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The Ulster Medical Journal, Volume 66, No. 2, November 1997.

Editorial

Audit: time to rethink

Doctors carry out 20,000 audit projects each year. This will have cost the NHS £834 million by the end of the century.[1]

What is the benefit to patients? Most clinicians would immediately reply "very little". The NHS Executive is more guarded in reply, but, tellingly, has commissioned more research on the value of audit.

The NHS Audit Initiative was formally launched in the Health Service reforms of 1990, and audit became a contractual requirement for hospital doctors (though not for general practitioners). Some doctors therefore felt compelled to participate in audit with their peers; many, however, have declined to become involved. I have not heard of any disciplinary action being taken against any doctor who has failed to take part in audit.

Medical audit committees were set up and audit assistants employed. More recently, the NHS has directed all audit funding at clinical (multiprofessional) audit as distinct from medical (uniprofessional) audit. Evidence-based medicine, risk management and protocol drafting have become mixed up with audit activity. The NHS has funded several centres of audit and evidence-based medicine, often with overlapping functions.[2] Little of this has penetrated to the clinician or altered daily practice.

Hospital doctors have become increasingly cynical about the value of audit.[3] They see scarce resources being diverted by political dogma without evidence of benefit. The initiative has been taken out of doctors' hands by non-clinicians, who have created an audit industry with its own jargon, literature and career structure. No wonder doctors merely pay lip service to audit while quietly ignoring it.

What can be done to redress the drift from the sensible aim of audit – to improve the quality of our care for patients? There are several measures which, from my experience as a hospital audit co-ordinator, I feel would help.

- No audit project should be started unless all members of the group agree at the outset that they are prepared to change practice if this is indicated by the conclusion. This is a key requirement, whose absence explains why so many audit projects fail to achieve change.
- Audits should preferably be national projects, with agreed national standards. (The National Cataract Audit is a good example.) Small, local, ad hoc projects should be discouraged as they seldom measure against accepted national standards and the conclusions are rarely acted on or re-audited.
- Doctors should retain control of medical audit projects, and resist managerial audit, which is differently motivated.
- Doctors should clearly distinguish research from audit. Research provides the evidence for a standard of practice; audit measures how an individual is performing against that standard.
- Audit assistants should be used from the early planning stages.

Let us stand up and admit that current audit practice is failing. We should demand a rethink, before audit is totally discredited.

At present, most doctors would be happy to see audit sacrificed as our annual efficiency savings; I do not think patients would suffer. Indeed, some of them might well ask why we have wasted so much of their money on such unaudited activity.

RAYMOND FULTON,
Hospital Audit Co-ordinator,
Altnagelvin Hospital

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Is Male Infertility on the increase?

Infertility affects one in six couples in the United Kingdom. Male infertility is now the single most common cause. Compared with animals, human conception is, at best, inefficient. From one act of coitus a man can eject some 500 million sperm, yet a mere hundred survivors will reach the ovum. As a result anything less than 20 million sperm per ml of ejaculate significantly reduces the chance of conception. This is why there is growing concern about the apparent trend in the Western world over the past two decades which shows a decline in sperm counts. The 'quality' of human semen is also very poor compared to other mammalian species. A large number of human sperm have morphological abnormalities and, according to the WHO classification, a human semen sample is to be considered normal even if 50% of the sperm are not moving progressively (ie exhibiting space-gaining forward movement).

APPARENT DECLINE IN SPERM COUNTS

Studies focusing on overall populations, fertile men and patients consulting for infertility show similar trends of diminishing sperm counts.[1] In one of the most comprehensive analyses of all, which included 15,000 men from 21 countries, Danish scientists discovered a decline of nearly 50% over the last 25 years.[2] Not surprisingly, a study with such dramatic conclusions was scrutinized by many experts in the field and became a topic of controversy.

Since then, a major American study[3] has been published suggesting that there is no decline in semen quality in the United States and that differences in sperm counts can be explained by geographical variations. An example of this was seen in France where one study in Paris concluded that there was a decline over the last 20 years, whilst researchers in Toulouse found that sperm concentration had not changed in their area between 1977 and 1992. The groups suggested that their differing results were caused by differences in air quality, water supply and lifestyle between the two areas.

The effects of alcohol on sperm production and quality are not well established. Common alcohol-induced disorders of the testis include spermatogenic arrest and 'Sertoli cell-only' syndrome, and heavy social drinkers (more than 80 g/day) may induce self-inflicted infertility. Alcohol also affects testosterone metabolism markedly. Alcohol has also been shown to have a direct effect on sperm motility in vitro, decreasing it in a dose-dependent manner.

Many studies have assessed the association between cigarette smoking and semen quality, again with variable results. Inadequate consideration of smoking dose or the potential for confounding and modifying effects may account for the contradictory findings.

Chemical pollutants in the environment have been named as one of the major culprits in impaired fertility. Many by-products of the petrol and plastic industries such as phenols and phthalates have oestrogenic effects. Recent tests by the Medical Research Council have shown that, by mimicking the effects of female hormones, phthalates can damage the testes of baby rats and reduce future sperm counts. Such substances are present (at Government permitted levels) in our water supplies, baby milk formulae, the inner coating of food cans, detergents and plastic food packaging, to name but a few environmental sources.

Intracytoplasmic sperm injection or ICSI has revolutionised the treatment of male infertility; the technique involves the injection of a single sperm directly into the egg so that even men with severe infertility factor can be treated. By its nature this treatment bypasses all the natural hurdles which would normally exclude defective sperm from fertilising. This means that the conventional semen parameters such as sperm count, motility and structure are no longer relevant. Accordingly we must devise new tests to select the very best sperm to ensure both fertilisation and implantation, and also the best health of the next generation.

The quality of sperm DNA is of paramount importance, no matter what assisted conception technique is employed. DNA must be intact in order to transfer the genetic material accurately to the next generation. One promising test to assess the quality of sperm DNA is the Comet Assay. This is a rapid, sensitive method of measuring DNA status which we have recently modified for use with human sperm[4] in the Andrology Laboratory of the department of Obstetrics and Gynaecology. To date we have investigated sperm DNA from fertile and infertile men to compare baseline DNA quality and to see if there are differences in the sensitivity of sperm to induced damage. DNA status may prove to be

a crucial indicator of sperm health and therefore useful in selecting the best sperm for use in assisted reproduction units.

Whether a deterioration in semen quality actually means a reduction in male fertility is debatable. In any human population, detection of changes in fertility potential is difficult. Birth rate gives limited information because this is influenced by socioeconomic conditions, ease of obtaining contraception and prevailing attitudes towards family size at a given time. Nonetheless, semen analysis is a well-established method of assessing male fertility potential. A decline in semen quality due to ethnic, environmental or lifestyle factors requires further exploration.

Changes in semen quality are not occurring in isolation in the male reproductive system. There is also evidence that the incidence of testicular cancer and congenital malformations of the male genital tract is increasing in Europe and the United States, suggesting that other aspects of male reproduction are also under threat.

Our understanding of male reproduction is extremely limited. Although more than one million cycles of in vitro fertilization have been undertaken worldwide, our knowledge of sperm function is still elementary.

However, the information we have raises concerns over male fertility and highlights our ignorance in the area. That is why we have set up the only laboratory in the province which is dedicated to the study of male fertility.

SHEENA E M LEWIS, BSc, PhD,
Lecturer in Obstretrics & Gynaecology,
Andrology Laboratory,
Queen's University of Belfast

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Conflicts in Resuscitation: Ethical Dilemmas

Paper presented at a joint meeting of Ulster Medical Society and Ulster Neuropsychiatric Society 20 February 1997

J L Gorman

Much work in philosophy is concerned with logical reasoning, and much else with mysterious metaphysical things which might make you agree with Sir Isaiah Berlin, who once said "Philosophers are adults who persist in asking childish questions".[1] Unsurprisingly, there are those who think that asking a moral philosopher to deal with practical ethical questions is rather like asking a psychoanalyst to perform brain surgery: he is completely inappropriate for the task.

Commonly, there are two presuppositions of the view that moral theorising has nothing to say about practical matters: one is that moral theorising is mere theory and is supposed to leave everything as it is, and is therefore of purely formal interest, so that there are no practical implications whatsoever; and the other is that moral theorising does have practical implications, but moral theorists squabble so much that they would produce far too many answers to practical questions, all of them different.

I would not be here if I took either of those views. While it is true that there are many inconsistent approaches to what moral philosophy is, and understanding it all is often rather as Lewis Carroll put it in *Alice through the Looking-Glass*: trying to believe "six impossible things before breakfast",[2] there is one central concern which both the practical and theoretical sides of morality share: that of justification. The essence of an ethical dilemma is that we do not know which side to choose, for neither side is self-evidently the only right choice. In the case of a difficult decision, the right choice will be a justified choice, and the better choice the more justified choice. The study of justification is a traditional philosophical study. We need to understand the kinds of reasons which will justify our choices.

If you want to know what "justification" is you should ask what a "good" justification is. There are two ways of justifying things well. However, describing these two ways is not straightforward, because many people find the concept of "justification" difficult, and then find the idea of splitting it up into two further kinds even more difficult. I shall therefore begin with an easier idea, the idea of explanation. There are two ways of explaining things well, just as there are two ways of justifying things well. One way of understanding a good explanation is to understand it as removing puzzlement on the part of those hearing it. If the explanation removes such puzzlement, then it is a success. If it does not, and such misunderstanding continues, then the explanation is a failure. We often expect schoolteachers to be good at explaining things in this way.

By contrast, the physical sciences try to explain the way the world works, and we ordinarily think that what makes a scientific explanation a good one is that it gives the true causes of things, or something of the kind. On the other hand, if the explanation says something scientifically false, then it is a bad explanation. But the kind of explanation which gives the true causes of things is in principle very different from the kind of explanation which successfully removes puzzlement. The kind of explanation which successfully removes puzzlement may very well not give the true causes of things, while our best explanations of the way the world works may be impossible for most people to understand. (Indeed, it may be that the correct explanation of the way the world works is impossible for anybody to understand.) It would be intellectually very satisfying if human understanding and objective truth went naturally together, but they are nevertheless different in principle. There are two kinds of explanation. One kind of explanation is

The Queen's University of Belfast.

J L Gorman, MA, PhD, Professor of Moral Philosphy.

measured against the existing understanding of people. The other kind of explanation is measured against the way the world is. One kind of explanation is measured by a subjective test. The other is measured by an objective test.

The distinction I have drawn between two kinds of explanation works also for the two kinds of justification. Justification of our moral choices in ethical dilemmas could be measured against either subjective or objective tests. Moral philosophers have spent the best part of three thousand years trying to find objective tests for justification. It would be marvellous if a kind of moral "reality" could be found, a certainty against which we could test our moral beliefs. Philosophers have not succeeded. In consequence, what counts as a good reason for a moral choice has a very great deal to do with what satisfies other people as a good reason. It is this which makes the understanding of law central to the understanding of practical ethical decisions, for in our tradition law commonly represents the outcome of much accepted moral reasoning.

The theory of law involves as many squabbles as other branches of philosophy. There are those who think that law is merely what Parliament commands, and that it is essentially an exercise in force. From this point of view, it is historical luck if our laws overlap significantly with the demands of morality. However, you have to obey it whether it does or not. On this approach, you in medical practice have to comply with the law because the authorities will get you if you don't. And there is no doubt that law at some times and in some countries can make demands backed by force which are very far from what morality would require or permit. Yet we are fortunate in our traditions that law is not merely that which is laid down in some arbitrary way. There are multiple sources of the law, and the reality of its application lies in the courtroom, where a determination is made of the rights and wrongs of particular cases. The highest courts do not mechanically pass on Parliamentary legislation, but draw on traditional conceptions of right and wrong, principles of justice, other decisions in similar cases and the like, all woven together in a reasoned justification of what is required in the particular case. In our tradition, legal decisions are essentially justified decisions. That our legal tradition at its heart involves reasoned justification is one of the central grounds for seeing it as essentially a moral enterprise. While there are no doubt many areas where the law's demands do not always accord with everyone's conceptions of what would be the morally right outcome, a procedure which essentially embodies a reasoned justification for the outcome is in itself a moral procedure, and the outcome is morally justifiable precisely because it is the outcome of a moral procedure.

This is one lesson we can draw from the shared world of both judicial decisions and moral decisions: that determining the answer to an ethical dilemma is a matter of reasoned justification. We are fortunate that, in the case of many dilemmas in medical ethics, some fine judicial minds have been applied to the required reasoning. That reasoning includes recognising relevant Parliamentary legislation as authoritative, and I shall not consider (this evening) arguments for changes in legislation. I take the moral dilemmas we face in practice to be those which arise within the framework of current law, in situations where clearly established law does not tell us what to do. Both medical practitioners and judges can find themselves having to determine what ought to be done in the light of such uncertainty.

Who ought to decide these matters? A doctor should not try to second-guess what a judge might determine about an ethical dilemma, particularly if the courts have made clear that it is their place to make a decision in certain types of case. What the doctor should do – where the decision is his to make – is adopt the right procedure. This is in effect to ape ideal judicial reasoning by being able to provide justification when called upon, justification which displays a reasoned consideration of the relevant principles. Adopting a reasoned course of justification still leaves room for different people to make different decisions about the same case, but whatever their decision is it may still be justified. It should not be thought that justifiably choosing one horn of a dilemma always means that the other choice would have been unjustified. There is often, in both morality and law, more than one right answer, both justified, and neither more justified than the other. What often matters is merely the making of a decision, rather than what that decision is, although this does not mean that any decision will do.

In the complex moral areas concerning resuscitation of dying and incompetent patients much of the relevant reasoning appears in what is

familiarly known as the Bland case.[3] Anthony Bland was a victim of the Hillsborough football stadium disaster, which left him in a persistent vegetative state, a state in which the cortex of the brain loses all function and activity. With an empty mind and no possible hope of recovery, Bland was kept alive by being artificially fed, and given close nursing and medical care as appropriate to cure or prevent various infections. The family, the consultant concerned and independent doctors all backed the relevant Hospital Trust in asking for a declaration by the courts that they might lawfully discontinue all life-sustaining and medical treatment and artificial nutrition and hydration.

Why go to the courts with this at all? Notice that the doctors did not go to the courts in the first place asking that they might lawfully begin and continue with appropriate treatment and artificial feeding. Yet at first sight they might well have done so. This is because both the treatment and the artificial feeding were – as they would standardly be in such a case – of an invasive kind, and it is a familiar feature of both law and morality that one is not entitled to interfere with the body of another without their consent. Otherwise it is an assault. Doctors know that consent standardly has to be sought. Yet in the case of an incompetent patient such as Bland it was plain that consent would not be forthcoming. In such cases various principles of substituted choice may be morally defensible, but in British law doctors are under an obligation to act *only* in accordance with the patient's best interests.[4]

The notion of "best interests" is fertile ground for moral dilemmas. To begin with, the obligation to act only in accordance with the patient's best interests is ambiguous. It might mean that a doctor must act whether he likes it or not, but only in so far as it is in the patient's best interests; or it might mean that a doctor may or may not act as he chooses, but if he does then it must be in the patient's best interests. The principle of the sanctity of life drives the matter here, but in the *Bland* case Lord Keith remarked that the principle of the sanctity of life is not an absolute one. He said, "It does not compel a medical practitioner on pain of criminal sanctions to treat a patient, who will die if he does not, contrary to the express wishes of the patient".[5] In addition to refusal of consent, there are other grounds for defeating the principle of the sanctity of life, such as killing in self-defence. So the principle of the sanctity of life can be defeated, but it stands if it is not defeated, and it is plain that, if it is not defeated (by a patient refusing consent, for example), it directs doctors to act in the patient's best interests where they are able to do so. One would not therefore need the court's explicit permission to act in a patient's best interests, since that permission is in effect already given in terms of the legal principle of the sanctity of life. Yet note that this is only permission to do that which is in the patient's best interests. If it was not in Bland's best interests to be artificially fed and treated then the doctors doing so were not justified. So it is not the case that a doctor needs legal permission to stop treating the PVS case but does not need it to start; on the contrary, legal permission is required both to start and to stop. The legal permission to start already exists in the principle of the sanctity of life. That legal permission lapses when the treatment is no longer in the patient's best interests. One goes to court, in such circumstances, for an explicit direction as to what is and what is not in the patient's best interests.

But why go to court about this? It is sometimes wrongly thought that it is for medical practitioners to determine, in such cases, what is in a patient's best interests. Thus Lord Justice Neill in a different case referred to "that which the general body of medical opinion in the particular specialty would consider to be in the best interests of the patient in order to maintain the health and secure the well-being of the patient".[6] Here the words "best interests" are not well-chosen. In ordinary parlance "best interests" marks a superlative, an ultimate good; it would normally be taken to refer to the end, goal or final purpose of some course of action. At the extreme it is life itself which is the highest aim in medical care. All this is misleading. It is plain from Lord Justice Neill's remarks, examined carefully, that "best interests" refers, not to the end, but to the means towards the end. For Neill, the "means" is the medical determination of "best interests" towards an "end"; the "end" is "health and well-being". It follows that, while "best interests" is to be determined by the general body of medical opinion, this is only in so far as "best interests" is a means, not an end. Lord Mustill in Bland put it differently: "best interests" refers both to the medical determination of the means and also to the ethical determination of the end. It is an ethical and legal matter that, for example, a long

healthy life is in the patient's best interests, but a medical matter how that goal is to be achieved. With regard to the ethical matter, Lord Mustill said, "there is no reason in logic why on such a decision the opinions of doctors should be decisive". Doctors are concerned with means, not ends. In the *Bland* case, the problem was not the medical one of the best means to be adopted, for so far as was known all that could be medically done for Bland was apparently being done, without any disagreement of substance. The doctors were under a duty to act in Bland's best interests, but faced an ethical and legal problem whether the outcome for Bland of the best medical attention was in fact in Bland's best interests. The problem was the end, not the means.

The determination of what is in Bland's best interests is in principle a completely different matter from any criminal considerations which might arise. One can imagine a legal system in which doctors were never liable for any criminal sanction for actions undertaken in the course of their work. In such a system the problem of what was in Bland's best interests would still arise. "Best interests" in some cases might not be a life-threatening issue at all. But when the hospital in *Bland* asked for a determination that it would be "lawful" to withdraw life-sustaining treatment they were not asking directly what was in Bland's best interests but asking what they could do without committing a crime, and the courts argued much of the material on the basis of this quite distinct question.

It is plain enough, legally and morally, that doctors are not allowed deliberately to kill people. Legally the crime of murder standardly involves two elements: what is called the "actus reus", or evil act which brings about death, and the "mens rea", which is the evil intention so to do. If the doctors in Bland deliberately acted so as to bring about Bland's death then they would be guilty of murder, and this has nothing whatever to do with the question whether Bland's best interests would be served by dying. But what if the doctors deliberately withdraw artificial life support measures? Is this an act which causes death, or is it an omission which allows death to be caused naturally?

In his judgement in *Bland*, Lord Browne-Wilkinson referred to Professor Glanville Williams's *Textbook of Criminal Law* as support for his view that withdrawing life support is an omission. Williams explains the difference between an act and an omission: "A crime [he said] can be committed by omission, but there can be no omission in law in the absence of a duty to act. The reason is obvious. If there is an act, someone acts; but if there is an omission, everyone (in a sense) omits".[8] If this is right, the difference between an act and an omission is much easier to make than many philosophers have thought. If there is an act, then it will be the act of a particular person who in ordinary circumstances can be readily identified. But if there is an omission, it will not be the omission of a particular person unless it is possible to identify the person who had the duty to act. So if everybody in the world (apart from the doctors) had omitted to treat Bland intending that he should die naturally, and he did, then nobody has committed murder, for while the mens rea existed on the part of all these people there would have been no actus reus. But what happens if the doctors deliberately withdraw life support knowing that this will be followed by Bland's death? Only if they have a duty to act and do not do so, only then do we have a situation where we can identify the source of the omission. A crime can be committed by omission; is this one of those cases?

In the *Bland* case, if the withdrawal of artificial life support is an act, then this act, together with the undoubted knowledge that this would bring about Bland's death, is one of murder. There is both actus reus and mens rea. If, on the other hand, the course of events constituted an omission, then this course would still amount to murder, but only if those involved were under a duty to ensure as best they could that Bland did not die. If those involved were not under a duty to ensure as best they could that Bland did not die then we cannot identify anyone or any action as being at fault. There is then no actus reus and no murder is involved.

Lords Browne-Wilkinson and Goff[9] made it clear that removing the nasogastric tube necessary for feeding was not an act but an omission. This, however, does not solve the problem since the doctors concerned may have been under a duty to ensure as best they could that Bland did not die, and if that were so then the acts/omissions distinction will not help them. This point was made clear by Lord Mustill.[10] The question is then, were the doctors under a duty to ensure as best they could that Bland did not die? They were certainly under a duty of "care", but this, as we

have seen, requires only that doctors act in the "best interests" of the incompetent patient. The question comes down logically to this: Is it in the best interests of Bland that he be prevented by the doctors from dying? This question is quite different from asking whether it is in the best interests of Bland that he die. This is not a case where the doctors need to argue that Bland would be better off dead; it is merely a case where they need to argue only that Bland would be no worse off dead.

To provide a succinct summary of the argument, the position is that Bland's PVS condition is such that he has nothing left to lose. He would be no worse off dead, even if he would be no better off dead. It is not in his best interests that he be kept alive because he does not benefit from it. The doctors' duty of care is restricted to Bland's best interests. Therefore they are not justified in continuing with the invasive life support system. Therefore since it is unjustified they have a duty to withdraw it.

All these arguments depend on Bland having nothing left to lose. I described Bland as having an empty mind, but how true is that? Bland's brain was, as one judge summarised it, a "mass of watery fluid".[11] It may be thought that a clear relationship between mind and brain is assumed in the legal decision: that with no brain there is no mind. Is this assumption right?

We must accept that we know very little about consciousness and the nature of mind. Whatever beliefs we may have about the issue, there is no demonstrably certain knowledge whether consciousness or mind can exist independently of physical existents like the brain. I think our best understanding is probably that conscious experience as we know it, which is consciousness of the physical world around us, depends on having the physical brain and sense organs that are familiar to us. But while this may be wrong, it need not be a moral concern. For if conscious life can exist independently of the physical body, then it need not worry us if we are unable or unwilling to preserve or prolong the life of the physical body. If, on the other hand, consciousness cannot exist independently of the physical body, then if the physical matters on which consciousness depends, like the brain, have already dissolved, we are already too late. Given his physical state, nothing we could do for Bland could possibly affect his conscious state. The upshot is that the *Bland* case is easier than it might be.

I don't think I have asked any childish questions yet and thus have not lived up to Berlin's standards for a philosopher. To make up for this, I will conclude with a brief speculation about some of these mysterious things. I have said that we do not understand consciousness. We do not have the right explanatory language which will make mind fit in with the other things which we think we do understand, such as those which the natural sciences cover. Like the scientists who thought that atoms were like billiard balls and that heat was a fluid, like the cognitive theorists who think that the mind is a computer, we think about the mind in terms of metaphors. We have given up some metaphors in our understanding of mind, such as Descartes' mental substance, but we still use the metaphor of a "point of view". Much of our imagining in the case of PVS patients and others similarly placed consists in trying ineffectually to see things from their point of view.

Computers exist for engineering design: one may design a car, for example, and plan the top, front, rear and side views. Enter such plans in the computer, with specified dimensions and parameters, and the computer can then present on its monitor a three-dimensional image of the car. This image may then be rotated so as to present the car's appearance from different points of view. The computer may fail in some way, and leave one looking at the offside rear of the car instead of from some other desired perspective.

It is plainly a mere contingency that I cannot, like such a computer, move my point of view around the three-dimensional world which I inhabit. Granted that, my eyes being where they are, a certain position is (so far as I know) "causally" natural and no doubt useful, still the world which I see is underdetermined by my immediate experiences and necessarily involves some imaginative input on my part. Like the designer's computer which shows the car from different standpoints, only some technicality stops me from being able to move my point of view, given the information which my brain currently has, from its present location behind my eyes to the opposite side of the room, or even as if it were positioned in your body which just happens to be in my perceptual range. It is true that I lack experiential information about what is, from my present point

of view, the far side of objects, but I would supply the deficiency in an automatic way on the basis of memory (as I do now in many situations), and the results would at worst be no more odd than some of the results of split-brain operations. Illness, like the computer failure, might leave one with an unexpected point of view, and this may explain that reported phenomenon of people "leaving their bodies" when close to death. If I moved my point of view, then I could operate my body apparently from a distance. Maybe evolution could give us these skills. I leave you to imagine just how different our understanding of the relationship between mind and brain would become if these serious possibilities came into being. Perhaps they will.[12]

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Prescription of oxygen concentrators and survival in Northern Ireland

L G Heaney, J B Buick, R C Lowry, J MacMahon

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SUMMARY

Long term oxygen therapy (LTOT) has been shown to prolong survival and to improve quality of life in patients with chronic obstructive pulmonary disease (COPD) and in respiratory failure. In Northern Ireland oxygen concentrators have been available on prescription since August 1986, initially on a restricted basis from hospital physicians only. This was followed by open prescribing from April 1989, when concentrators could be prescribed by general practitioners. This study examined prescribing habits of LTOT during both periods, and patient survival. Case notes of all prescriptions of oxygen concentrators in Northern Ireland (to April 1991) were reviewed. Prescription criteria and advice regarding usage during both periods were analysed. A questionnaire survey of subjects during open prescribing documented the advice given at the time of prescription and current usage. 164 charts of 178 total installations were available for review. During both periods many concentrators were installed without adherence to the prescribing criteria at the time (75% restricted, 48% open). The majority of these were on the advice of a consultant respiratory physician and only 14 were prescribed directly by GPs. 89 of 91 subjects receiving current LTOT during the study period completed questionnaires. Of the subjects prescribed LTOT during the restricted period, 2 subjects are still alive (median survival 19 m, range 0-104). From the open period, survival data was available on 107 of 129 subjects with 17 still alive (median survival 22 m, range 0-94). This study documents an inadequate rate of prescribing and a lack of conformity to guidelines in the provision of LTOT in Northern Ireland. We would suggest that familiarisation with the prescribing criteria, formal written advice at the time of prescription, appropriate follow up to ensure adequate supplementation and regular patient education on the use of LTOT would address these problems to a substantial degree.

INTRODUCTION

Long term oxygen therapy (LTOT) has been shown to prolong survival and to improve quality of life in patients with COPD and in respiratory failure.[1,2] Following these studies, recommendations for the prescription of oxygen concentrators were published by health authorities and scientific societies.[3] Oxygen concentrators became available on prescription in England and Wales on 1st December 1985. Scotland and Northern Ireland had separate arrangements. In Northern Ireland, from August 1986 to April 1989, a period of "restricted" prescribing was introduced during which the installation of an oxygen concentrator could only be initiated by a consultant physician. Following this, "open" prescribing was introduced, during which GPs could prescribe concentrators, with advice from the Department of Health that the installation be recommended by a consultant respiratory physician. This study reports the prescribing habits of LTOT during both these periods and the survival of subjects prescribed LTOT.

METHODS

All prescriptions of oxygen concentrators in Northern Ireland are processed by the Central Services Agency in Belfast, thus enabling the identification of all recipients of LTOT. Case

Department of Respiratory Medicine, Belfast City Hospital, Northern Ireland, BT9 7AB.

L Heaney, MD, MRCP, Senior Registrar.

J B Buick, BSc, Senior Scientist.

R C Lowry, FRCP, Consultant Physician.

J MacMahon, FRCP, Consultant Physician.

Correspondence to Dr Heaney.

notes were obtained and reviewed where available. Prescription criteria and advice regarding usage during both the restricted and open (to April 1991) periods were analysed. Spirometric and blood gas data are the values nearest in time to the prescription of LTOT. All subjects receiving LTOT between August 1989 and April 1991 were sent a questionnaire concerning the advice given at the time of prescription and current usage. A failure to reply prompted a second questionnaire, and if again there was no reply, a home visit was made.

RESULTS

The criteria for prescription of LTOT by the Ulster Thoracic Society (UTS) during the period of restricted prescribing are given in Table I. Subsequently, the guidelines were modified and the absolute and relative indications for the prescription of LTOT during the open period are also given in Table I. The total number of installations during the study period was 178, and of these 164 charts (44 [90%] restricted and 120 [93%] open) were available for review. The diagnoses for the study subjects in both the restricted and open periods are given in figure 1. Mean spirometric and arterial blood gases for both periods are given in Table II.

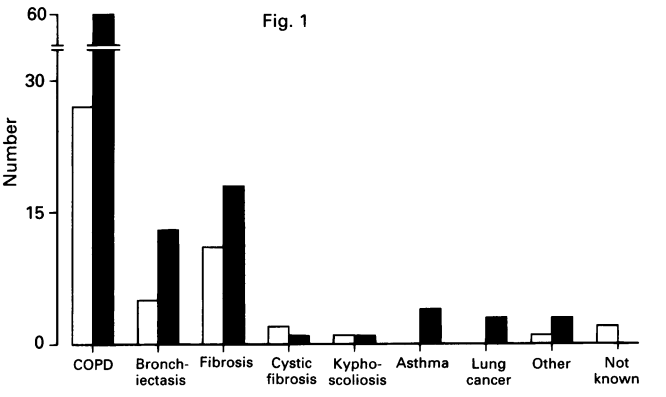

Fig 1. Diagnostic groups for which oxygen concentrators were provided (open columns – restricted prescribing, closed columns – open prescribing).

During the restricted period, 11 (25%) subjects fulfilled the UTS arterial blood gas (ABG) criteria at the time of prescription and 25 (57%) did not. Eight (18%) subjects had no record of ABG analysis, thus by definition did not fulfil the prescribing criteria. 19 (43%) subjects would have fulfilled present ABG criteria. During the restricted period, spirometric criteria were not specified by the UTS. On review of the charts, 28 (64%) had spirometry measured and of these 22 (50%) fulfilled the current criteria.

TABLE I

Criteria for prescription of long term oxygen therapy during restricted prescribing and open prescribing (defined by the Medical Research Council study and Nocturnal Oxygen Therapy trial).

Restricted prescribing		Usually COPD with or without right heart failure, whose lifestyle or work is severely limited
		Baseline steady state PaO_2 on room air < 6 kPa
		No smoking
Open prescribing	**Absolute**	FEV_1 < 1.51 / FVC < 2.01
		PaO_2 < 7.3 kPa
		$PaCO_2$ > 6.0 kPa
		Oedema
		Clinically stable
		Repeated measurements
		Optimal therapy
		No smoking
	Relative	As above without hypercapnia or oedema

TABLE II

Mean spirometric and arterial blood gases (± standard deviation (SD)) for subjects during the periods of restricted and open prescribing.

	Restricted (SD)	*Open (SD)*
Installations	49	129
Female	19	49
Age (y) at prescription	60 (12)	65 (12)
FEV_1 (l)	0.92 (0.7)	0.94 (0.66)
PaO_2 (kPa)	6.45 (1.03)	6.56 (1.76)
$PaCO_2$ (kPa)	6.33 (1.56)	6.6 (1.68)

In the open period, 62 (52%) subjects fulfilled the ABG criteria and 24 (20%) did not meet the criteria. A further 34 (28%), had no record of ABG analysis, thus by definition did not fulfil the prescribing criteria. Spirometric criteria were met by 55 (46%) subjects but not by nine (7%, 5 with pulmonary fibrosis) whilst a further 56 (47%), had no record of spirometry and hence did not fulfil the prescribing criteria. 38 (32%) subjects fulfilled all prescribing criteria.

Of the 115 prescriptions issued on the advice of hospital physicians, only eight were prescribed by a non-respiratory consultant. Of these, all had ABG, and three did not fulfil the criteria. Four had spirometry with one subject fulfilling all criteria.

Of the 14 general practitioner requests, seven medical charts were available for review. Two subjects had ABG measurements and one fulfilled the criteria. Two had spirometry and one fulfilled the criteria.

91 subjects currently receiving LTOT were identified during the open study period with questionnaires completed by 89 (98%) (Table IV).

Of the subjects prescribed LTOT during the restricted period, two subjects are still alive. The median survival time after prescription was 19 m (0-104). From the open period, survival data was available on 107 of the 129 subjects prescribed LTOT and of these 17 (16%) are still alive. The median survival time after prescription was 22 m (0-94) and for subjects who fulfilled all criteria for provision of LTOT was 18 m (0-90). The cumulative survival curve for all subjects and for those who fulfilled all criteria is shown in figure 2.

TABLE III

Comparative mean spirometric and arterial blood gases (± standard deviation (SD)) for subjects prescribed home oxygen by general practitioners and consultant physicians during open prescribing.

	General Practitioner	**Physician**
Installations	14	115
Female	3	46
FEV_1 (I)	0.46 (0.13)	0.97 (0.69)
PaO_2 (kPa)	5.89 (0.64)	6.59 (1.75)
$PaCO_2$ (kPa)	6.5 (0.7)	6.59 (1.69)

TABLE IV

Advice given when home oxygen prescribed and actual usage by subjects during period of open prescribing.

		Open – consultant n (%) Total n=75	*Open – General Practitioner n (%) Total n=14*
Duration of use	no advice	2 (3)	0 (0)
	prn use	3 (4)	10 (71)
	< 10 h / day	1 (1)	1 (7)
	10-15 h /day	14 (19)	1 (7)
	> 15 h / day	55 (73)	2 (14)
Flow rate not stated		5 (7)	14 (100)
Incorrect use despite correct advice		7 (9)	not applicable
Smoking		0 (0)	3 (21)

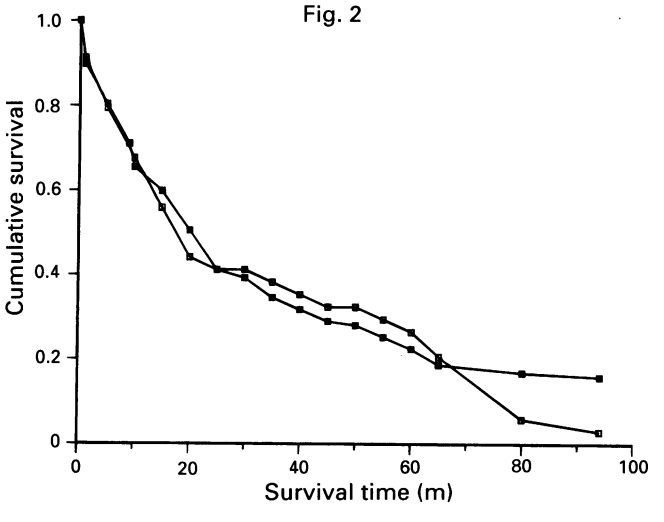

Fig 2. Cumulative survival curves for patients prescribed oxygen concentrators during the period of open prescribing (closed squares – all subjects, open squares – subjects fulfilling prescribing criteria).

DISCUSSION

LTOT for patients with COPD and respiratory failure prolongs survival,[1,2] improves quality of life,[4] reduces hospitalisations[5] and improves intellectual performance.[6] This study documents prescribing habits of oxygen concentrators in Northern Ireland but did not examine oxygen provision in other ways, notably via cylinders. During open prescribing the number of concentrators provided (129, 4 per 100,000 population) was lower than the UK average of 8000 (16 per 100,000 population).[7] It has been estimated that the prevalence of hypoxia in the community sufficient to require LTOT is 0.3% of the population over the age of 45 years[8] suggesting significant underprovision of LTOT in Northern Ireland. There is a need for accurate epidemiological data on the prevalence of hypoxia in Northern Ireland.

Whilst the prescribing criteria for both periods were different, this study demonstrates that a significant number of concentrators were installed without adherence to the stated criteria, and to patient groups who have not been shown to benefit from long term oxygen provision (figure 1). This occurred independent of the source of the prescription i.e. either physician-advised or by the general practitioner. Earlier studies have demonstrated that fewer than 60% of prescriptions for long term oxygen were on the recommendation of a respiratory physician and only 43-63% of patients fulfilled the Department of Health criteria.[9,10,11] Our figure of 32% during a comparable period is even lower despite the high proportion (89%) provided on the advice of respiratory physicians.

The low prescribing rate coupled with the failure to prescribe according to the guidelines suggests that many who could benefit from LTOT are not receiving it. The reasons for this are probably

multifactorial but seem likely to include lack of awareness of the current criteria. Our clinical experience indicates that many who attend primary care physicians and hospital based services are not referred for investigation of oxygen status. A greater awareness of this issue coupled with practices employed to assess oxygen status is required. More widespread use of oximetry by general practitioners and subsequent referral for formal assessment if oxygen saturation is low would help in the primary care setting. In hospital, the use of a committed respiratory nurse and assessment at home after discharge using ear lobe gases, which is technically easier to perform, would ensure hypoxic patients are followed up.

The median survival time was not significantly different for both periods of prescribing. During the open period, survival was similar for the group as a whole, compared to subjects in whom the prescribing criteria were fulfilled. In this latter group, the age at prescription and the poor survival suggests intervention at a relatively late stage of the disease. Improvements in survival are only likely to be achieved by intervention at an earlier stage.

In terms of advice given, patients were more likely to receive appropriate advice about duration of daily use and flow rates when the LTOT was prescribed in hospital, though again a significant proportion were given inappropriate advice from both physicians and general practitioners. Most subjects received advice about flow rate when LTOT was prescribed from hospital; this is important, especially in patients with Type 2 respiratory failure. The aim of LTOT is to raise the PaO_2 above 8 kPa without excessive hypercapnia[3] and regular follow up at least twice yearly by a respiratory consultant is recommended by the British Thoracic Society.[3] The majority of patients followed the advice which was given even when inaccurate. Previous studies have demonstrated that compliance is better when advice is received from a respiratory physician compared to general practitioners.[9] Since the number of general practitioner prescriptions in our study was small we cannot comment on this but adherence to advice presupposes that the advice is both given and appropriate.

In our study, three subjects were still smoking after prescription of LTOT in breach of guidelines. This figure is less than in other studies which have demonstrated 20%, 19% and 14% still smoking respectively[7, 9, 12] assessed by review of case notes or questionnaire. This suggests our population is either more compliant or less honest than other studies. Cessation of smoking was not assessed by an objective measure such as carboxyhaemoglobin level or urinary cotinine levels. There is obvious concern over safety as well as the likely benefit of LTOT in patients who continue to smoke.

This study demonstrates an inadequate rate of prescribing and a lack of conformity to guidelines in the provision of LTOT in Northern Ireland. Greater awareness of the potential of LTOT to improve quality of life in patients with chronic lung disease is needed. We would suggest that familiarisation with the criteria by general practitioners, practice nurses and hospital physicians, formal written advice at the time of prescription, appropriate follow up and regular patient education on the use of LTOT would address these problems to a substantial degree. A further audit should be performed to examine the current provision of LTOT in Northern Ireland.

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Visual impairment in Northern Ireland

Y M Canavan, A J Jackson, A Stewart

SUMMARY

Statistics on the registration of blind and partially-sighted patients in Northern Ireland underestimate the true extent of visual impairment within our community. In comparison to other UK regions, where between 0.53% and 0.59% of the population avail of blind or partial sight registration, only 0.35% of residents in Northern Ireland appear on the respective registers. Most patients on the combined registers are in the older age groups and many also suffer from other disabilities.

Regional discrepancies may be attributed to a combination of factors including: patient attitudes to the registration process, medical attitudes to registration and local anomalies in the way in which social services departments both record and present annual registration returns. Better liaison is necessary between the community, hospital and voluntary sector providers to improve identification and support services for the visually impaired in the future.

INTRODUCTION

The World Health Organisation (WHO) has estimated there are 38 million people who are blind, worldwide. A further 110 million people have low vision and are at risk of becoming blind, representing a global burden of visual impairment of 148 million people. Approximately 80% of visual disability occurs in the developing world.[1]

There is no standard worldwide definition of blindness or low vision. The WHO data is based on the definitions in the International Classification of Disease (ICD 10) which defines 'blindness' as a best-corrected visual acuity of less than 3/60, or where the central visual field is less than 10 degrees around fixation, in the better eye. 'Low vision' corresponds to a corrected visual acuity of between 6/18 and 3/60 in the better eye.

In the United Kingdom a patient is certified as blind or partially sighted by a consultant ophthalmologist at the request of the patient's local social services department. Registration, which is entirely voluntary, is subsequently carried out by the local authority.

Currently in the United Kingdom the legal definition of blindness, "so blind as to be unable to perform any work for which eyesight is essential", is as stated in the 1920 Blind Persons Act.[2] There is no legal definition for 'partial-sight', although this term was introduced into the 1948 National Assistance Act, and has subsequently been interpreted as "substantially and permanently handicapped by defective vision caused by congenital defect, illness or injury".[3]

These definitions are quoted on the forms currently used for registration in Northern Ireland (A655) and Scotland (BP1), but are so vague as to be unhelpful in defining the degree of visual handicap. In England and Wales the BD8 form which is used for registration specifies exact guidelines for the level of visual acuity and field loss required to facilitate inclusion.

There is therefore no uniform level of visual acuity or visual field loss in use to define 'blindness' or 'partial-sight' across the United Kingdom regions. This causes confusion when trying to correlate data from different areas.

METHODS

Blind and partial sight registration statistics, for the period 1980-1996, were collected and compared for England, Wales, Scotland and

Departments of Opthalmology, Royal Victoria Hospital,[1] Queen's University,[2] Belfast.

[1] Y M Canavan, MD, FRCOphth, FRCS (Ed), Consultant Opthalomogist.

[1,2]A J Jackson, MCOptom, PhD, Principal Optometrist.

[1]A T Stewart, MSc, BAA, RGN, Clinical Audit Officer.

Correspondence to Dr Jackson.

Northern Ireland. Data collection methods vary within the United Kingdom regions with the result that there are variations in the collection periods quoted.

New additions to the blind and partial sight registers in Northern Ireland, recorded between 1984 and 1996, were analysed in detail to establish the causes of visual handicap within our community and to identify the patients most at risk of developing visual impairment.

RESULTS

In each geographical area the number of individuals on the combined blind and partially sighted registers increased steadily during the period examined (Figs. 1a and lb). In Northern Ireland the upward trend was least obvious. The averaged annual percentage increases in registration, recorded over the respective 8 to 14 year periods were: Scotland 7.2%, England 3.9%, Wales 3.3% and Northern Ireland 2.9%.

The numbers registered in England, Wales and Scotland, expressed as a percentage of the total populations of these areas, were 0.54%, 0.59% and 0.53% respectively. In Northern Ireland only 0.35% of the population appear on blind and partially sighted registration lists (Table).

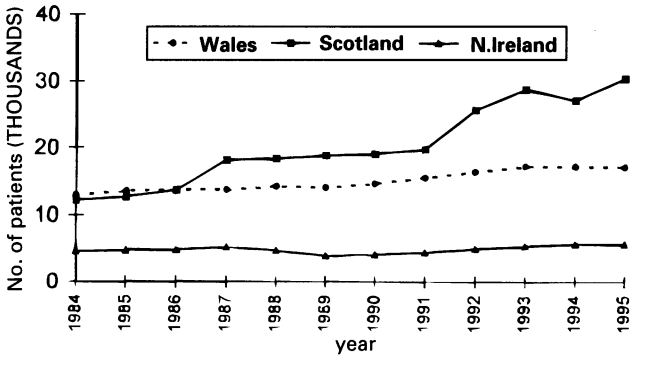

Fig 1a. Total number of patients on the blind and partial-sight registers in Wales, Scotland and N.Ireland.

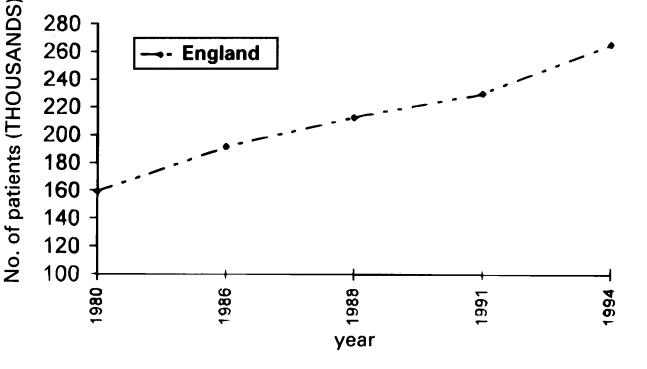

Fig 1b. Total number of patients on the blind and partial-sight registers in England.

TABLE

Total numbers of patients on the blind and partial sight registers across the UK

UK Region	*Total number of patients on blind and partial-sight registers*	*% of regional population*
Wales (1993)	17,280	0,59
England 1994)	265,400	0.54
Scotland (1994)	27,215	0.53
Northern Ireland (1994/95)	5,764	0.35

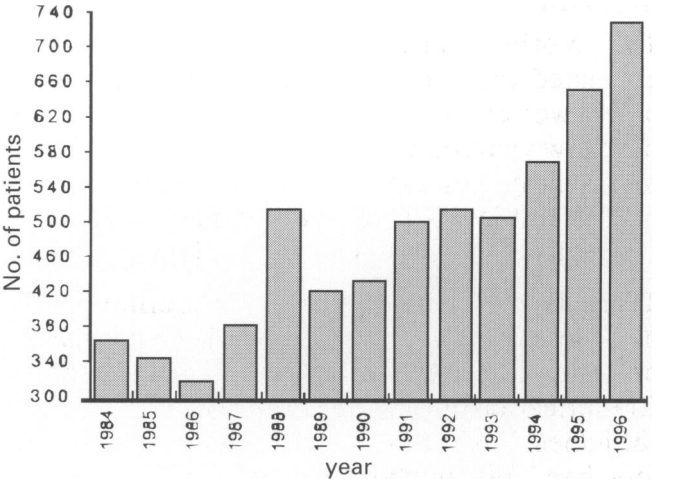

Fig 2. New additions to blind and partial-sight registers in N. Ireland

In Northern Ireland, the number of new patients registered as having a visual handicap increased from 361 in 1984 to 731 in 1996 (Fig. 2). There has been a predominance of females compared to males, registered each year (1.6 to 1.0). The skewed distribution mimics the male/female ageing characteristics of the general population. In the 0-20 year age group there has not been any obvious change in the numbers registered but there has been a gradual increase in those registered in the 21-64 year age group. There has, however, been a marked increase in those registered in the 65+ age group (Fig. 3). This is reflected in the dramatic increase in the number of new registrations resulting from age-related

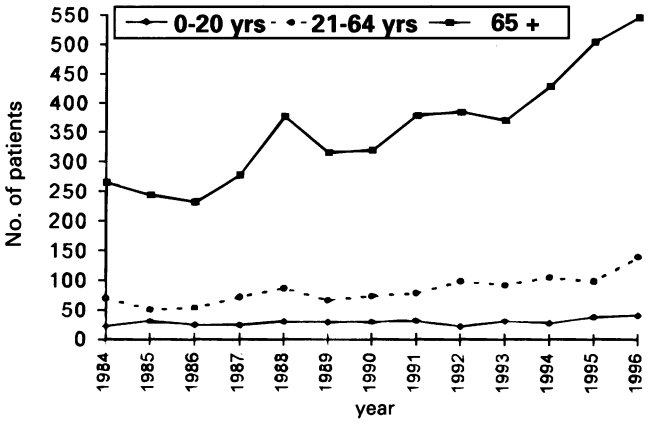

Fig 3. Age distribution of patients added to the blind and partial-sight registers in N. Ireland

macular degeneration (Fig. 4a). There has also been an increase in the number registered because of diabetic retinopathy (Fig 4b), while those registered because of primary open angle glaucoma (Fig. 4c) and myopia (Fig. 4d) have remained fairly stable. Senile cataract has decreased as a cause of registration (Fig. 4e).

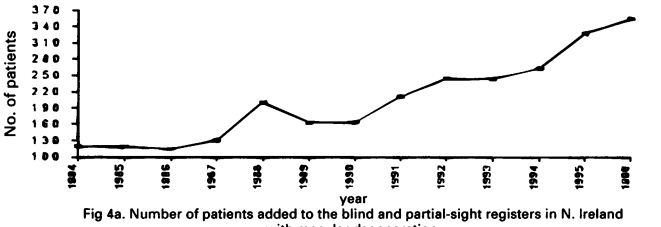

Fig 4a. Number of patients added to the blind and partial-sight registers in N. Ireland with macular degeneration.

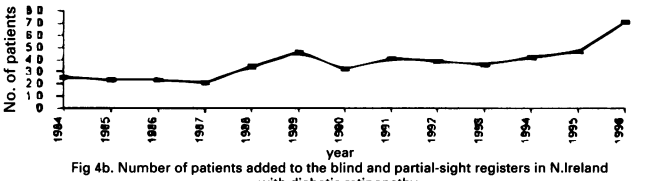

Fig 4b. Number of patients added to the blind and partial-sight registers in N.Ireland with diabetic retinopathy.

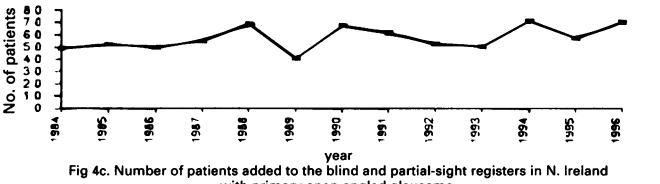

Fig 4c. Number of patients added to the blind and partial-sight registers in N. Ireland with primary open-angled glaucoma.

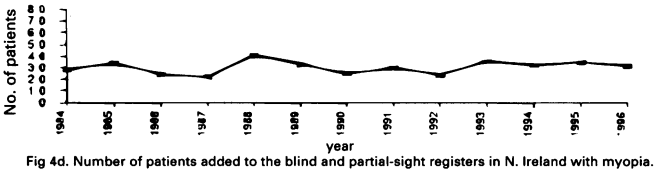

Fig 4d. Number of patients added to the blind and partial-sight registers in N. Ireland with myopia.

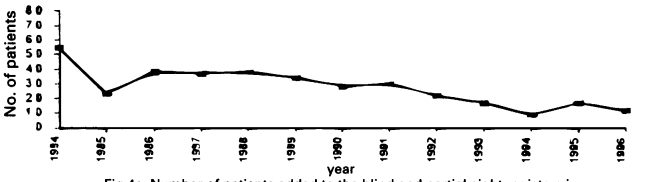

Fig 4e. Number of patients added to the blind and partial-sight registers in N.Ireland with senile cataracts.

DISCUSSION

The main causes of blindness worldwide are cataract, trachoma, onchocerciasis and xerophthalmia. These conditions, which are prevalent in the developing world, can, to a large extent, be prevented or cured. Age-related macular degeneration and diabetic retinopathy are also common causes of visual disability but their global prevalence is uncertain. These are the predominant causes of visual handicap in developed countries.[1] Diabetic retinopathy is generally recognised as a leading cause of blindness among those of working age while age-related macular degeneration is a problem which predominantly affects the elderly. Glaucoma and ocular injuries are also common causes of visual handicap in both the developed and developing worlds.

In Northern Ireland age-related macular degeneration, for which there is no definitive treatment, is by far the commonest cause of registration and has increased steadily over the last 12 years. The number of registrations due to diabetic retinopathy has also increased significantly despite screening programmes and the availability of laser treatment. Registrations resulting from chronic open angle glaucoma and myopia have tended to remain constant during the same period. The advent of local anaesthesia for cataract surgery and the implantation of intraocular lenses have virtually abolished senile cataract as a cause of registrable visual handicap in Northern Ireland.

There is universal agreement among authorities in the field of ophthalmology and related specialties that blind and partial-sight registration statistics substantially underestimate the extent of visual impairment within our community.[4, 5]

Although there was an increase in the numbers of patients registered as blind or partially sighted in all geographical areas within the United Kingdom during the period studied, this increase was least obvious in Northern Ireland.

There is no reason to assume that the population of Northern Ireland differs from that of the rest of the United Kingdom in the incidence of ocular pathology. It must therefore be assumed that the apparently low incidence of visual handicap in Northern Ireland is misleading and grossly underestimates the extent of the problem within our community.

Registration as blind or partially sighted is particularly important in elderly patients who are often on low income and living alone and have other disabilities including deafness and mobility problems. Registration provides access to benefits and other support services.[6, 7, 8]

The social services departments which initiate and monitor the registration process are now reorganising, with many areas setting up teams of social workers and rehabilitation workers to deal specifically with the visually impaired. This should facilitate the identification of many more visually handicapped patients within the community. Perhaps our patients in Northern Ireland, particularly in the rural communities, feel that they do not wish to be involved in the bureaucracy or perceived stigma of registration. Alternatively they may consider that a decrease in vision is a normal and acceptable part of the ageing process and thus fail to seek help. Some patients feel that registration is a negative approach to their disability whereas others may consider it to be a form of 'charity'. It is possible that ophthalmologists do not suggest registration to their patients feeling that it indicates a failure on their part to deliver treatment, or that the benefits of partial-sight registration are barely worthwhile. General practitioners also need to be encouraged to identify their visually-handicapped patients, particularly in the older age groups, and acquaint them of the benefits of registration.

CONCLUSIONS

Accurate estimates of the number of blind and partially-sighted patients within our community are required to allow planning of support services for this group in the future.

Each social services area should develop well-staffed teams of social workers and rehabilitation workers dealing specifically with the visually impaired. In the hospital environment the Low Vision Service, which supplies magnifiers and other visual aids, requires expansion and reorganisation to facilitate the provision of low-vision services at peripheral hospitals, as well as at the major ophthalmic units in Northern Ireland. This would obviously improve access for many elderly patients who find travelling difficult. Better liaison needs to be developed between the Low Vision Services within the hospital environment and the social services teams dealing with the visually impaired within the community. The voluntary sector, which also provides extensive services for the visually impaired should be included in this multidisciplinary approach.

If co-ordination between these services can be improved the visually-impaired patients in Northern Ireland would benefit immensely and a much more comprehensive service could be offered to allow them to improve their quality of life and maintain their independence.

ACKNOWLEDGEMENTS

We are grateful to Mr J H Bryars, Consultant Ophthalmologist at the Royal Victoria Hospital, who made available data on patients added to the blind and partially-sighted registers between 1984 and 1996. Thanks also goes to the Community Social Services and Royal Group of Hospitals Clinical Audit Departments for their help in compiling information on registration statistics, and to Andrew Murdock and Tracey Rowlands of the Guide Dogs for the Blind Association for their help and advice.

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The Unlinked Anonymous HIV Prevalence Monitoring Programme in N. Ireland 1992-1995

C Larkin, R D Maw, P V Coyle, W W Dinsmore, M O McBride, E Mitchell

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SUMMARY

Previous evidence has suggested that Northern Ireland is a low seroprevalence area for HIV infection. The Unlinked Anonymous HIV Prevalence Monitoring Programme initiated in England and Wales in 1990 was extended to Northern Ireland in 1992. Patients attending the Genitourinary Medicine Clinic at the Royal Victoria Hospital have, with informed consent, been tested anonymously for HIV infection since that time. The results of the survey between 1992 and 1995 have shown an overall seroprevalence rate of 3.01% for homosexual/bisexual men, 0.08% for heterosexual men, and 0.05% for heterosexual women. These results confirm the previous impression of low HIV seroprevalence in Northern Ireland and the survey provides an excellent longitudinal study by which changes may be monitored.

INTRODUCTION

The Unlinked Anonymous HIV Prevalence Monitoring Programme was introduced in Northern Ireland in 1992 in the Department of Genitourinary medicine (GUM) in the Royal Victoria Hospital, Belfast, under the auspices of the Public Health Laboratory Service, having been initiated in England and Wales in 1990.[1]

All data available prior to the introduction of the survey suggested a low HIV seroprevalence in Northern Ireland. Between January 1985 and December 1991 there was a total of 91 first ever UK notifications of HIV infections from Northern Ireland. The Northern Ireland Blood Transfusion Service which tests approximately 15,000 new donors annually for HIV infection identified four donors as HIV positive during this time. A study done in the GUM in 1989 testing 500 consecutive new attenders for HIV yielded no positive results.[2] In 1991 the Northern Ireland Regional Virus Laboratory tested 3,003 samples from sources other than GUM of which three were positive – all of whom had a clinical diagnosis of HIV infection at the time of testing. In 1991 11 out of 1,006 attenders at the GUM clinic tested positive for HIV.[3] Our concern with these surveys was that there was the possibility of self-exclusion from testing by those at high risk of HIV infection.

The aims of the Programme nationwide are to ascertain the seroprevalence and to monitor the spread of HIV in sentinel groups of patients attending GUM Clinics, injecting-drug users attending specialist treatment and support agencies, and pregnant women proceeding to birth or having terminations.

Providing estimates of the prevalence of HIV infected people in these groups assists in

Department of Genitourinary Medicine, Royal Victoria Hospital, Belfast BT12 6BA.

C Larkin, MB, MRCP (UK), Senior House Officer.

R D Maw, MB, FRCP (Lond), Consultant Physician.

W W Dinsmore, MD, FRCP (Lond), FRCPI, FRCPEd, Consultant Physician.

M O McBride, MB, MRCP (UK), Consultant Physician.

Regional Virus Laboratory, Royal Victoria Hospital, Belfast BT12 6BA.

P V Coyle, MD, MRCPath, Consultant Virologist.

Department of Health & Social Services, Dundonald House, Belfast BT4 3SF.

E Mitchell, MB, BCh, MRCP, MFPHM, Senior Medical Officer.

Correspondence to Dr Maw.

TABLE

Anonymous HIV Test Results of patients attending the Genitourinary Medicine Clinic, Royal Victoria Hospital Belfast 1992-95.

Sex	*Sexual Orientation*	*Year*	*Objections*	*HIV Positive*	*Total Tested*	*Prevalence (%)*
M	Homo/ Bisexual	1992	0	3	147	2.04
		1993	1	3	116	2.59
		1994	1	6	142	4.23
		1995	1	4	126	3.17
		TOTAL	3	16	531	3.01
M	Heterosexual	1992	4	2	2047	0.10
		1993	4	0	1930	0.00
		1994	2	4	1911	0.21
		1995	6	0	1781	0.00
		TOTAL	16	6	7669	0.08
F	Heterosexual	1992	4	1	1567	0.06
		1993	5	2	1561	0.13
		1994	13	0	1536	0.00
		1995	10	0	1556	0.00
		TOTAL	32	3	6220	0.05

predicting the future numbers of people with HIV disease, enabling appropriate service planning. The Programme comprises six longitudinal surveys of six categories of persons - homosexual men, bisexual men, heterosexual men and heterosexual women attenders at GUM clinics, injecting drug users and pregnant women. In Northern Ireland only GUM clinic attenders in the first four categories have been studied.

METHODS

All patients attending the GUM Department from 1st January 1992 were given written information on the Unlinked Anonymous HIV Seroprevalence Monitoring Programme. Verbal consent for participation was obtained by the examining doctor.

Individuals eligible for inclusion were those who were having serum taken for a syphilis serology test and not surveyed previously in that quarter of the year.They were also eligible for retesting in subsequent quarters. Demographic data on age group, gender and country of birth and epidemiological data on sexual orientation, past use of injecting drugs, known diagnosis of HIV infection and presence of acute or non-acute sexually transmitted diseases (STD) was recorded in the information sheet attached to the patient's chart. Data were also collected from persons not consenting to testing of their blood for HIV antibodies to ascertain any demographic or epidemiological trends by which self-excluders might bias survey results.

The data sheet was removed from the patient's chart and sent to the Public Health Laboratory Service to be matched with the HIV test results. The information could not be linked to patient identity thus ensuring anonymity.

RESULTS

There was a total of 531 samples tested from the homosexual/bisexual male group between 1992 and 1995. Sixteen were positive for HIV, giving an overall prevalence rate of 3.09% (Table). Only two HIV infected men were aware of their diagnosis at the time of testing. Of the 16, five presented with an acute STD at the time of testing. Those homosexual/bisexual men testing positive for HIV were in the 25-45 age bracket except one who was in the 20-24 age group.

A total of 7,669 samples was tested from the heterosexual male group. Six were positive for HIV (2 in 1992, 0 in 1993 and 4 in 1994) giving a prevalence rate of 0.08%. (Table). Only two HIV infected men were aware of their diagnosis at the time of testing. Of these six, four presented with an acute STD.

There was a total of 6,220 samples from heterosexual women taken between 1992-95. Three tested positive for HIV, giving an infection rate of 0.05% (Table). Of these three, none was aware of her HIV status. None presented with an acute STD.

CONCLUSIONS

Seroprevalence reporting of the data collected from GUM Departments in England and Wales has been on a geographical basis. These have been attenders at Central London Clinics, Greater London and the South East, and other regions inclusive of England, Wales, and Northern Ireland. The Northern Ireland figures have to date not been identified separately in published reports. It is interesting to compare the seroprevalence in Northern Ireland with these other areas. The prevalence in London clinics involved in the survey between 1992 and 1995 was 15.1% in homosexual and bisexual males (with a range in clinic prevalences from 23.1% to 5.9%), 1.0% for heterosexual males, and 0.6% in heterosexual females. In the areas outside London and S.E. England, a prevalence of 4.0% was detected in homosexual and bisexual males, 0.1% in heterosexual males, and 0.1% in heterosexual females. In all areas the group with the highest prevalence is the homosexual/bisexual male group.[4] Northern Ireland is seen to have a very much lower prevalence of HIV than the London and S.E. England regions but the overall figures for the areas outside London and S.E. England are not substantially different.

Attenders at a GUM Clinic are likely to be among those at greatest risk of HIV infection in our community. If there were a significant or increasing prevalence of undetected HIV infection in our population this would be one of the first places where this would be detected.

Previous information on seroprevalence could have been biased by persons not wishing to be identified as HIV positive excluding themselves from testing. By ensuring anonymity in the Unlinked Anonymous Screening Programme few persons have self-excluded themselves from testing. This has enabled us to be confident that GUM clinic attenders provide a good sentinel population for HIV seroprevalence in Northern Ireland.

The information obtained confirms our impression that Northern Ireland is a low seroprevalence area, although not so different from areas outside London and the South East of England. This may be due to several factors including cultural hostility to expression of homosexuality, resulting in homosexual men going to more cosmopolitan cities such as London or Dublin, the presence of a small injecting drug community and a small commercial sex industry. Church influence and the relatively intact family structure along with geographic isolation and civil disorder may also be strong contributory factors.[5] As elsewhere in the UK, homosexual/bisexual men are found to be the population with the highest seroprevalence. It is a matter of concern that few of those testing positive for HIV were aware of their HIV status. It is also alarming that a high proportion of those infected with HIV continue to present with acute STDs thus indicating the absence of "safe sex" practices and illustrating the potential for HIV transmission to people unaware of their HIV status. Large numbers of homosexual/ bisexual men, heterosexual men and heterosexual women continue to acquire new episodes of STDs,[6] and risk of acquiring another STD is a powerful predictor for HIV infection.[7] This indicates the need for continued targeting of all groups but perhaps especially homosexual/bisexual men for preventative intervention.

ACKNOWLEDGEMENT

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A survey of exercise based cardiac rehabilitation services in Northern Ireland

J M Bradley, E S Wallace, P M McCoy, G W N Dalzell

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SUMMARY

A survey was undertaken to establish the extent of provision of phase III exercise-based cardiac rehabilitation in Northern Ireland. Detailed information was obtained on patient referral mechanisms, patient assessment, the exercise component of cardiac rehabilitation and the use of outcome measures. The results suggest that cardiac rehabilitation in Northern Ireland has developed on an *ad hoc* basis, and although most centres accept myocardial infarcation and coronary artery bypass graft patients for cardiac rehabilitation, higher risk patients are generally excluded from these programmes. Currently, little in the way of standard outcome measures are being used to evaluate the effectiveness of existing cardiac rehabilitation services. This paper makes several recommendations to facilitate the development of a more standardised service within Northern Ireland.

INTRODUCTION

Rationale for cardiac rehabilitation

The mortality in terms of premature death from coronary artery disease (CAD) in Northern Ireland accounted for 255 deaths in the 15-74 age group per 100,000 population in 1993.[1] These figures suggest that death from CAD in Northern Ireland is still among the highest in the world, even though the rate has been declining in recent years. The increasing number of patients surviving cardiac events may be attributable to primary prevention strategies, recent improvements in the management of acute myocardial infarction (MI) patients, and the increased number of successful revascularisation procedures (coronary artery bypass grafts and angioplasties) performed each year.[2] However, such successful outcomes are responsible for the continuing financial burden to the Health and Personal Social Services, and although direct costings are not available for Northern Ireland it has been suggested that direct treatment of CAD costs £30 million in Ireland annually, with £100 million lost as an indirect result of the disease each year.[3] Even the most successful medical treatment or revascularisation procedure does not counteract the cumulative effect of inactivity, the traumatic effect of the operation, nor does it ensure the adoption of a healthier and more active lifestyle.[4,5] Signs and symptoms may return in many patients, and it is suggested that up to 20% of venous coronary bypass grafts may be occluded within the first year, rising to 50% after 10 years.[6] The rate of restenosis in those treated by Percutaneous Transluminal Coronary Angioplasty (PTA) is similarly high, since as many as 30% of vessels may restenose within the first 6 months.[7]

A cardiac rehabilitation programme aimed at maximising patients' quality of life and reducing signs and symptoms associated with CAD is,

Department of Sport and Exercise Sciences, University of Ulster at Jordanstown, Newtownabbey, Co. Antrim, BT37 0AS.

J M Bradley, MCSP, Research Physiotherapist.

E S Wallace, BEd, MA, DPhil, Course Director, Sport and Exercise Sciences.

Department of Physiotherapy, University of Ulster at Jordanstown, Newtownabbey, Co. Antrim, BT37 0AS.

P M McCoy, OBE, FCSP, Med, BA, Senior Lecturer in Physiotherapy.

Department of Cardiology, Royal Group of Hospitals, Grosvenor Road, Belfast BT12 6BA.

G W N Dalzell, MD, FRCP, Consultant Cardiologist.

Correspondence to J M Bradley.

therefore, an essential component of the secondary prevention of coronary disease. There is also increasing evidence that cardiac rehabilitation may maximise the potential health gains in a wider population of patients, such as those with heart failure, valve surgery, angina, hypertension and after the correction of congenital heart lesions; however many of these patients are currently excluded from cardiac rehabilitation programmes. It has been suggested that for a population of 200,000 up to 600 patients may be suitable for cardiac rehabilitation.[8] In a population equivalent to Northern Ireland this equates to as many as 4740 patients who may require cardiac rehabilitation each year. However, even this may be a conservative estimate of the numbers that could potentially benefit if this service were available.

CARDIAC REHABILITATION

The misconception in the early part of this century that prolonged bed rest was needed to facilitate healing after a cardiac event was eradicated in the 1960s and 1970s, when the rationale behind early mobilisation and rehabilitation was accepted as a safe and scientifically based practice. It follows that cardiac rehabilitation is still a relatively new contribution to the holistic management of patients with CAD. Cardiac rehabilitation has recently been defined as the sum of activities required to favourably influence the underlying cause of the disease, as well as to ensure the best possible physical, mental, and social conditions so that patients, may, by their own efforts preserve, or resume when lost, as normal a place as possible in the life of the community.[9]

Cardiac rehabilitation has been traditionally described in terms of four discrete phases or stages, although there is still some discrepancy in the literature as to the duration of these phases and how they are utilised in the rehabilitation process. Phase I covers the period of hospital stay, phase II is the period following hospital discharge and can last from two up to twelve weeks, phase III is the period when most gym sessions begin, and phase IV is the period when patients receive less supervision, and may begin six months after the cardiac event.

BENEFITS OF CARDIAC REHABILITATION

Exercise based cardiac rehabilitation may reduce mortality and morbidity by as much as 25%.[10] However, the efficacy of rehabilitation extends far beyond such end points and significant improvements in quality of life in terms of physical well-being, psychological well being, decreased hospitalisation, and ability to return to work are well documented. More specifically, the benefits of the exercise component of cardiac rehabilitation occur via the following mechanisms: increasing ischaemic threshold, improving left ventricular function, increased coronary circulation, improving lipid profiles, decreasing serum catecholamines, lowering blood pressure, decreasing platelet aggregation and stimulating fibrinolysis, improving psychological status, and reducing skeletal muscle wasting".[11] As not all exercise will result in the above purported improvements, it is thought that the key to optimising these outcomes lies within the exercise dose. It is somewhat surprising then that the concept of exercise dose has gained only lukewarm interest in the field of cardiac research, and as no standard protocol for exercise prescription exists in Northern Ireland it is likely that these services will vary considerably at local, district and regional level. The aims of our survey were therefore to establish the extent of the provision of phase III, exercise-based cardiac rehabilitation in Northern Ireland, and to identify the components of these schemes. Specific objectives were employed to identify the characteristics of patients referred to cardiac rehabilitation schemes; to identify the indices used to ascertain the health status of individuals on entry to, and discharge from cardiac rehabilitation schemes; to identify the exercise dose currently used in cardiac rehabilitation schemes; to identify the outcome measures currently used to assess health gain following cardiac rehabilitation; and to ascertain the facilities available for the provision of phase IV of cardiac rehabilitation.

METHODS

Survey research techniques were used in the present study. To identify centres offering cardiac rehabilitation, each of the four health boards in Northern Ireland was initially contacted. As none of the health boards could provide the information sought, the Northern Ireland Chest Heart and Stroke Association was contacted, and subsequently a comprehensive list of hospital and health centre-based cardiac rehabilitation, and independent self-help cardiac groups, was obtained. At this point each of the services was contacted to determine whether or not their service constituted Phase III of cardiac rehabilitation. A

total of eight hospital-based, and one health centre-based, cardiac rehabilitation programmes were identified as offering a phase III service. A postal questionnaire was then sent to the co-ordinators of each programme, which sought information pertaining to the extent of the current provision and the components of each programme. Specifically, this data included entry criteria, details of assessment of health status, details of exercise dosage and the outcome measures currently used.

RESULTS

Eight of the nine identified centres returned a completed questionnaire. All eight centres offered rehabilitation to MI patients, seven centres included coronary artery bypass graft (CABG) patients, but only one programme accepted valvular disease, heart failure, angina, PTCA and stent patients. Most programmes have adopted exclusion criteria to ensure that high risk patients are not included in their moderate intensity exercise based rehabilitation programmes. Those exclusion criteria common to all centres included uncontrolled arrythmias, acute illness, active pericarditis, with a majority of centres (n=6) also listing severe aortic stenosis, tachycardia (>120 bpm), uncontrolled hypertension, valvular disease and ischaemic signs occurring early on exercise test as exclusion criteria.

While cardiologists were largely responsible for the referral of patients to cardiac rehabilitation programmes, a diversity of professions including general practitioners, physiotherapists, nurses, and surgeons were also identified as being involved in the referral process.

The use of exercise testing as a measure of functional capacity and assessment of health status was by no means the norm in our study. In only one out of the seven programmes involving CABG patients was preadmission graded exercise testing (GXT) a requirement, with a further four centres reporting that GXT's were "sometimes" performed and the remaining two stating that they were never carried out. Routine preadmission GXT is standard practice for MI patients in only three of the programmes, performed sometimes in four of the programmes, and never performed in the one remaining programme. Furthermore, in four centres where GXT's are conducted, the respondents stated that they did not in fact receive the results of the tests.

Those programmes which did obtain the results of the GXT's incorporate these values along with scores from the Borg scale of perceived exertion[12] to determine and subsequently monitor appropriate exercise intensities. Most centres prescibed exercise intensity levels of 60-70% of determined maximal heart rate and/or Borg ratings of between 11-15.[12] It is assumed that those centres with no objective measure of functional capacity depend on an age-related equation to determine exercise intensity level, which is further used along with a Borg scale to monitor subsequent gains in functional capacity.

All the programmes recognised the importance of exercise progression. When the patient failed to reach a Borg rating of 11 and/or when they were not achieving their target heart rate during their routine exercise, the level was increased. However, the manner in which the exercise demands were increased varied between programmes. Some programmes considered it to be initially safer to progress the exercise by increasing the frequency or the duration of the exercise, rather than its intensity. Others also concomitantly increased the intensity. All patients irrespective of geographical location or clinical presentation were offered cardiac rehabilitation once a week, but were also advised to take part in an additional home exercise programme several times per week. The duration of the third phase of cardiac rehabilitation varied from three up to thirteen weeks in the eight centres. The most common duration was six weeks (n=4), followed by eight weeks (n=2), with one programme of three weeks and the remaining centre offering a thirteen-week programme. These findings reflect a general trend in Northern Ireland towards the provision of a short course of physical training, with "advice to continue exercising after discharge".

While most programmes did not rely solely on referral forms for baseline measures, not all programmes obtained a baseline measure of functional capacity, and only one programme obtained a baseline measure of cholesterol. Furthermore, only two of the programmes measured whether there was a programme-mediated improvement in functional capacity, as measured by GXT (one treadmill and one cycle ergometer), three did not attempt to measure outcomes, and one centre relied on perceived satisfaction on the part of the patients. However, none of the centres reported the use of quality of

life (QOL) as a specific outcome measure. None of the current programmes evaluated the effect of exercise on other baseline measures. Although attendance rates, resting and maximum heart rate were recorded daily, not all programmes documented adverse patient reactions that occurred during the exercise sessions.

DISCUSSION

The development of cardiac rehabilitation services in Northern Ireland has been on an *ad hoc* basis and is mainly confined to large specialist hospitals. Northern Ireland lags well behind the rest of the United Kingdom in the provision of such programmes, and their availability depends more on geographical location than on the physical or psychological needs of the patient.

The lack of facilities in some areas of Northern Ireland is sometimes attributed to limited resources. However, the cost of setting up a cardiac rehabilitation service in any centre throughout Northern Ireland could be negligible if the hospitals and large health centres already had gym facilities and suitable equipment available. The running costs vary but may be as little as £5 per person per session.[8] It may be that the lack of facilities available to cardiac patients is due to the autonomous nature of, and lack of support from, cardiologists. Certainly a divergence of opinion among cardiologists about the physical and psychological effects, as well as the cost effectiveness of cardiac rehabilitation has been documented.[8] If medical opinion continues to question the cost effectiveness of cardiac rehabilitation and fails to recognise its benefits, it is not surprising that this service is not more widespread. Perhaps in the future the Health and Personal Social Services, as Commissioners of services, will specify that cardiac rehabilitation services should be made available by providers, as suggested in the recently published draft Regional Strategy.[13] Unlike much of the United Kingdom and many other European Countries, exercise-based phase III cardiac rehabilitation in Northern Ireland has remained mostly hospital based. The majority of the programmes cater for small numbers of patients and target mainly "low risk patients", usually stable MI and/or CABG patients. There are many suggested reasons for this. Some programmes, although recognising the benefits cardiac rehabilitation offers severely disabled patients, are limited by lack of resources or patient-monitoring equipment. In other areas where cardiologists are responsible for the policy, patient referrals to cardiac rehabilitation programmes may be limited by personal opinion and a reluctance to refer a more diverse range of patients for rehabilitation. This reluctance may however be justified, as there remains a dearth of scientifically controlled, randomised studies conclusively demonstrating cardiac rehabilitation as significantly improving the physical and psychological status of higher risk patients.

As there is a diversity of professions responsible for patient referral throughout Northern Ireland, this may lead to very different information being included in the referral forms, inappropriate referrals or inadequate referrals, and ultimately a non uniform cardiac rehabilitation service. These findings therefore highlight the need for an agreed, standardised, and user-friendly protocol of referral.

Graded exercise testing (GXT) has been deemed mandatory prior to entry to a well organised exercise programme.[14] Nevertheless, the use of exercise testing as a measure of functional capacity was by no means routine in our study, and reflected findings of the surveys conducted in Ireland,[8] and in England and Wales.[15]

The use of an age-related equation to determine exercise intensity is subject to considerable error, and is invalidated in any patient on beta blockers as they exhibit exercise induced bradycardia. It is well documented that they should not be used for patients with cardiac disease.[16] The Borg scale represents a reliable and valid measure of perceived exertion,[17] but as with other measures used to prescribe and monitor exercise intensity, such as breathlessness, pain, or angina, it may not be sensitive enough to demonstrate a training effect. Some programmes have adopted the American College Sports Medicine (ACSM) guidelines[18] which suggest intensities between 60-70% heart rate max are adequate to attain health related benefits such as decreased angina,[19] decreased hospitalisation,[20] and increased vital capacity,[20] while others have argued that in previously sedentary persons even lower will result in health related benefits.[21]

Without a formal exercise test, or the use of some other valid and reliable functional capacity measure, it is difficult to prescribe an exercise programme suited to the individual needs of the patient. It has been suggested that GXT and risk factor assessment are necessary to classify patients

into low, intermediate, or high risk categories and to individualise exercise programmes accordingly.[22] This highlights the importance of GXT in patient categorisation which will be a major determinant in the design of the patient's programme with regard to the type, frequency, intensity, and duration of training.

At present cardiac rehabilitation is currently based on the provision of moderate intensity exercise programmes. This survey has therefore identified the need for development of additional programmes, designed to take into account the needs and limitations of special cardiac patient populations. More scientific data regarding the optimum exercise intensity for the different groups of patients is needed if a comprehensive service is to be offered to this ever-increasing section of the population. Findings from this survey highlight the need to find an alternative, user-friendly measure of functional capacity that is sensitive, but which still correlates strongly with the GXT.

It has been recommended that programmes should be of at least 12 weeks' duration, based on the suggestion that training effects increase in an S shaped curve plateauing at thirteen/fourteen weeks.[23] In view of the more conservative approach to exercise in the cardiac patient, and the fact that individuals do not adapt to lifestyle changes in the same way, or at the same pace, a much longer time span may be needed to obtain optimal health related benefits. Despite the acclaimed additional benefits of longer programmes, it would seem that the duration of cardiac rehabilitation programmes is determined by financial limitations rather than sound scientific research. If the current programmes are of insufficient duration to bring about noticeable improvements in the patient's functional status, it is unlikely that the patient will be led to continue with the prescribed regime of exercise or adopt a healthier lifestyle. Conversely, it is not the aim to offer cardiac rehabilitation for an indefinite period, but rather through rehabilitation and education to enable the patient to achieve optimal functional status in an independent manner. Thus there is an urgent requirement to determine the optimum programme length and to subsequently implement such findings into good practice. One of the main criticisms of hospital based cardiac rehabilitation programmes in Northern Ireland is their limited duration which brings any controlled benefit to an abrupt end. Self help/support groups could constitute phase IV of cardiac rehabilitation and act as an invaluable step-down mechanism from hospital based cardiac rehabilitation, by providing the reinforcement considered necessary for long term compliance to a healthier and more active lifestyle. Nevertheless, this service is largely under-developed (only one of the self help groups participated in any regular supervised exercise) and frequently patients are not made aware of the continuing help available to them.

All of the programmes recognised the benefits of group rehabilitation, although the length of time spent on the warm-up and the aerobic/circuit section varied between groups and not all groups have included a cool down, stretch and relaxation section. Additionally many of those that have incorporated these into their exercise programme do not spend sufficient time on them. Most complications occur during exercise classes because of an inadequate warm-up or cool down period. A period of at least 10 minutes should be spent on the warm up and cool down to minimise the risk of adverse reactions. It is also well documented that psychological disturbance can inhibit the physical outcome of these programmes, and therefore stress management strategies such as relaxation training should be an integral part of all these programmes.

These findings call for a recognised set of guidelines with respect to the components of the exercise programme and highlight the need for a specialised workforce in the area of cardiac rehabilitation. Although a retrospective audit using crude measures such as attendance or resting heart rates may be undertaken in most of the programmes examined, these measures are unlikely to demonstrate any benefits that cardiac rehabilitation has to offer. The reluctance to use more sensitive and reliable outcome measures is often attributed to limited resources, and the belief that the reliable and valid measures developed by academics are for research purposes, rather than incorporation into the day to day functioning of a cardiac rehabilitation programme. The lack of resources and support from physicians and purchasers for these programmes could be attributed to the finding that little in the way of standard outcome measurements is being used to demonstrate the effectiveness of the existing services. In this era of evidence-based medicine, audit needs to be undertaken alongside an ongoing cardiac rehabilitation service to assess the effectiveness of that service. The total lack of

recognised quality of life measures was rather surprising, given the fact that the ultimate aim of cardiac rehabilitation is to improve the patient's overall lifestyle.

In conclusion, cardiac rehabilitation in Northern Ireland appears to have developed on an *ad hoc* basis and has generally targeted low risk patients, excluding many of the patients who may benefit most from such programmes. Fundamental differences in the length of the programmes and a reluctance to use objective outcome measures have made it difficult to provide evidence of the benefits of this type of service. Based on the findings of this study, the following recommendations have been made to facilitate the development of a more coherent service within Northern Ireland:

(i) The development of a reliable and valid user-friendly measure of functional capacity that correlates well with GXT. This test could be applied in the clinical setting to prescribe an exercise programme suited to the individual needs of the patient, and subsequently to measure the outcomes of cardiac rehabilitation. There is also the need to investigate whether changes in functional capacity translate to changes in quality of life.

(ii) The use of existing, or development of new, appropriate and valid quality of life measures with which to determine outcomes of cardiac rehabilitation programmes.

(iii) The development of agreed guidelines on the components of cardiac rehabilitation programmes, protocols for referral, discharge arrangements, and the development of a service structure that will enable the implementation by members of the multidisciplinary team of a more cost effective cardiac rehabilitation service.

(iv) The need to develop and support the step down mechanism that currently exists, that is, community support groups, including a need for increased liaison between hospital programmes and community based programmes.

(v) Increased funding for research and staff training and equipment.

(vi) The setting up of a multidisciplinary Cardiac Interest Group in Northern Ireland that meets regularly to discuss recent developments and agree on a standard form of audit (based on scientific research) to evaluate the true value and cost effectiveness of cardiac rehabilitation.

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Transabdominal Cervicoisthmic Cerclage: Initial Experience

H K Sidhu, B McElhinney, J C Dornan

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SUMMARY

Pregnancy outcome before and after insertion of transabdominal cervical cerclage is evaluated. The series also reports on the first cases of second pregnancies with the original suture left *in situ*. It is our view that transabdominal cervical cerclage should only be performed in units that have specialists in Perinatal Medicine.

INTRODUCTION

Cervical incompetence/insufficiency is widely acknowledged as predisposing women to mid-trimester abortion and premature delivery. Cervical cerclage by vaginal approach increases the fetal salvage rate.[1] There is a small subset of women with cervical incompetence for which the transvaginal approach is not effective. This group of women was first described in 1965 by Benson and Durfee[2] and expanded by Novy.[3] These investigators stated that women with specific clinical findings may benefit from the transabdominal approach (Table 1). In this paper, all cases of transabdominal cervicoisthmic cerclage (TCC) performed in the Royal Maternity Hospital, Belfast are discussed. The technique described is a modification of the original procedure in that no dissection of the uterine vessels is performed. This helps to decrease the risk of vascular trauma.[4] Further, we report on the first group of women who have had two successful pregnancies with the original abdominal suture having been left *in situ*.

TABLE I

Specific clinical conditions in women that may be helped by abdominal cervical cerclage in pregnancy

1. Congenitally short or extensively amputated cervix.
2. Marked scarring of the cervix, as after unsuccessful transvaginal cerclage.
3. Deeply notched multiple cervical defects.
4. Penetrating forniceal lacerations.
5. Subacute cervicitis.
6. Wide or extensive cervical conization.
7. Cervicovaginal fistulas after abortion.

METHOD

Between 1982 and 1996, 12 women were selected for TCC. All patients had the suture inserted during pregnancy by one surgeon (J C Dornan).

The clinical material consisted of twelve patients with a past history of 53 pregnancies and delivery of only eleven surviving children, two of whom had cerebral palsy. All women had either previous mid-trimester miscarriages and/or premature deliveries. Table II illustrates the pregnancy history at the time of insertion of the TCC. The main indication for performing TCC was the presence of a short or damaged cervix and/or failed vaginal cerclage procedures.

Belfast City Hospital. Lisburn Road, Belfast BT9 7AB.

Harmini Sidhu, MD, MRCOG, Senior Registrar.

Royal Maternity Hospital, Grosvenor Road, Belfast BT12 6BJ.

Bernadette McElhinney, MB, BCh, BAO, Specialist Registrar.

James C Dornan, MD, FRCOG, Consultant.

Correspondence to Dr Sidhu.

TABLE II

Pregnancy history at time of insertion of transabdominal suture

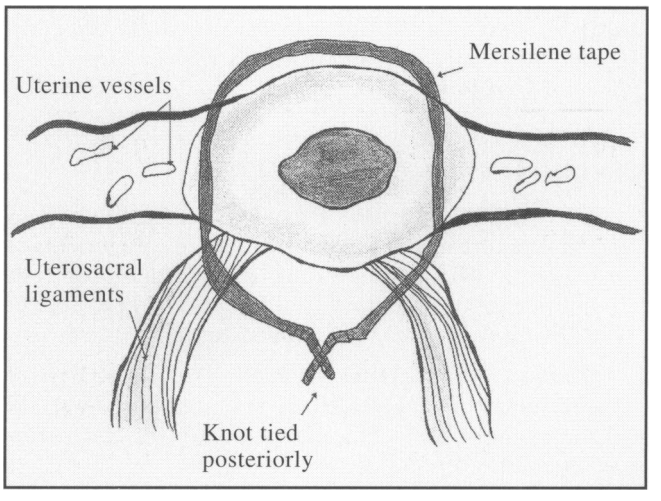
Case	*Parity at insertion of TCC*	*Term deliveries*	*Pre-term deliveries*	*Abortions*	*Number of living children*	*Previous operations, relevant medical history*	*Cervical status*
1	0+5	0	1	4 (1 set of twins)	**None**	None	Short
2	2+1	0	2	1	**None**	Cone biopsy of cervix	Scarred
3	1+1	0	1	1	**None**	None	Short
4	0+2	0	0	2 (twins)	**None**	Subfertility	Short & scarred
5	1+4	0	1	3	**One**	Failed vaginal cerclage x 1	Short
6	2+2	0	2 (twins)	2	**None**	Failed vaginal cerclage x 1	Short
7	4+4	4	0	3	**Four**	Cone biopsy of cervix, failed vaginal cerclage x 1	Short & scarred
8	0+5	0	0	5	**None**	Hysteroscopic removal of vaginal septum, failed vaginal cerclage x 1	Soft in non-gravid state, easily dilated
9	2+5	2	0	5	**Two**	Failed vaginal cerclage x 2	Short & scarred
10	2+2	1	1	2	**Two**	Failed vaginal cerclage x 1	Short & scarred
11	2+4	0	2	4 (1 set of twins)	**One**	None	Soft, short cervix
12	2+1	0	2	1	**One**	None	Short

SURGICAL PROCEDURE

In all cases, the abdomen was opened through a transverse suprapubic incision. The bladder peritoneal fold was dissected off the anterior cervical aspect and the bladder was pushed caudally until the supravaginal cervix could be seen and palpated in the midline with good exposure laterally. On the side of the uterus, the cervical branch of the uterine artery was identified in the broad ligament. The uterine vessels were gently displaced laterally when inserting the suture. This facilitated the opening of a connective tissue window and allowed Mersilene tape to be inserted between the artery and the upper end of the cervix on both sides. The suture material was 5 mm wide with round bodied needles on both ends (RS22 Ethicon Ltd, Edinburgh). In all cases the suture knot was tied posteriorly, leaving the ends 3 cm long (Figure 1). The peritoneal fold was closed and the abdomen closed in layers. Postoperatively, appropriate analgesia was given. No patient received prophylactic tocolytic agents or antibiotics.

Figure 1

Diagram of Mersilene tape around the uterine isthmus, medial to uterine vessels.



RESULTS

There were no complications following the procedure. Blood loss in each case was miniml. Table III illustrates the outcome of the pregnancies. In Case 9, delivery of a male infant was performed at 29 weeks, for obstetric reasons, following intrauterine demise of his twin. Three patients have since conceived again with the original TCC *in situ* and have had a successful outcome. Six patients still have the suture *in situ* as they hope to conceive again. None of these nine patients have reported any problems with the suture *in situ*. In this cohort of patients, the fetal salvage rate was 21% before insertion of TCC, and 94% after insertion of TCC.

DISCUSSION

Transabdominal cervicoisthmic cerclage is an uncommon procedure but is finding an increasing

TABLE III

Details of insertion of transabdominal cerclage and pregnancy outcome

Case	*Week of TCC insertion*	*Mode of Delivery*	*Neonate(s) – weight in grams*	*Subsequent Pregnancies*
1	12	C/S at 38 weeks	3410 g, A&W	C/S at 37 weeks, A&W Suture removed
2	14	C/S at 37 weels	2900 g, A&W	C/S at 37 weeks, A&W Suture removed
3	12	C/S at 37 weeks	2815 g, A&W	Suture removed
4 Triplets	9	C/S at 35 weeks	1712 g, A&W 2046 g, A&W 1826 g, A&W	Suture still *in situ*
5	11	C/S at 37 weeks	3390 g, A&W	Suture still *in situ*
6 Twins	12	C/S 36 weeks	2500 g and 2400 g, both A&W	Suture still *in situ*
7	12	C/S at 37 weeks	3120 g, A&W	Suture removed
8	13	Classical C/S at 37 weeks	2770 g, A&W	Suture still *in situ*
9 Twins	12	C/S at 29 weeks	825 g – Stillbirth, 820 g, A&W	C/S at 37 weeks, A&W Suture removed
10	12	C/S at 37 weeks	3150 g, A&W	Suture left *in situ*
11	12	C/S at 37 weeks	3200 g, A&W	Suture left *in situ*
12	12	C/S at 37 weeks	2820 g, A&W	Suture removed

C/S = Caesarean section A&W = Alive and Well

place in the management of repeated pregnancy loss due to cervical incompetence. All sutures in this series were inserted during pregnancy. There is still insufficient experience with pre-pregnancy cerclage to assess its efficacy. Mahran advocates insertion during pregnancy at a gestational age of between 10 and 14 weeks.[4] He felt that a laparotomy in the non-pregnant state might interfere with subsequent conception. Further, during pregnancy the tissues are softer and more pliable, facilitating the opening of the connective tissue window in the broad ligament lateral to the cervix and medial to the uterine vessels. Other reports suggest that the tension applied to the Mersilene band is more accurately judged during pregnancy.[5] This procedure was a modification[4] of the technique described by Benson and Durfee.[2] They had advised dissection of the uterine vessels through the connective tissue window which is usually present at the level of the internal os. However, most of the bleeding complications reported by them was the result of this dissection. In this series, no injury to vessels in the parametrium occurred during placing of the suture using the lateral displacement technique.

The outcome in this series is better than previously reported.[5,6] Criteria for patient selection must be strict. Transabdominal cervicoisthmic cerclage should be considered:

1. in patients who have had normal term deliveries but then experienced repeated fetal loss after a distinct traumatic event (e.g. extensive cervical conization causing a short or a absent cervix).

2. when the cervical operator feels that he/she has compromised the competence of the cervix.

3. in patients with proven cervical incompetence who have failed to respond to vaginal cerclage procedures.

Further, although TCC is recognised as a therapeutic option in carefully selected patients who have cervical incompetence, [5,6] experience in the United Kingdom is limited given the small number of suitable patients and the potential increased morbidity of the procedure.[5] It is recommended that patients be offered TCC in units that have subspecialists in Perinatal Medicine and where expertise has been acquired with sufficient numbers of cases.

In previous reports,[6] the suture was removed after delivery. In this series, patients were given a choice: nine patients had the suture left *in situ*, three of whom conceived again and had a successful outcome to their pregnancies. This is the first series to report second pregnancies with the original suture having been left *in situ*.

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Fine needle aspiration cytology of gastric carcinoma

D C Allen, S T Irwin

SUMMARY

Four patients between 58 and 81 years of age undergoing investigation and endoscopic biopsy for gastric carcinoma also were subjected to direct-vision fine needle aspiration cytology of their mucosal lesions which yielded malignant cells. The relevance of this technique is discussed regarding both intrinsic and extrinsic lesions of the gastrointestinal tract.

INTRODUCTION

Percutaneous fine needle aspiration cytology is being used with increasing frequency and accuracy in the investigation of inflammatory and neoplastic lesions in a wide range of tissues including breast, thyroid, salivary gland, lymph nodes, lung, liver and kidney. Both percutaneous and trans-duodenal aspirates are used in pancreatic disease. This paper illustrates the use of aspiration cytology in gastric mucosal lesions where diagnostic yield in endoscopic biopsy and brushing specimens may be as low as 50%, particularly when the lesion is undermining normal mucosa.[1]

PATIENTS AND METHODS

Four patients, aged between 58 and 81 years, underwent oesophago-gastro-duodenoscopy with multiple endoscopic biopsies. The biopsy fragments were placed in 10% formalin and sent for routine processing through to paraffin sections with haematoxylin and eosin and cresyl-violet staining. The gastric mucosal aspirates were obtained using a fine bore flexible needle (Disposable Varices Injection Needle, DV1-25, Wilson-Cook Medical Inc., Winston-Salem USA) passed via the biopsy channel of a standard gastroscope. Multiple punctures of each suspicious lesion were taken. The aspirate was flushed through into a container of normal saline and immediately transported to the Cytopathology Laboratory. Four cytospins were prepared from each sample and stained with haematoxylin and eosin, Papanicolaou and Giemsa preparations.

CASE 1

A 75 year old male presented with dysphagia and weight loss. Gastroscopy showed severe gastritis with clinical suspicion of possible linitis plastica. No ulceration or raised mucosal lesion was seen. Eight endoscopic biopsy fragments were submitted. Six of these showed chronic gastritis and focal small intestinal metaplasia. In two there was diffuse gastric carcinoma of signet-ring cell type. Of the four cytospin preparations one contained malignant signet-ring cells (figure 1).

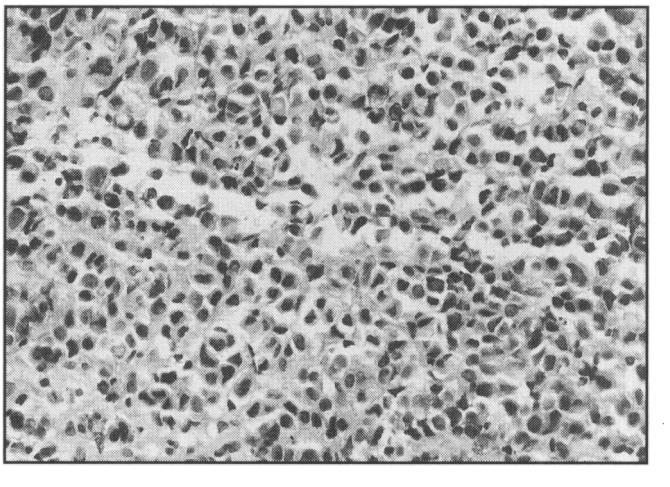

Fig 1. (a) Case 1 – biopsy histology showing diffuse type gastric adenocarcinoma.

Histopathology Laboratory and Surgical Unit, Belfast City Hospital, Belfast BT9 7AD, Northern Ireland.

D C Allen, MD, FRCPath, Consultant Pathologist,

S T Irwin, MD, FRCS, Consultant Surgeon.

Correspondence to Dr Allen.

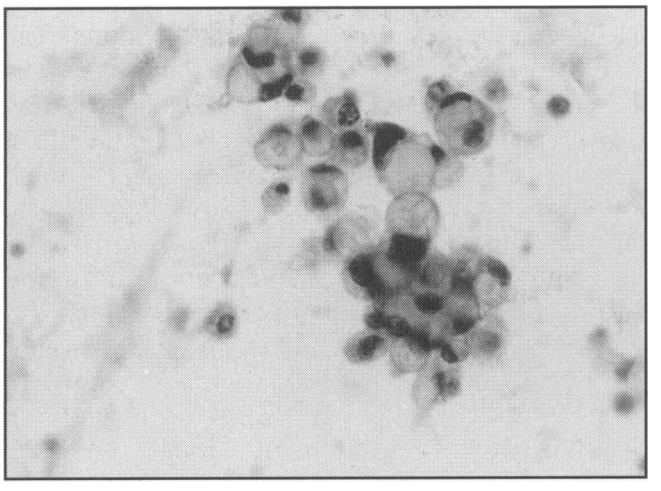

Fig 1. (b) Case 1 – aspiration cytology showing malignant signet-ring cells.

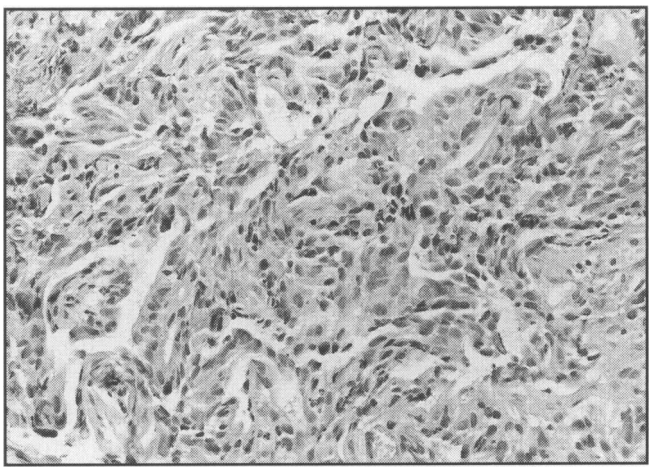

Fig 2. (a) Case 2 – biopsy histology showing poorly differentiated intestinal-type gastric adenocarcinoma.

CASE 2

A 73 year old male presented with dysphagia. Gastroscopy showed a large ulcerated tumour at the gastric cardia. Seven endoscopic biopsies were submitted, four of which, contained ulcerated, severely dysplastic glands suggesting that the sample came from the surface of an adenocarcinoma. The cytospin preparations contained malignant cells from a poorly differentiated carcinoma (figure 2).

CASE 3

An 81 year old female presented with dyspepsia. Gastroscopy showed a 4 mm diameter raised pre-pyloric lesion. There was poor distention of the gastric body and a clinical suspicion of carcinoma. Two biopsy fragments were submitted showing congested, reactive gastric mucosa. Along an edge in one of these was a number of moderately dysplastic glands. The cytospin preparations contained benign columnar epithelial cells and a small number of atypical cells. Repeat endoscopic biopsy showed intramucosal adenocarcinoma.

CASE 4

A 58 year old male presented with weight loss, dyspepsia and evidence of bone metastases. Gastroscopy showed a rigid stomach and suspicion of a lesion at the oesophago-gastric junction. Four endoscopic biopsy fragments were submitted, two of which contained diffuse gastric carcinoma of signet-ring cell type. The cytospin preparations also contained poorly differentiated carcinoma cells.

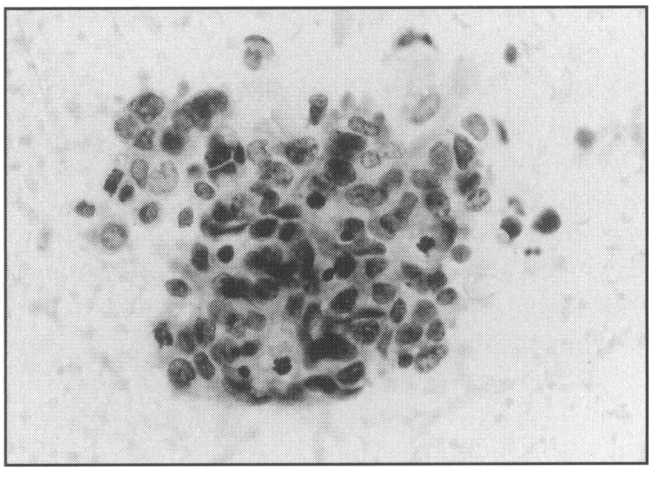

Fig 2. (b) Case 2 – aspiration cytology showing malignant cells from a carcinoma.

DISCUSSION

Standard practice for maximal diagnostic yield is to submit multiple biopsies both from around the rim and base of an ulcerated gastric lesion.[2] Despite this, positive diagnostic rates can be low especially when the lesion is undermining normal mucosa.[1] This is particularly relevant to linitis plastica, where the carcinoma shows predominantly a submucosal pattern of spread, submucosal/mural lesions such as leiomyomatous tumours and extra-mural extrinsic compression. A number of studies have considered the comparative diagnostic yield of such lesions using endoscopic biopsy, brush cytology and fine needle aspiration cytology. Iishi *et al* [3] found a biopsy yield of 83.1% in 65 patients increased to 87.7% when combined with brush cytology. Positive

biopsies were generally obtained from lesions with an eroded or ulcerated surface rather than an intact mucosa. In addition fine needle aspiration cytology confirmed the diagnosis in 11 of their 65 patients and was positive in four patients in whom routine histology and cytology were negative. Ingoldby *et al* [4] had two similar cases positive only on aspiration cytology and noted that the technique was particularly useful in tumours situated deep to normal mucosa or necrotic slough. Tao and Davidson[5] illustrated the cytological features of 10 gastric leiomyomas and 41 leiomyosarcomas – lesions which are also amenable to tissue diagnosis using an endoscopic ultrasonographically-guided guillotine needle biopsy which yields a sample approximately 8 mm long x 1.1 - 2.1 mm diameter.[6] However, a note of caution should be sounded as the behaviour of leiomyomatous or gastrointestinal stromal tumours can be difficult to predict morphologically and a combination of various parameters, eg size, necrosis, mitoses, margin, cellularity and cytological atypia should be taken into account. Kochar *et al* [7] in a series of 46 gastro-oesophageal malignancies had positive yields of 88.8%, 80.4% and 89.1% with forceps biopsy, brush cytology and needle aspiration cytology respectively. The combination of biopsy and brush cytology increased this to 93.5% whereas all three modalities gave a 100% result. Not surprisingly, as in other sites such as bronchoscopic biopsy and brush cytology, diagnostic yield increases with the amount of material submitted and the number of techniques used. As with any technique false negative and false positive sampling can occur,[6,8] emphasising that the techniques are complementary and should be looked at in combination rather than isolation. Fine needle aspiration cytology has also been used both to exclude and diagnose lymphoma in thickened gastric folds[8,9] and even in a case of CMV infection.[8]

Fine needle aspiration cytology has also increased the diagnostic yield in oesophageal and colonic lesions.[10] Zargar *et al*[11] in a series of 265 oesophageal, gastric and colorectal malignancies found diagnostic accuracies of 87.2% (biopsy), 84.9% (brush cytology) and 94% (fine needle aspiration) which were related to the tumour growth pattern. Fine needle aspiration cytology was statistically significantly better in diagnosing submucosal, deeply infiltrative and ulceronecrotic malignancies. There was a non-significant trend for biopsy to be better in polypoid lesions. The cumulative accuracy of the three modalities was 98.5% versus 90.9% for biopsy and brush cytology alone. Aspiration cytology was also diagnostic in 21 out of 24 lesions that were negative on brush cytology and biopsy. Aspiration cytology may be of use in extrinsic compression of the gastrointestinal tract, examples being gastric and caecal secondaries in the Pouch of Douglas and lung carcinoma causing an extrinsic occlusion of the mid oesophagus.[12] Faced with a potentially malignant submucosal or extrinsic lesion yielding negative conventional forceps biopsy and brush cytology results a further option is the use of endoscopic ultrasonography. It can be of help in characterising and staging various lesions, eg leiomyoma – importantly it can be coupled with directed fine needle aspiration cytology to obtain a definitive tissue diagnosis.[9,13,14] Endoscopic ultrasonography is not currently available in Northern Ireland. Diagnoses obtained on transoesophago-gastric aspiration included ectopic thyroid tissue, lung carcinoma, secondary breast carcinoma, sarcoidosis and tuberculosis. The technique has also been of use for adrenal adenomas,[14] retro rectal tumours,[9] and pelvic recurrence of rectal cancer.[15]

The technique requires no specialist apparatus; the flexible needle is widely used for endoscopic sclerotherapy or haemostasis. The use of this technique should be brought to the attention of clinicians and pathologists as a means of supplementing routine endoscopic biopsy and brush cytology investigations.

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Living in interesting times

Presidential Address, Ulster Medical Society 16th October 1996

Lewis Miller, BSc, MD, FRCGP

INTRODUCTION

I must begin by thanking the Society for appointing me as President. This is a professional honour which I had never anticipated. It is said that adversity sharpens the mind. Certainly the prospect of addressing you induces a degree of angst which I hope to put to good use. One's first though is inevitably "What am I going to say?". However general practitioners are first and foremost renowned as problem solvers. It is always interesting to see what one's predecessors have done. One can ask one's friends and family for advice or seek inspiration in the writings of others.

I decided that if I were worthy of being President then surely I must have something interesting to say for myself. So far as I could see the President of the Ulster Medical Society has carte blanche in this matter. At this point, my mother's words came into my mind. As a teacher she was fond of quoting from Hamlet:[1]

> "This above all: to thine own self be true,
> And it must follow, as the night the day,
> Thou canst not then be false to any man."

So, the society has an ordinary jobbing general practitioner for President this year. General practitioners as a group are not noted for the scientific rigour of their work or speech. But they are very good at anecdotes, and anecdotal evidence is perfectly valid so long as it is recognised as such. My talk on this occasion is in the manner of an autobiography, from and with which I hope to demonstrate some of the ways in which general practice has changed over the past half-century and to show how it might develop in the future.

To me, one of the pleasing things about general practice is the way in which the academic and practical aspects are as intertwined as the Yin and the Yang.[2] You will already have recognised this as my second allusion to Chinese culture, the first being in my title which refers to an ancient curse, "May you live in interesting times!" One aspect of this intermingling has been beautifully illustrated in his book" "The Doctor, Father figure or Plumber" by Dr James McCormack from Dublin.[3]

For Yin and Yang one might also substitute Royal College of General Practitioners and General Medical Services Committee. The College attempts to promote the academic and ethical aspects of general practice while the GMSC is mainly concerned with matters of regulation and pay. The College does however clearly recognise a balance between these elements[4] though their diagram is not as elegant as the Chinese one, and they would never be so indelicate as to mention money, although, like medical ethics, this is one of the engines which drives doctors.

The College recognises the new conflicts which have arisen in the National Health Service after the reorganization of 1990. It refers in its Report from General Practice number 27[4] to the development of a two-tier structure in the delivery of secondary care for patients and perceives the dangers of the shift in the responsibility for rationing of care from administrators and politicians towards doctors. Remember that this is the College which 25 years ago promoted Dr John Fry's paradigm where patient need is always greater than demand which in turn is always greater than resources.[5]

IN THE BEGINNING

'Where shall I begin, please your Majesty?' he asked. 'Begin at the beginning,' the King said, gravely, 'and go on till you come to the end: then stop.'[6]

In the beginning, my father was a doctor. I was born just after the Battle of Britain and my first memories of him were at the Garlands Hospital, Carlisle, the County Psychiatric Hospital for Cumberland, where he worked as a junior hospital doctor under the superintendent, Dr Madill, who also was an Ulsterman. Following some

experience in general practice in South Wales in the 1930's which by his account was very similar to that described in A J Cronin's novel "The Citadel",[7] my father had decided to become a general practitioner. However he was trapped in hospital work by the war, as in addition to his normal psychiatric work he supported an Emergency Medical Service Hospital for sick and wounded soldiers and prisoners of war.

After the war my father bought a practice in a mining village in County Durham called Trimdon. We moved there in 1946 which was a major culture shock to us all. The practice had been allowed to run down by the previous doctor who had been what would now be described as a Sick Doctor. He had died about half-way through the War. Fortunately the practice had engaged the services of a young Irish doctor who had kept things going as an assistant. One of my father's first and best decisions was to keep him on and he quickly became a partner.

The practice numbers grew and eventually another partner was taken on. Each partner consulted in his own house, looking after his own patient list although they did combine to allow each other some time off duty. The actual consulting and waiting rooms were very good as they had been purpose built by the previous doctor. Notes were kept in the traditional Lloyd George envelopes and filed in metal cabinets as they still are today in some practices. There were no receptionists and the doctors carried out some dispensing of medicines. There was however a retail pharmacy in the village and I remember my father saying that he preferred the chemist to dispense medicines as he considered that this was not really his job.

By today's standards there was very little professional contact between the partners. Patients usually came to the surgery on foot in order to see the doctor or to leave a message requesting a home visit. Only a very few private patients ever came to the front door! It was necessary for everyone to listen for the door bell and the telephone as these might ring at any time all 365 days of the year. Patients might arrive at the door in a collapsed state or with blood pouring from a wound and my mother was obliged to tend to their needs as best she could until my father came home from his rounds. In the early days he was summoned to accidents underground in the pit, and his patients greatly appreciated his attending them there.

For some years my father cared for an elderly sick doctor who lived in a nearby village. He also looked after his small list of patients. I know that he received no money for this work as my mother did not approve. Nevertheless, my father considered that he had an ethical duty towards a colleague who had fallen on hard times which encompassed both clinical and social needs and which transcended any purely financial aspects. He may also have reasonably expected to inherit the list of patients!

My father always enjoyed meeting his partners and soon like General Practitioners everywhere they were discussing their patients in an animated manner but they had no formal clinical meetings at all. Relationships were always formal and they addressed each other by title and surname. Initially they practised on their own without support from receptionists or nurses and midwives and they had much more contact with the local clergy than with clinical colleagues.

Holiday locums were a problem. One doctor could not do the work of two and it was necessary to ring the Secretary of the Student's Union at Queen's University from time to time to find an unemployed Irish doctor who could stand in for a month or so. Some of these locums were notable characters, rather fond of the bottle and on one occasion addicted to narcotics although this did not come to light in Trimdon and we had no disasters that I am aware of. Indeed my father and his partner were asked by the General Medical Council to supervise this last doctor's eventual re-introduction to clinical work. This they agreed to do regarding it as a difficult but honourable professional duty. On one other occasion a locum developed poliomyelitis and was nursed in our house by my mother for some weeks until he recovered.

In 1948 the appointed day dawned and the National Health Service arrived. I learnt later that this had been opposed by a significant proportion of the medical profession and that Aneurin Bevan had 'stuffed the consultants' mouths with gold'[9] to get it started. I remember that for the first time the whole population was encouraged to register with a general practitioner. This did not make much difference to my father as most of the village was already on his 'panel' as was the right of all working folk and their families. He did however lose his small number of private patients. I also remember my aunt, a general practitioner in

Chesterfield, saying how good it felt not to have to worry about bad debts anymore! My father complained bitterly at that time about the number of prescriptions which his patients were requesting. They had been encouraged by the government to regard the new NHS as being able and willing to supply anything they asked for. The were therefore unsuccessfully requesting endless supplies of codliver oil and cotton wool for nonmedical uses such as caring for their greyhounds.

The response of general practitioners to this trauma lay somewhere between two extremes. One was to drop dead in harness and the other was to join the new College of General Practitioners. My father at this juncture decided to employ a receptionist and claimed that it transformed his professional life for the better. I remember the angst of the Dankwerts Award,[10] which significantly increased general practitioners' pay.

I recall the drama of sending to the BMA undated resignations from the NHS that my Father, two Uncles and an Aunt submitted when Dr Jim Cameron of the GMSC was negotiating with the Government in the 1960's to produce the GPs' Charter[11] which gave us reimbursements for our staff and premises, and encouraged us to work together in partnerships.

I never wanted to be anything but a doctor. I did not seriously consider any medical school other than Queen's even though I was the first student to apply to Durham Education Committee for a grant to study there.

In the days before the Todd Report[12] on medical undergraduate education was published, the aim of a medical school was to produce a "safe doctor." This meant that students were not expected to develop problem-solving skills but were required to learn a great mass of fact, much of which was expected to last them for the rest of their professional lives. In those days students rightly feared that if they did not reproduce exactly what their lecturers had said they might well fail their exams and perhaps never qualify. There were still a few perennial students around the medical school who might take decades before acquiring their final degrees, if they ever did so. The pre-registration year was however well established though it was perfectly possible to enter general practice immediately upon its completion.

My own entry to general practice was in exactly this manner. I had decided to become a physician and firstly to proceed to an MD in pathology. At that time clinical medicine was still largely based upon cellular pathology and it was common for aspiring physicians and surgeons to spend time in pathology before returning to clinical work. The post in histopathology was not available until October, so after my houseman's year I had two months to put in which I decided to fill by doing GP locums. Accordingly, I finished work as a Houseman at the Royal Victoria Hospital on July 31st and took over a large single-handed practice in Holywood on the following day.

EXPERIENCE OF GENERAL PRACTICE

The single-handed practitioner whom I was replacing was in County Cork. I was left in sole possession of the practice and surgery, where I resided. This was necessary as there was no answering service or on-call rota. There was one invaluable asset which he left behind, his housekeeper. 'Don't worry' he said on the phone before he left, 'she knows everything. If you get stuck ask Nora.' He added cryptically 'the chemists are very helpful.'

I soon discovered what he meant. Much of the set-up was familiar from home. The morning surgery began at 9-30 am. Notes were kept in the consulting room and were taken out by the doctor whenever he felt the need to do so. As far as I could see this was not at every consultation! Hospital letters were carefully filed away though judging from their pristine condition they were usually then left in peace. The daily post often consisted of two or three hospital letters which were read in the dining room over toast and marmalade. There were no letters from Voluntary Agencies, Social Services, Physiotherapy, Occupational Therapy, Speech Therapy, Chiropody or Audiology and I remember no requests for legal reports. There were a few letters from the Medical Referee Service but none from the various welfare agencies which have proliferated since. I cannot remember being asked to complete a single report or questionnaire during the happy month I spent there.

The patients were the usual mixture of diagnostic bewilderment and professional frustration. Like my first day at school I still remember much of my first day as a general practitioner. This has been better described by Keith Hodgkin in his autobiography.[13] Suffice to say on later reading his book I empathised fully with his bewilderment in having to cope with new syndromes such as

'dizzy spells in the busy spells.' I also found the pharmacopoeia rather confusing. I had been well grounded in how to treat common medical conditions by Professors Wade & Elmes but I knew almost nothing about tonics. This was where the local chemists came in so handy. I had not finished my first surgery before they were on the phone to explain the finer points of phenobarbitone & theobromine mixture.

Frankly even with their help, I could not then and cannot now understand some of the repeat dermatological prescriptions which were at that time issued by consultants to private patients. No variation from the ancient formula could be tolerated. Each ointment was made up from the recipe written in copperplate pen and ink on a scrap of shrivelled rice paper and I never became initiated into the mysteries of minims and drachmae.

At the same time life and death proceeded as they always do. As T. S. Eliot[14] would have it–

> "That's all the facts when you come to brass tacks,
> Birth, and copulation, and death."

I gave antenatal and terminal care. I comforted the distraught and dealt with medical emergencies as best I could. I remember doing no preventive work at all. I puzzled over crying babies, I still do, and discovered new diagnoses like 'teething' which still come in handy. I recall one Old Wife when she and I held a joint consultation over a coryzal child. 'Why don't you give him achromycin?' she asked. 'Why should I do that? I responded 'Well' she said 'if you give him achromycin he will boke it all up and that will get rid of the phlegm and then he will feel better.' This was the sort of practical lesson in therapeutics which even Peter Elmes never imagined. In her defence, should she need it, I must say that at that time had the infant been seen at the local paediatric unit, achromycin is exactly what he would have been given! I wrote death certificates and referred patients as required. I took a crash course in local geography which is still useful at times. Looking back I do not think I did too much harm. The principal must have thought so too as he was good enough to invite me back to repeat the process the following year.

After three years in histopathology interspersed with locum work, I finally had to decide which career to follow. I had discovered the joys of being a generalist and did not want to give them up. I felt that there would be more opportunities to express myself in general practice which seemed to me then as it does now, to offer almost infinite scope for development and change. When I imparted this news to my pathological colleagues I was struck by the fact that only Professor John Henry Biggart showed no surprise. He asked what practice I intended to join. When I told him he sucked reflectively on his pipe. 'Yes' he mused 'that's a well-run practice'. I have always regarded this as a form of paternal blessing.

My new practice was a Training Practice and although I did not do vocation training which had recently been set up on a voluntary basis, I was fortunate to receive almost the same thing, as my appointment as an assistant for 11 months coincided almost exactly with the appointment of the first trainee to the practice. I was permitted to attend tutorials and other classes with him from which I greatly benefited. Indeed I consider that I had de facto vocational training and owe a great debt of gratitude to my trainer and her colleagues. She was certainly capable of taking my breath away with a vengeance. Knowing of my pathological background she began by asking me about the histopathology of Neimann-Pick Disease. Later when de-briefing me following a home visit she asked me what I had thought of the sick child's father. Did I consider him a forceful character? I agreed that he probably was. 'Yes' she said, 'that's the second marriage, you know. He was so nasty to his first wife that she got Crohn's Disease and died!'

With this sort of background Balint[15] made sense. I soon became involved with the nascent department of general practice and took students for teaching. I became interested in Vocational Training for General Practice and became a trainer. At that time the practice ran surgeries six and a half days a week and evening surgeries often ran on past 7 or 8 pm. We used no locums for holiday or sickness cover though I was fascinated to discover that the practice had formerly employed a young physician in that capacity who was later to rise to professorial rank. The partners had some interesting and not disrespectful comments to make about him but agreed that he would never have succeeded in general practice.

I discovered that it was normal for experienced practitioners to discuss their professional

problems together and even confess to ignorance although there was debate about whether one should ever admit this to a patient. The partners had other very interesting views about specialists. Consultants were loosely classified into a number of categories. These were useful or not useful, accessible or inaccessible, industrious or lazy. They were certainly not regarded as infallible and the partners felt that after a few years experience they could decide what a new consultant was good for.

My partners agreed that the then current fashion for prescribing benzodiazepines on each and every pretext was both misguided and harmful. This, remember, was at least a decade before such doubts surfaced widely in the medical literature.[17] They described their role in supporting the neurotic and chronically ill as 'keeping them going' and regarded early diagnosis of life-threatening disease as a major priority. They prized medical nous above almost all else and the greatest compliment they could pay was to describe a fellow practitioner as "shrewd." After seven years in this practice I was appointed to the post of Senior Lecturer in General Practice at Queen's University, Belfast.

ACADEMIC LIFE

The department of general practice had developed as an off-shoot from the department of social medicine. By the time of my appointment it had detached itself and found a home in the then new Whitla Medical Building. There on the first floor it was sited between Psychiatry and Oncology a situation which I felt to be appropriate both literally and figuratively.

My teaching and clinical duties were not onerous and my time was relatively unstructured. I was fortunate to work with Drs Ben Moran and Jack McCluggage in the GP Trainee day release course which then covered all of the province. I found myself working as a general practitioner in a number of practices in South and in West Belfast which was a useful extension to my professional education. I discovered that it was very difficult to change practices. One's old patients were angry at what they perceived as rejection and it was difficult to establish new professional relationships when one was changing practices so often. My problem was that while I had the authority I had not the power of an established general practitioner. As Professor Paul Freeling of the Department of General Practice, St George's Medical School, London has said. 'Authority comes with the white coat. Power is what the individual patient gives you.[18]

I had no direct patient base on which to perform the clinical research that I wanted to do but I did have access to general practice all over the Province through medical undergraduates and trainees. I therefore extended the existing Log Diary which students kept while out in practice.[19] Medical students can make very accurate and reliable observations in general practice as they are not directly involved in the process. Trainers and trainees likewise were able to complete log diaries for me and I processed all of this information in the central University mainframe computer. The drawback to this was that I needed help to input and interpret the data which I'm sure nowadays would be handled at the desk by a PC. However it was analysed using Statistical Packages for Social Sciences[20] which I believe are still used and I hope that this material may become a useful archive within the Department of General Practice.

Among the studies I wrote up at this time were analyses of the different clinical material seen by trainees and trainers. I was interested in how to distinguish between good and bad trainees. This I did by looking at the clinical behaviour of trainees who later passed the MRCGP examination compared with the clinical behaviour of trainees who did not. I felt that I could identify significant differences between the two. Even more interestingly I felt I could show equivalent differences in the clinical performance of their respective groups of trainers.

Influenced by my work as an examiner for the Royal College of General Practitioners I became interested in the question of attitudes. The process of learning can be divided into three domains called cognitive, psychomotor and affective or, in plain language, knowledge, skills and attitudes. I became fascinated by the complexities and ambiguities of assessing and defining attitudes and how these in turn affect a doctor's clinical behaviour which they undoubtedly do.

Accepting that doctors as a group were/are highly analytical and intelligent and knowing of the strong psychological forces which make us all tend to behave "politically correctly" I decided to work with a system which would be impenetrable to the doctor being assessed. My advisers in psychology told me that such a system existed in

the form of the Semantic Differential based on the work of Charles E Osgood of the University of Illinois.[21]

The application of this work was mathematically very complex and involved factor analysis using a good deal of computer power. I constructed test papers of 20 parameters using topics which I selected on the grounds that they would be of interest to all practising doctors. The exact nature of the topics did not matter as I was only interested in grouping the scores of individuals from different medical disciplines so that I could then define the core attitudes found in each medical discipline. I wanted to establish a data bank of information which would allow me to assess the attitudes of an individual doctor in order to assign him or her to an appropriate medical discipline.

I was reasonable successful in getting experienced colleagues to complete these papers though about 10% showed their apprehension and confusion in the letters which they returned with their scores. I was able to establish a database to my own satisfaction and began to compare the scores of random individuals in order to assign them to a particular medical discipline. This was modestly successful. I had hopes of testing all final year medical students in order to compare their scores with their eventual career choices when disaster struck. My mathematician took a better post in Dublin and I was unable to replace him!

MY OWN PRACTICE

Becoming frustrated by my nomadic clinical existence, I decided with some reluctance to leave academia and return to full-time service general practice. A single handed practice became available in East Belfast and I was appointed to my present post on lst May 1980.

The practice has grown through two changes of address now to include three partners. From an early stage the practice has been interested in Audit and has produced an annual report since the mid 1980's. As it is difficult to define hard end-points in general practice I decided to use death as the hardest end-point of all. Our death audit has been useful in comparing the practice death rates with those over Northern Ireland as a whole. It seems to show some relative improvement in patient mortality with the passage of time which we like to think reflects the hard work of the whole practice team.

We embraced Fundholding[22] as soon as we could, joining the second wave of fundholding practices in 1994. We have found the experience interesting and productive though hard work for all concerned. It definitely can give better services for patients. Some of the by-products of fundholding are fascinating and clearly indicate areas for future research with regard to capitation funding and the organisation of a primary care led health service.

The New Contract,[3] like the curate's egg, was good in parts. General Practitioners by the very nature of their daily work are accustomed to accepting all of life's inequalities and unfairness, and will always try to make the best of a bad job almost as a professional reflex. The new contract was accepted by general practitioners both for this reason and because of lack of leadership from within the profession. In 1990 I felt that it could not be allowed to continue unmodified but what was to be done? Things that are only good in parts are essentially bad. "It is necessary only for the good man to do nothing for evil to triumph" said Edmund Burke.[24] Just as, according to Georges Clemenceau, "la guerre, c'est une chose trop grave pour la confier a des militaires", [25] I decided that medical politics was much too important to be left to the medical politicians. One almost felt sorry for Kenneth Clark, the Secretary of State for Health, in having to deal with a group of doctors who, like the Bourbons of old, forgot nothing and never learnt anything and whose only ambition was to keep things exactly as they had been, which was in fact the only objective which was completely unattainable.

I decided to throw my hat into the ring and was elected to the Eastern Local Medical Committee (ELMC) in 1992. This was not too difficult. I was elected unopposed. I decided that it was necessary to politicise my colleagues and to this end have circulated a Newsletter for the past four years to all the 420 or so GP Principals in the Eastern Board Area. One of the things I have encouraged is the collaboration of general practitioners in co-operatives for out of hours care.

Out of hours co-operatives have been set up in three of the four local areas covered by the Eastern Health Board. This has already transformed for the better the social and family lives of the doctors involved.

This work has led to my becoming involved in the ELMC/EHSSB forum on commissioning of care

from Health Trusts. The Health Boards commission from Health Trusts all of the health care received by patients of non-fundholding general practitioners from health trusts and about 70% of the care received by patients of fundholding general practitioners. The Eastern Health Board has established a "forum" where general practitioners representing their colleagues from the four community health districts within the Board area, meet with Board officials to plan and arrange contracts with Trusts for patient health care.

We may well be poised on the brink of major changes in the commissioning of patient care. We must work towards the development of a true primary care led Health Service in order to maximise the resources available for health care, and to deliver the best service possible to our patients. This will require a great deal of research and development which needs to be funded. This has not yet happened in Northern Ireland although it is beginning in other parts of the UK. We also need funding to support the changes in medical undergraduate education implicit in the "New Curriculum"[27] which is much more primary care based. This will necessarily involve a major redirection of teaching and research resources from specialists to generalists in the community. The implications of the Calman Report[28] on specialist education will also impinge upon general practice in a major way involving day to day clinical care.

Doctors are only human and may err. Through the Local Medical Committee I have become involved in the problems of "Sick Doctors". This is of course a euphemism for doctors incapacitated by abuse of alcohol and/or drugs. These individuals may present at any stage from studenthood to retirement.

However, when in practice, they need to be identified and removed from practice if patient care seems to be in jeopardy. We may facilitate this process by reducing the financial burden of "outing" for these individuals. The resulting threat to their income may prevent some families from disclosing the truth and some doctors may forget that their first ethical responsibility in this situation is towards care of patients and not the protection of a colleague and their family.

Whatever else the future holds I am sure that like the past it will not be boring. The one constant in all this flux seems to be the wants and needs of the patient who will, it seems, always desire to consult the doctor in whatever fashion is prevalent at the time.

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Dispensaries in counties Armagh and Down in the pre-Famine years

G M Beale

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SUMMARY

This paper traces the development of dispensaries in the counties of Armagh and Down in the decades prior to the Great Famine. It examines the number and distribution of dispensaries and discusses their management, finance and daily administration. The role of dispensary doctors, their conditions of employment and the diseases which they treated are also considered.

INTRODUCTION

A dispensary was intended to supply medical attention and medicines to the sick poor of the district surrounding the place where it was located. Towards the end of the eighteenth century the first tentative steps in this form of primary health care were being taken by some of the landed gentry for the benefit of their tenants. Their efforts may have been inspired by similar developments in England with which they would still have had strong ties. The English dispensary system had developed from a reaction on the part of apothecaries and some concerned physicians like John Lettson to the neglect of the poor by physicians during the previous century and was intended to produce 'Charitable institutions where medicines were dispensed and medical advice given free or for a small charge'.[1]

NUMBERS OF DISPENSARIES AND THEIR MANAGEMENT

The legislation passed in 1805[2] which permitted Irish grand juries to contribute sums equal to the amount of donations and subscriptions, doubled the income of existing dispensaries, and encouraged the growth of new dispensaries in Ireland. In 1833 they numbered 452 and by 1839 this figure had risen to 615.[3] By 1841 counties Armagh and Down could boast a combined total of 31 dispensaries, 16 in the former and 15 in the latter.[4]

The earliest of these was founded at Lurgan in 1804, a year prior to the aforementioned Act.[5]

Generally, the management of these institutions was vested in those who subscribed to the charity 1 guinea or more, annually; or in a committee of 5 or more members elected by the guinea subscribers.[6] Contributors of smaller sums were, nevertheless, authorised to recommend patients for treatment.

In counties Armagh and Down, quarterly meetings of subscribers were held with more or less regularity at some dispensaries, for example, at Banbridge and Loughgall. The subscribers to the Seagoe dispensary, who took an active interest in its affairs, and who, according to one report, conducted them 'honourably and economically', also met quarterly.[7] At others, quarterly meetings of management committees were convened, for example at Blackwatertown, Lurgan, Mullaglass and Warrenpoint/Rostrevor. In a few areas, meetings were held most irregularly. There was no fixed meeting at Rathfriland, as a result of which the management of the dispensary was entrusted to the surgeon; and in 1835, the assistant commissioners inquiring into the state of the poorer classes in Ireland reported that only two meetings of subscribers had been held at Meigh/Jonesborough since the opening of the dispensary in 1822.[8]

The dispensary district was in some instances accurately defined, and comprised one or more parishes, or a half barony or barony. Frequently,

Department of History, Stranmillis College, Belfast BT9 5DY.

G M Beale, BEd, MA, MTh, PhD, Principal Lecturer and Head of Department.

however, there was no defined or acknowledged boundary and the district was considered to extend to any distance where a subscriber or his tenants resided. In counties Armagh and Down, definition of areas varied greatly. Some like Blackwatertown and Markethill, county Armagh, were defined in numbers of townlands – 72 in each of these – while others such as the Crossmaglen district, also in county Armagh, were described as covering an area of 15,000 acres. Two districts in county Down – Rathfriland and Warrenpoint/Rostrevor – marked their boundaries in terms of compass points – 12 miles north-south, 8 miles east-west; and 20 miles east-west, 7 miles north-south respectively, while others – Mullaglass, county Armagh, for example, were defined simply as 7 miles long by 6 miles wide.[9]

Throughout Ireland the population served by dispensaries varied from county to county. In county Meath, for example, there was one dispensary for a population of 6,545; in county Dublin, one for 6,286; in county Kildare one for 7,228. In Ulster counties the proportions also varied as shown in the table below:

TABLE I

Number of dispensaries in Ulster in 1839 and the population which they served[10]

County	*No. of Dispensaries*	*Population to Dispensary*
Antrim	18	17,606
Armagh	16	13,752
Cavan	16	14,246
Donegal	27	10,709
Down	15	23,468
Fermanagh	13	11,520
Londonderry	19	11,685
Monaghan	11	17,776
Tyrone	21	14,498

As can be seen from the above table, counties Armagh and Down were somewhat inadequately provided with dispensaries. In county Armagh there was one for a population of 13,752 and in county Down only one for 23,468 inhabitants. In 1839, the mean average for all Ireland, assuming its population to be 8,500,000, was one dispensary for a population of 13,520. Taking this average into consideration, most Ulster counties, with the exception of Down, were fairly close to this figure. It is difficult to understand the reasons for this apparent neglect in an area which had experienced good landlord-tenant relations, a comparatively healthy economy and a charitable attitude towards the poor. Yet although most, if not all of landed gentry in county Down were active in these charities, it was evidently difficult in the economic climate of the 1830s for patrons of dispensaries to raise funds.

Dispensaries were supported by subscriptions and county grants; a portion of the fines imposed at petty sessions was also applied to aid their funds. To establish a dispensary, it was necessary that subscriptions were placed in the hands of an individual designated a treasurer, who affirmed that he had received the money for that purpose and that the presentment sessions approved of the establishment of such an institution in the particular locality. The subscribers defined the extent of the dispensary district and made by-laws and regulations for its management. At each successive presenting period, the attention of the county authorities might be called to it, but in general they had neither the time nor the opportunity, even if they had the disposition, to inquire about its management or efficiency.[11] It was imperative that the grand jury granted a sum equal to the amount of subscriptions received by the treasurer, when the institution had been approved by the presenting sessions and on each subsequent occasion when a presentment was sought.

In 1839 the amount of subscriptions for county Down with a population of 352,012[12] totalled £880 1s 9d, whereas those for county Armagh with a population of 220,134[13] amounted to £991 18s 6d.[14] In some areas in county Down, for example in Castlewellan, Rathfriland, or Warrenpoint, if one or more subscribers had withdrawn support, the efficacy of the dispensary would have been severely impaired, but in others, Donaghadee and Hillsborough, for example, the withdrawal of subscriptions by even one family would have been disastrous for the charity.[15] Funds at the Tynan dispensary in county Armagh were reported to have been greatly reduced in the early 1830s owing to the withdrawal of both a bequest and the subscription of a member of the

local gentry, but generally, in this county dependence on a limited number of subscribers was not as crucial as that in county Down.[16]

Occasionally, circumstances on some estates, for example the death of a benevolent landlord, could cause financial difficulties for a dispensary previously supported by him. Sometimes this meant a temporary lapse in subscriptions. In February 1839, Rev J R Moore, the trustee of the Annesley estate at Castlewellan, wrote to Crane Brush, agent for the Meade estate at Rathfriland, apologising for his inability to make a contribution from the Annesley estate to either the Castlewellan or the Rathfriland dispensary. Moore hoped that when the affairs of the estate were settled 'these two desirable institutions will be supported by the present Lord as did his father'.[17] Concern for the provision of the Annesley tenantry at this time was also expressed and Moore was hopeful that they would be treated favourably at the dispensary on the Meade property:

> I beg to inform you whenever your tenants here apply to me I give them recommendations to the dispensary in Castlewellan the same as Lord Annesley's tenants and hope that you will be so kind as to do so by those of the Annesley property who apply to you at Rathfriland; by so doing we shall be serving each other.[18]

Landed proprietors in the Downpatrick area displayed equal concern for their tenants. As no medical officer was paid to visit the sick poor in their own homes, several landlords in the neighbourhood employed a doctor to attend patients on their estates.[19] In 1833, Lord Mandeville established his own dispensary for the tenants on his estate in the Portadown – Tandragee – Newry area of county Armagh.[20]

Geographically, the dispensaries were situated throughout counties Armagh and Down, and table II indicates the numbers of patients relieved during a selected period:

Table II

Number of patients relieved at dispensaries in counties Armagh and Down 1825-29 [21]

Dispensary (Co. Armagh)	*Number relieved*				
	1825	*1826*	*1827*	*1828*	*1829*
Forkhill	1,328	1,207	1,933	1,326	1,232
Keady	377	346	416	414	325
Loughgall	3,673	3,607	3,200	2,913	—
Markethill	618	754	700	956	829
Newry	954	1,456	1,915	2,166	1,889
Tynan	2,627	2,606	2,015	2,551	2,370
(Co. Down)	*Number relieved*				
	1825	*1826*	*1827*	*1828*	*1829*
Ardglass				680	1,120
Banbridge	2,488	2,871	3,164	3,763	3,869
Bangor	790	911	1,120	833	541
Castlewellan	4,162	5,167	6,811	8,756	5,466
Donaghadee	138	158	189	156	152
Dromore	917	892	1,003	1,129	828
Hillsborough	1,250	1,396	957	1,498	1,519

(Co. Down)	Number relieved				
	1825	*1826*	*1827*	*1828*	*1829*
Holywood	620	570	792	779	629
Kilkeel	830	707	726	724	850
Newry	954	1,456	1,915	2,166	1,889
Newtownbreda	769	1,070	876	1,098	1,241
Rathfriland	513	1,042	970	948	828
Warrenpoint	682	769	1,118	1,212	1,892

Whilst these figures appear encouraging, later evidence reveals that some of the districts were undoubtedly too large to provide effective medical relief. The Banbridge district, with a population of 40,000, was considered far too extensive for satisfactory provision. More than half the population of the Downpatrick poor law union was, according to Gulson and Phelan, 'so circumstanced as to be unable to obtain any dispensary relief'. Of the three dispensaries in that area they reported:

> Two of these institutions appear too circumscribed in area and population, and one seems to be most inconveniently large, in consequence of which, the Medical Officer states that he is obliged to resign, as he cannot perform the duty, and is unwilling to be responsible for it.[22]

The Newry union contained seven dispensaries, which afforded relief to 9,864 cases annually. The medical officer of one of these lived eight miles away and the assistant commissioners considered that he could not 'give efficient attendance in his district'. In three districts of this union the population was much too large, which rendered it impossible for one medical officer to perform his duties effectively. In the Newry and Rathfriland districts a considerable proportion of the sick poor was not visited, as two medical officers were too few to attend the numbers of patients in such populous areas.

The Newtownards union, with a population of 53,873, contained only one dispensary, located at Donaghadee. This served a population of approximately 5,500. In the remaining portion of this union there was no gratuitous medical provision. A dispensary had existed at Bangor having been established in 1817, but this had been discontinued due to lack of funds. There was certainly a great need for some form of medical provision in this area.

In county Armagh, where the ratio of dispensaries per head of population was of course much more favourable than that in county Down, similar criticisms were levelled. The Armagh union, for example, contained six dispensaries and, as cited earlier, one was supported entirely by the private funds of Lord Mandeville. The six institutions provided relief for 10,571 patients, but some areas appeared too large and too populous for one medical attendant.

Three dispensaries in the Lurgan union afforded relief to 6,363 persons; however two of these were in such close proximity that more distant areas were in some respects neglected.

INEQUALITIES IN PROVISION

Considerable disproportion existed in the amount of relief afforded by particular dispensaries, even those in the same county. In county Down, the Kilkeel dispensary afforded relief to 4 per cent of the population, that at Donaghadee to 4 1/6 per cent, whilst the Seaforde dispensary gave relief to 35 per cent. In county Armagh, 4 per cent of the population were attended at the Bellatrain dispensary, 9 1/2 at Seagoe, 44 at Portadown and 50 at Forkhill.[23]

The same inequality appeared with regard to the salaries of medical officers, the expenditure on medicines and the amount allocated to treatment per patient. In most instances this was dependent on the state of dispensary funds.

TABLE III

Annual salaries and allowances of dispensary doctors in counties Armagh and Down as reported by the assistant commissioners for inquiring into the state of the poorer classes in Ireland, 1835[24]

Dispensary	*Salary*	*Allowances*
Ballymacarrett	£60	£10 for house rent
Banbridge	£74	
Bangor	£30	
Castlewellan	£100	
Donaghadee	£30	
Dromore	£31 10s	
Hillsborough	£63 3s ld	
Holywood	£40	
Newtownbreda	£50	
Warrenpoint/Rostrevor	£50	2s 6d per visiting ticket; 7s 6d per labour ticket
Blackwatertown	£60	2s 6d per midwifery case
Crossmaglen	£75	lodging
Forkhill	£50	house, rent free
Loughgall	£50	2s 6d for visiting at a distance over 2 miles; house and garden rent free
Meigh/Jonesborough	£30	
Mullaglass	£50	
Newtownhamilton	£40	unfurnished lodgings; small garden; stable
Lurgan	£60	
Markethill	£50	£12 allowed towards horse
Poyntzpass	£50	£10 conditional for visits
Tandragee	£50	
Tynan	£50	

As can be ascertained from table III, salaries in the dispensaries in counties Armagh and Down ranged from £30 per annum with no additional allowances for the medical officer at Meigh and Jonesborough in south Armagh and a similar amount for those in charge of each of the dispensaries in Bangor and Donaghadee in county Down, to a maximum of £100 at Castlewellan, where Lord Annesley's influence was evidently paramount. Some committees supplied accommodation and additional financial incentives for their surgeons. At Loughgall, county Armagh, for example, the medical officer, in addition to his salary, was provided with a house and garden rent free and received 2s 6d when he visited a patient who lived over 2 miles from the dispensary. Similar visiting allowances were permitted by other boards of management: at Warrenpoint and Rostrevor, county Down, the surgeon's salary was fixed at £50, but he received 2s 6d for each visiting ticket and 7s 6d for each labour ticket. Such allowances augmented his basic salary to

average £90 - £100 per annum. But the intentions of committees of subscribers were sometimes frustrated due to shortage of funds. The Tandragee managers had originally voted for their medical officer to receive £40 salary and 2s 6d for every visit, provided the distance did not exceed one mile. However, within a few years of such a proposal it was considered expedient to alter this arrangement and he received £10 in lieu of the visits. The cost of the original proposal obviously proved too expensive. At Mullaglass, county Armagh, a similar situation pertained. The surgeon was entitled to have received 2s 6d for each visit in addition to his salary of £50, but here too, the cost was prohibitive.[25]

As suggested earlier, contributions to these charities in the north Down area were most disappointing. Subscriptions to the Bangor dispensary were so low that the funds were seldom sufficient to allow the medical officer the agreed annual salary of £30. This may be attributed to a lack of dedication on the part of the subscribers as, by 1835, no meetings had been held for several years and perhaps no effort made to secure new subscribers to the charity. It was reported simply that the treasurer received subscriptions and paid the bills.[26] Another reason may have been the popularity of the mendicity association which was attracting subscriptions most likely to the detriment of the dispensary funds.[27] Between 1825 and 1834 the medical officer's remuneration ranged from £8 14s 11d in the former year to a maximum of £15 in both 1831 and 1834. £10 was received in 1827, 1830, 1832 and 1833, but in 1826, 1828 and 1829 no salary whatsoever was paid. From the statement of accounts for the years 1833-1835 it appears that the grand jury granted annual sums equal to only half the amount of subscriptions, despite the charity's apparent compliance with statutory regulations. Receipts for the year 1830 were £42 ls 6d and expenditure £46 1s 3d. Figures for 1831 were: receipts : £51 7s 6d and expenditure : £50 19s 11d. When these figures are compared with the medical officer's salary for those years (£10 and £15 respectively), it would appear that priority was afforded to the patients and the surgeon's salary was accordingly reduced. It should be noted that the medical officer who had been appointed since the establishment of the Bangor dispensary in 1817 was surgeon to the south Down militia, for which he was in receipt of £63 17s 6d per annum and, like many other dispensary doctors, he was also in private practice, so perhaps the lapses in salary payments were not so serious in his situation.[28]

The financial constraints of dispensaries and variables, such as the extent of districts and types of illnesses treated, all affected the amounts spent on the purchase of medicines. Evidence in this respect is far from complete, and the discrepancies between the end of the dispensary year which was March and the year for reporting which was December, exacerbate the difficulty of providing a logical and structured analysis of available figures.

However, some examples of sums expended may be helpful in demonstrating the variations which prevailed among individual establishments. See Table IV)[29]

Figures for some dispensaries provide an average cost per head over a 3-year period, for example, at Loughgall where, for the years 1832-34 the average sum expended on medicines was £89 2s $11^{1}/_{2}$d and the average number of patients treated was 3,046. This shows that the average expense of each patient amounted to a fraction more than 7d per annum. A similar calculation for the previous three years gave an average of $7^{1}/_{2}$d per head.[30] At Castlewellan the expense of medicines from March 1830 to March 1833 amounted to £99 9s 2d and the number of patients relieved was 6,735. According to calculations made by the governors this rendered an average expense of $3^{1}/_{2}$d per head. Within that period, from March 1832 to March 1833, the medicines cost £60 9s and 2,338 patients were relieved. Thus an average expense of 6d per head was calculated. Dispensaries which treated fewer patients could afford to be more generous in the allocation of funds to those who did benefit from treatment. The figures for the Tynan dispensary, county Armagh, for example, illustrate this. During the 3 years ending 31 July 1833 the cost of medicines amounted to £99 4s 2d and 1,554 patients were attended. This permitted an expenditure of ls $3^{1}/_{8}$d per head and contrasted sharply with establishments such as that at Tandragee, county Armagh, where, in the 3 years 1832 – 1834, 5,716 patients received treatment and an average of $6^{3}/_{4}$d was expended on each.[31]

TABLE IV

Amounts expended at selected dispensaries in counties Armagh and Down 1831-34 [29]

Dispensary	*Year*	*Patients*	*Cost*	*Cost per head*
Banbridge	1832	5,230	£62 11s 6½d	3d
	1833	6,444	£71 15s 10d	2¾d
	1834	6,572	£73 15s 7½d	2¾d
Dromore	1831	1,088	£39 12s 11½d	8½d
	1832	984	£37 19 0d	9d
	1833	966	£35 10s 2½d	8½d
Hillsborough	1832	870	£15 3s 2d	4⅓d
	1833	858	£15 6s 7½d	4¼d
	1834	318	£ 9 12s 4d	6½d
Holywood	1831		£30 6s 5d	7¼d
	1833		£18 16s 11d	2d
	1834		£11 13s 6d	2d
Warrenpoint/ Rostrevor	1833	1,858	£64 3s 10d	1s 6d
Forkhill	1834	1,474	£40 10s 0d	6½d
Markethill	1833	1,318	£29 11s 0d	4½d
	1834	1,674	£25 8s 5d	4½d
Mullaglass	1833		£45 1s 1½d	1s 1d
	1834		£36 3s 9½d	1s 1d

REGULATIONS FOR RELIEF

The regulations under which dispensary relief was afforded were various. In some locations the medical officer was empowered to give advice and medicine to all whom he considered 'fit objects' and to refuse all others. At most dispensaries, however, a subscriber's recommendation was required. Generally, assistance was given to the tenantry or dependents of subscribers, whilst individuals residing on the property of those who were not contributors were excluded from all participation in the relief. Locally, this exclusion was widely obviated through the compassion of subscribers who recommended the poorer tenantry of non-contributing landlords to receive aid.

In counties Armagh and Down it was usual for all poor persons to have access to the benefits of dispensary relief and applicants were issued with a ticket supplied and signed by a subscriber. Abuse of the system, by which persons able to pay for advice attempted to impose on the charity sometimes occurred, but this was guarded against in most areas.

There were two kinds of tickets – those for advice and those which entitled the bearer to receive a visit from the medical officer. Normally, in these counties, there was no difficulty in procuring a ticket, although some committees, no doubt for financial reasons, and indeed perhaps also to avoid exploitation or abuse of the system, limited the number of tickets distributed to their

subscribers. Some differentiated between the two classes of ticket, and in certain districts the amount of subscription determined the number of tickets issued. Visiting tickets tended to be fewer in number. The rules of the Donaghadee dispensary committee permitted the issue of eight tickets for advice and medicine to subscribers of 1 guinea, 24 tickets for subscribers of 2 guineas and 40 for those who subscribed 5 guineas. At Lurgan, tickets were limited to 20 per 1 guinea subscriber, but no distinction was made between advice and visiting tickets. Subscribers of one guinea to the Blackwater charity were issued with only 12 visiting tickets, but the number of tickets for advice and medicine was unlimited. The committee of the Warrenpoint/Rostrevor dispensary agreed to limit the visiting tickets issued to four for each £1 subscriber, although clergymen of all denominations received double that figure. Here, the number of advice tickets supplied for issue was, like many other areas, unlimited. In some districts, Mullaglass, for example, whilst each £1 subscriber was limited to 10 tickets for advice and 5 for visits, the rule was not vigorously enforced.[32]

In most districts the sick were seen at the dispensary on fixed days. Some dispensaries like that at Holywood received patients on two days per week, others like the one at Dromore were open on three days. Those who were too ill to attend were visited at home, provided the relevant ticket had been procured. In some areas, for example Blackwatertown, with the exception of emergencies, presentation of visiting tickets was required before 10.00 am. In case of accident most establishments possessed splints and bandages and provided the necessary assistance. In these counties, expectant mothers were usually attended by midwives, many of whom lacked skill and expertise. Only seriously ill cases were seen by the medical officer, sometimes for an additional payment. Dispensaries where payments were required formulated their own rules regarding the surgeon's remuneration. At Lurgan 'lying-in cases' were 'attended from the dispensary on a ticket of recommendation and on payment of 10s 6d by the recommender for each case'.[33] Regulations at the Meigh/Jonesborough dispensary stipulated that the medical officer should attend cases only where the patient produced a ticket of recommendation and paid him 5s if visited on a dispensary day and 10s on any other day.[34] Fees were generally not as high as those at Lurgan or Meigh and were frequently met by the dispensary funds. The surgeon at Warrenpoint/Rostrevor attended all difficult cases and was paid 7s 6d from the funds, and the medical attendant at Holywood was allowed 2s 6d for similar visits. Some areas, though few in number, for example, Mullaglass and Newtownhamilton, were attended by the surgeon simply on production of a subscriber's ticket.[35]

Vaccination increased in Ireland during the early years of the nineteenth century. The zeal of the medical profession for this practice was demonstrated by a series of resolutions passed unanimously at a meeting of the Royal College of Surgeons of Ireland in 1811. It was agreed by this august body that there was not a physician or surgeon in the country who did not approve and practise vaccination and that due to such efforts the mortality from small-pox had materially decreased.[36]

Before the Great Famine little direct encouragement was given to vaccination by the state. However, the dispensaries, which were, of course, assisted partly by public finance, popularised the practice in many areas.

In counties Armagh and Down, vaccination was performed free of charge at most dispensaries. Medical officers were generally in favour of it and certainly the population of the area was confident of its benefits. Some local physicians even supported re-vaccination, for example, Dr Robert Chermside from Warrenpoint:

> the protective influence of vaccination against small-pox contagion is only temporary, or limited to a certain number of years; but it appears to remain almost complete for 8 or 10 years, and then progressively to become less and less decided;
>
> it is, therefore, proper to have recourse to re-vaccination, and this operation should be performed at least two or three times in early life; say at the first three septennial periods. According to the German authorities no case of small-pox has occurred in any re-vaccinated person.[37]

and Dr J M Lynn from Markethill :

> From pretty extensive experience, I am still strongly of opinion that all persons should be re-vaccinated at the end of eight or ten years; and the report just published by the French Academy of Sciences on this subject, fully supports the views which I had the honour of laying before the governors of this dispensary in my annual report of 1838.[38]

In some districts, whilst the vaccination was performed free, a deposit – usually 1s – was required in an attempt to ensure the return of the child for future inspection.

As elsewhere in the country, inoculation was far from popular among the surgeons in this area of Ulster. Sir Gilbert Blane, writing in 1811, while admitting that inoculation gave the individual a milder form of small-pox, thought that on balance there was an increase of mortality by 'inoculation destroying more than it saved, by spreading it [the disease] to places which would otherwise have escaped'.[39] This view evidently pertained in the 1830s.

ACCOMMODATION AND EQUIPMENT

Patients consulted their local medical officers during specific hours at the dispensary premises. Usually, these consisted of one or two rooms in a house, frequently rented by the charity. In some districts the surgeon held the dispensary in part of his own home. At Lurgan, for example, a 'room opening out of the medical officer's house' was used, but no remuneration for the accommodation was received; at Tynan, part of the medical officer's residence acted as a dispensary, although here a payment of £3 per annum was donated from the funds; at Warrenpoint, the surgeon who provided a room in his home was paid £8 8s from the local contributions; and at Markethill £10 was allocated for the use of a room in the surgeon's house.[40]

Rarely did these establishments comprise anything more than a waiting room and a room for consultation. In some places for example, Ballymacarrett, Lurgan and Newtownbreda only the latter existed. However, the benevolence of the Marquis of Downshire ensured that the premises at Hillsborough included a 'good waiting room, a small neat dispensary, a physician's consulting room, a committee room and a kitchen on the ground floor; a housekeeper and nurses-room (sic), and three wards capable of containing ten beds (all in excellent repair)'.[41]

The poor law assistant commissioners reported that a few dispensaries – Hillsborough, Meigh, Mullaglass and Warrenpoint, had insufficient supplies of medicines. Principally this was because their visit coincided with the end of a quarter when in certain places medicine stocks were low awaiting re-ordering, but the inevitable shortage of funds was also a factor. Generally, however, in counties Armagh and Down, the establishments were supplied with ample quantities of medicine, including some expensive and delicate mixtures.[42] Most medicines were purchased from druggists in Belfast, Dublin and in one case, Glasgow. Dispensaries in these counties had very limited resources. Few had apparatus for preparing decoctions; surgical instruments, in the possession of the personnel of a minority of dispensaries, included a stomach pump, bougies, enema syringes and catheters.

ILLNESSES TREATED

Numerous complaints were treated at the dispensaries each year. At the Warrenpoint/ Rostrevor dispensary during 1829, pectoral, inflammatory and rheumatic problems constituted the most prominent part of the catalogue of diseases. Such may be easily accounted for when several factors are considered: the humidity and variable nature of the climate; the wretched dwellings of the class of people among whom the dispensary practice was situated; their imperfect clothing and scanty supply of fuel; and the general privation of the necessities of life.[43] Similar causes may be ascribed to the increased ratio of fever during the same year. Whooping cough, measles, scarlatina and bowel complaints were also prevalent in the district at different times in 1829.

According to some medical officers, many of the diseases of the poor arose from improper and insufficient diet. Consequently, many ailments could have been prevented by eating more wholesome food. Lack of variety in their diet and the total dependence on the potato often produced diseases of the digestive organs. Too frequent use of oatmeal and salted food gave rise to many eruptive diseases.[44]

Complaints of a similar nature were treated at other local dispensaries in the pre-Famine years. The report of the Newry dispensary for 1831 noted that during the months of January, February and March the diseases most frequently encountered were those of an inflammatory nature: inflammation of the lungs and bowels, pleurisy, erysipelas, rheumatism, diarrhoea and dysentery. In April, May and June, small-pox, typhus fever and dysentery prevailed and in July, August and September, measles, whooping cough and cholera were in evidence. During the final quarter of that year, pulmonary affections, scarlatina, rheumatism and, in particular, diarrhoea and dysentery were exceedingly common.[45]

At the Holywood dispensary in 1841 and 1844, bowel complaints, dyspepsia, febrile colds, scrofula and rheumatism continued to be the most prevalent diseases treated.[46] The report of the medical officers at Loughgall showed that during the year 1 May 1842 – 1 May 1843, scarlatina, influenza, dyspepsia, rheumatism and bronchitis accounted for the largest number of patients who received treatment.

As suggested earlier, due to climatic conditions in this part of Ulster and the poor living conditions of many of the inhabitants, the diseases and complaints of the population showed little variation. There were evidently local differences as may be ascertained from a closer examination of the limited number of dispensary reports. In general, the medical officers showed compassion and concern for their patients and though working with limited resources they provided relevant treatment for the sick. However, it may be noted that 'generous diet alone, with the comforts of a warm room and bed, have been sufficient to remove disease'.[47]

ASSESSMENT

Dispensaries were, undoubtedly, a valuable asset to provision for the sick poor. They afforded timely aid in cases of accident or disease, thus preventing disablement or death and consequently, the ultimate pauperism of entire families. Generally, throughout Ireland, however, the dispensaries were too few in number to serve the needs of the people, and as discussed earlier, their distribution was by no means evenly dispersed.[48] So much was contingent on the financial state of these charities, which depended on local subscriptions even before they could be established, that when the wealthier classes withheld support, the poor were deprived of any localised medical treatment. In theory, the principle of making private contribution an indispensable condition to the grant of county assistance, was viewed as encouraging the foundation of dispensaries where they were most required, as well as fostering the interest of a number of subscribers in the administration of these establishments to which they themselves contributed.[49] In practice, however, as has been illustrated by the financial constraints of most dispensaries, due to the paucity of subscriptions, this philosophy was to prove far from realistic.

Many districts were too populous for the medical staff to attend effectively, and in numerous instances their salaries were disproportionate to the duties required of them. The fact that most dispensaries were visited by doctors on a limited number of days per week created doubts as to the overall efficiency of the establishments, particularly, when in cases of accident or acute disease, a daily attendance was probably necessary.

In some areas, payment required for visits was prohibitive for a large proportion of the community. Some doctors were inclined to stint their patients by a regulation permitting them to seek remuneration in the funds which remained when the medicines were paid for – a factor which might explain the discrepancies in the cost of medicines at various dispensaries not only in counties Armagh and Down, but in the country as a whole.[50]

The rationale of the dispensaries was largely determined by the serious deficiencies in hospital provision and, as the population increased, by the need to extend medical treatment to the labouring poor. The concept, albeit in a limited way, encouraged closer and more direct contact between patient and physician, both through attendance at the dispensary and home visiting; thus the medical profession learned the true extent of illnesses associated with poverty and overcrowding, in which continued fever dominated the picture in successive epidemics against a background of endemic and equally serious diseases such as dysentery.

Despite their shortcomings, the dispensaries in counties Armagh and Down, as indeed elsewhere in Ireland, provided medical advice and assistance to many who would otherwise have had none.[51] In 1851, when the Medical Charities Act was passed, the dispensaries, with the workhouses, were to form part of a new structure of health care which was to last well into the twentieth century.

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Case Report

Thyroidectomy for medullary carcinoma in MEN 2A: Positive genetic screening as the sole indicator for surgery

D McNally, W J Campbell, J M Sloan, P J Morrison, C F J Russell

The multiple endocrine neoplasia type 2A syndrome (MEN 2A), comprising medullary thyroid carcinoma (MTC), phaeochromocytoma and primary hyperparathyroidism, is inherited in autosomal dominant fashion on chromosome 10. The specific genetic abnormality was initially localised to a site close to the centromere of chromosome 10[1,2] and, more recently, has been identified as a mutation (most commonly exons 10 and 11) in the RET proto-oncogene.[3] As the invariable component of MEN 2, medullary thyroid carcinoma is present in all affected individuals. Previously, the presence of tumour within a family member could only be confirmed either by the detection of clinical disease (goitre or cervical lymphadenopathy) or by the finding of elevated levels of plasma calcitonin measured basally or following stimulation with a calcitonin secretagogue such as pentagastrin or calcium. The identification of the specific genetic defect in MEN 2A now permits diagnosis of the syndrome, following routine blood sampling, in patients who may have no clinical or biochemical stigmata of disease. We record the management of a 10-year-old girl from a known MEN 2A family,[4] who underwent thyroidectomy solely on the basis of genetic information. We believe this to be the first reported occasion within the United Kingdom when a patient has undergone operation in these circumstances.

Case Report

Screening of the 10-year-old daughter of a MEN 2A family member revealed the presence of a 634 Cys-Tyr mutation within the RET gene. Her father had previously undergone total thyroidectomy for medullary carcinoma and bilateral adrenalectomy for phaeochromocytoma. Basal plasma calcitonin values at age 5, 6 and 10 years were normal. Pentagastrin stimulation testing which often results in significant retrosternal and abdominal discomfort, had not been carried out in this child. Clinical examination on each of these occasions had revealed no evidence of palpable goitre or lymphadenopathy. Urinary catecholamine levels and serum calcium were not estimated, as phaeochromocytoma and hyperparathyroidism, if present in an individual MEN 2 patient, invariably develop much later. Following appropriate discussion with parents, and solely on the basis of the genetic information, total thyroidectomy was carried out in January

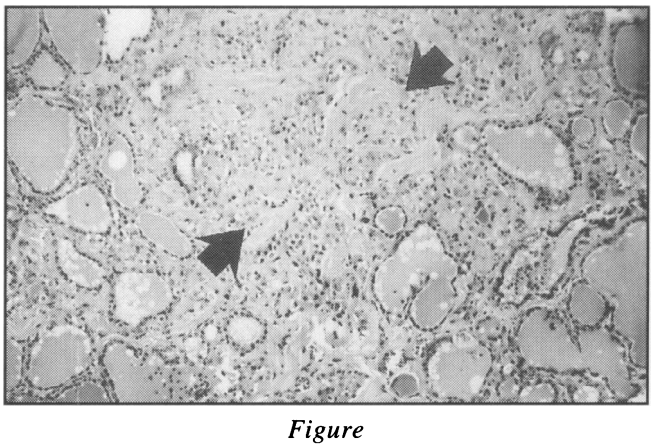

Figure
Small focus of medullary cell carcinoma infiltrating thyroid tissue. Immunocytochemistry showed tumour cells staining positively for calcitonin and CEA. H & E x 60.

Royal Victoria Hospital, Belfast, Northern Ireland.
Department of Endocrine Surgery.
D McNally, MB, FRCS, Senior House Officer.
W J Campbell, MD, FRCS, Senior Registrar.
C F J Russell, BDS, FRCS, Consultant Surgeon.
Department of Pathology.
J M Sloan, MD, FRCPath, Consultant.
Belfast City Hospital, Belfast, Northern Ireland.
Department of Medical Genetics.
P J Morrison, MD, DCH, MFPHM, Senior Registrar.
Correspondence to Mr C F J Russell.

1995. At operation the thyroid gland was grossly normal. However, careful histological examination of the surgical specimen revealed the presence of C-cell hyperplasia and several small foci of frankly invasive medullary carcinoma (Fig.). The largest of these was 0.5 cm. maximum diameter. Two adjacent lymph nodes which were submitted contained no tumour. At 24-month review the patient is clinically free of disease, with unrecordable plasma calcitonin values.

DISCUSSION

Until recently, identification of affected members within MEN 2A kindreds was dependent upon the appearance of clinical or biochemical evidence of MTC after repeated and often prolonged screening. With the recognition of specific RET mutations responsible for the syndrome, its presence can now be confirmed in over 98 per cent of affected individuals following a routine blood sample. Equally important, non-affected family members can be reassured and discharged from further screening. Previously, the decision to advise thyroidectomy has usually been taken only when the plasma calcitonin level has become elevated, thus indicating the presence of MTC or its precursor, C-cell hyperplasia. Now, with the reality of a positive diagnosis made solely on genetic grounds, there is the potential for even earlier surgical intervention, with greater certainty for cure of the thyroid cancer. Following the pioneering work of Wells and colleagues[5] we advised 'prophylactic' thyroidectomy in our patient exclusively on the basis of the genetic information. The histology suggests that the operation was in fact 'therapeutic' and lends support to the belief that thyroidectomy at an even younger age may be appropriate in such circumstances.

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Case Report

Cutaneous Metastasis as a complication of hepatic intra-arterial chemotherapy

S O'Hagan, T Diamond

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We report an unusual complication of hepatic intra-arterial chemotherapy for metastatic colorectal carcinoma.

CASE REPORT

A 44 year old man who had a resection for an adenocarcinoma of the tranverse colon was also found to have a metastatic nodule in the right lobe of the liver (segment VI). He underwent a laparotomy, during which an intra-operative ultrasound revealed 2 additional nodules – in segments IV and VII. These three lesions were resected, each with 2 cm margin of normal liver. A Portacath (Pharmacia Deltic/NC, St Paul MN55112, USA) was inserted into the gastro-duodenal artery. A regime of hepatic intra-arterial chemotherapy was commenced post-operatively with seven doses of 5-Fluorouracil (5-FU) (500mg/m^2 per day) and one dose of Mitomycin C (5mg/m^2) on the first post-operative day. He was subsequently given seven cycles of 5-FU (400mg/m^2 intravenous bolus followed by the same dose in an intravenous infusion over 18 hours on days 1 and 2 of the cycle) and folinic acid (200mg/m^2 intravenous infusion, also on days 1 and 2). Each cycle's duration was 2 weeks. One year later he developed further hepatic metastases. Six months after this he requested removal of the Portacath due to abdominal discomfort. Examination revealed a hard mass around the Portacath (figure). This was removed with the Portacath. Histological examination identified an adenocarcinoma. The patient died two months after the removal of the Portacath.

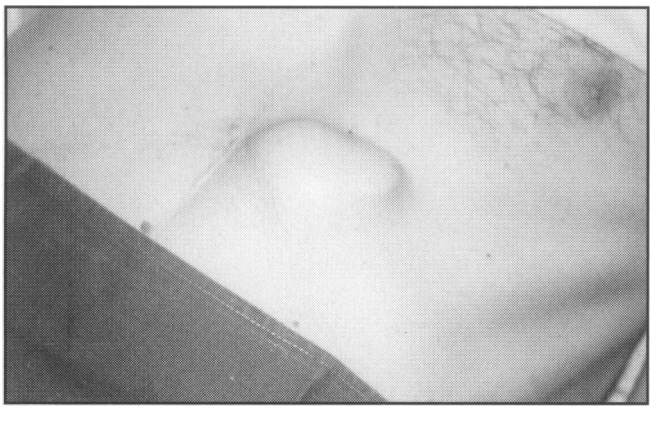

Figure Cutaneous metastasis surrounding Portacath chamber.

DISCUSSION

Treatment of hepatic metastases from primary colorectal carcinoma remains problematic. Hepatic resection may offer increased survival in up to a quarter of patients but is usually only practicable in those with less than four small metastases. The role of chemotherapy for advanced colorectal cancer is still controversial. Due to the toxic side-effects of systemic chemotherapy, hepatic intra-arterial infusions are being explored as an alternative. The theoretical reasons that HIA infusions may be successful are that hepatic metastases less than 3 mm in diameter derive their blood supply from the hepatic artery. HIA administered radiolabelled floxuridine concen-trates in hepatic metastases to a much greater degree than when systemically administered and the high first pass metabolism of certain agents prevents them from causing systemic side effects.[1]

Mater Hospital Trust, Crumlin Road, Belfast BT14 6AB.

S O'Hagan, BSc, MB, BCh, FRCSI, Senior House Officer.

T Diamond, BSc, MD, FRCS, FRCSI, Consultant Surgeon.

Correspondence to Mr Diamond.

HIA may delivered in several ways: angiographically-placed hepatic arterial catheters, surgically-implanted infusion ports used with external pumps, or surgically-implanted silicone catheters with subcutaneous chambers (Portacath). HIA infusion is associated with several potential complications. Hepatic enzyme elevation is quite common and stricturing of the bile ducts, requiring stenting, may occur. Peptic ulceration can occur and prophylactic proton pump inhibitors should be used. Technical difficulties in placing the catheter correctly and occlusion of the hepatic artery have been reported. However the systemic complications of 5-FU treatment are largely avoided.[2, 3]

The development of a metastastic lesion at the subcutaneous insertion of the HIA infusion system has not been previously reported. We postulate that the nodule may have arisen from peritoneal disease which progressed along the catheter. In this patient it was a late occurrence, but a rare complication such as this may become more common if HIA infusion becomes widely used for the treatment of hepatic metastases.

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Case Report

Solitary breast metastasis from carcinoma of colon

K S Bhirangi, D J D T Pinto, J J Crosbie

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Colonic tumour spreads to lymph nodes, liver, bones and lungs. Metastatic spread of colonic tumour to the breast is rare and is usually in the context of widespread malignancy. We report a colonic tumour spread to the breast.

CASE REPORT An 86 year old woman was referred to the surgical clinic with three month history of a painless lump in the right breast. She also complained of intermittent abdominal pain with nausea and occasional vomiting. Examination revealed a 2 x 2 cm hard lump in the upper outer quadrant of the right breast which was not fixed to the skin or underlying structures. The other breast and both axillae were clinically normal. Abdominal examination was unremarkable. Fine needle aspiration cytology of the breast lump showed a few cells with nuclear atypia. Ultrasound scan of the abdomen and chest X-ray were normal.

On admission to the hospital a soft mass was noted in the right iliac fossa suggestive of distended caecum. Barium enema showed a stricture in the ascending colon. Right hemicolectomy and breast lumpectomy with axillary node dissection were performed. There was no evidence of spread of the disease from the colon. Histopathology confirmed a moderate to poorly differentiated adenocarcinoma of the colon extending to mesenteric fat (Duke's B).

Mesenteric lymph nodes were clear and there was no evidence of lymphovascular invasion. The breast lump showed a tumour histologically similar to colonic tumour. (Figure) Axillary lymph nodes were clear. Further immunochemistry confirmed existence of colonic tumour to be a primary tumour and breast tumour as a metastatic lesion from colon. Post operative recovery was uneventful and the patient remains well a year and half after the operation.

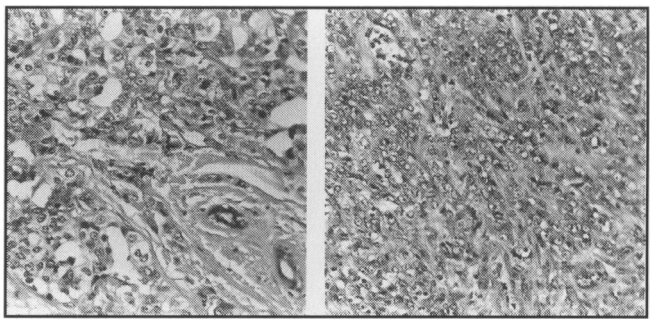

Figure The photomicrograph on the left shows tumour in the breast. One on the right is the tumour in the bowel wall. (25x)

DISCUSSION

Metastatic tumours to the breast are rare.[1] Virchow's statement that "almost all organs which show a strong tendency to develop primary neoplasm are seldom site of metastases" remains true for the breast. Just over 200 cases of breast metastases have been reported in the literature. Metastatic lesions of breast are usually part of a widely disseminated disease, though one case has been reported where a solitary breast metastasis was manifestation of an occult carcinoid of ileum.[2] Malignant melanoma is the most common tumour metastasising to the breast.[3,8] Others in the order of frequency include lung, prostate and stomach. Gastrointestinal carcinoids metastasising to the breast have also been reported.[2,4,5] Though most of the patients were female, a few were males and in such cases the primary tumour was in the

Tyrone County Hospital, Omagh BT79 0AP.

K S Bhirangi, MS, FRCS, Surgical Registrar.

D J D T Pinto, OBE, MB, FRCS, Consultant Surgeon.

Altnagelvin Area Hospital, Londonderry BT47 1SB.

J J Crosbie, MRCPath, Consultant Pathologist.

Correspondence to Mr D J D T Pinto.

prostate.[6, 7] At least four cases of colonic malignancy spreading to the breast have been reported.

A few important points were noted during management of this patient. Though presenting symptoms were related mainly related to breast, the major pathology was in the abdomen. Even though there was no evidence of lymph node involvement, and the liver was clear of metastases and no lymphovascular invasion was demonstrated, the disease had reached the breast.

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Case Report

Thoracic duct cyst in supraclavicular region

M Maruyama, S Kobayashi, Y Kasuga, M Fujimori, S Yokoyama, K Shingu, Y Hama, K Ito, R Kato and J Amano

Accepted July 1997

SUMMARY

A 28-year-old female attended an outpatient clinic in October, 1989, because of a tumor in the left supraclavicular fossa, detected in a health examination. Following exploratory puncture of the tumor which yielded milky-white fluid, suggesting a cyst in the thoracic duct, she was admitted to our department. The cyst was unilocular measuring about 6 cm in diameter, and the fluid content was chyle-rich in lipids. Lymphography demonstrated a lymphatic structure adjacent to the lesion and scattered lymph vessels on the cyst surface. On November 16 the cyst was resected. A restiform structure was observed between the cyst and the thoracic duct, but the presence or absence of communication was unclear. The histological diagnosis was thoracic duct cyst. Thoracic duct cyst occurring in the cervical region is very rare. Our case may provide useful information as to its pathogenesis and the mode of retention of cyst fluid.

INTRODUCTION

Thoracic duct cyst in the cervical region is extremely rare, and there have been only three reported cases.[1-3] We now report this extremely rare case of cervical thoracic duct cyst in the left supraclavicular fossa, including diagnostical details and its pathogenesis.

CASE REPORT The patient was a 28-year-old female with a cervical mass in the left supraclavicular fossa. She had no past history of trauma in the neck or chest. Her family history was unremarkable. On October 5, 1989, she attended our outpatient department because of a tumor in the left supraclavicular fossa. Imaging techniques suggested a cystic mass. Cytodiagnosis by aspiration puncture yielded milky-white fluid. On November 6, she was admitted to the ward for definitive diagnosis and treatment. The tumor measuring 5.4 x 4.6 cm was oval, well-defined and tense with a smooth surface and rather poor mobility. There was no goitre or cervical lymph node enlargement.

Preoperative examination: Routine blood tests, biochemical data and urine examination showed no abnormalities. The appearance of the fluid aspirated from the cyst was milky-white. Analysis of the fluid revealed triglyceride of 911 mg/dl, chylomicron of 3,155 mg/dl and lactic dehydrogenase (LDH) of 1,026 U (Table). Ultrasonography revealed a unilocular cyst with increased posterior sounds and a structure with high-luminance sounds in the fluid. Computerized tomography (CT) scanning showed a cystic lesion with a maximum axis of 6 cm at a site posterolateral to the left sternocleidomastoid muscle and anterolateral to the anterior scalenus muscle; infiltration to the left common carotid artery, left subclavian vein, or surrounding organs was absent. Lymphography of the cervical and chest regions 24 hours after infusion showed a lymphatic structure adjacent to the lesion, scattered lymph vessels on the cyst surface, and lymphatic systems in the bilateral supraclavicular fossa and the anterior mediastinum, suggesting lymph regurgitation or collateral vessel formation (Fig. 1). Radiography of the cyst demonstrated a unilocular cyst but no communication with the thoracic duct or other organs (Fig. 2).

Department of Surgery, Shinshu University School of Medicine, Matsumoto 390, Japan.

M Maruyama, S Kobayashi, Y Kasuga, M Fujimori, S Yokoyama, K Shingu, Y Hama, K Ito, J Amano.

Shinshu University School of Allied Medical Science, Matsumoto 390, Japan.

R Kato.

Correspondence to Dr Maruyama, 108 Torrens Drive, Lakeside, Cardiff CF2 6DR, UK.

TABLE

Analysis of the fluid revealed triglyceride 911 mg/dl, chylomicron 3,155 mg/dl and lactic dehydrogenase (LDH) 1,026 U.

	Fluid of the cyst on admission	*Normal values for seruum*
Appearance	milkly-white	—
Total Protein (g/dl)	5.4	6.8 – 8.2
Uric Acid (mg/dl)	6.8	2.5 – 5.4
Blood Urea Nitrogen (mg/dl)	12.9	6.0 – 20.0
Creatinine (mg/dl)	0.7	0.6 – 1.3
Total Cholesterol (mg/dl)	75	150 – 219
HDL* Cholesterol (mg/dl)	4	39 – 93
Free Cholesterol (mg/dl)	15	30 – 60
Lactate Dehydrogenase (U)	1026	230 – 460
Alkaline Phosphatase (U/1)	108	80 – 260
Amylase (U/dl)	211	60 – 200
Free Fatty Acid (mEq/l)	1.13	0.14 – 0.85
Triglyceride (mg/dl)	911	36 – 130
Phosphatide (mg/dl)	140	160 – 260
Phosphatide Fraction		
Lecithin (%)	82.23	66.5 – 83.1
Sphingomyelin (%)	14.42	0.5 – 24.5
Lysolecithin (%)	3.55	3.1 – 7.9
Lipoprotein Fraction		
LDL (mg/dl)	115	58 – 160
VLDL (mg/dl)	120	0 – 64
Chylomicron (%)	3155	0
Lipid (mg/dl)	1067	390 – 720
Cytodiagnosis	class II	

* High-density lipoprotein
† Low-density lipoprotein
‡ Very low-density lipoprotein

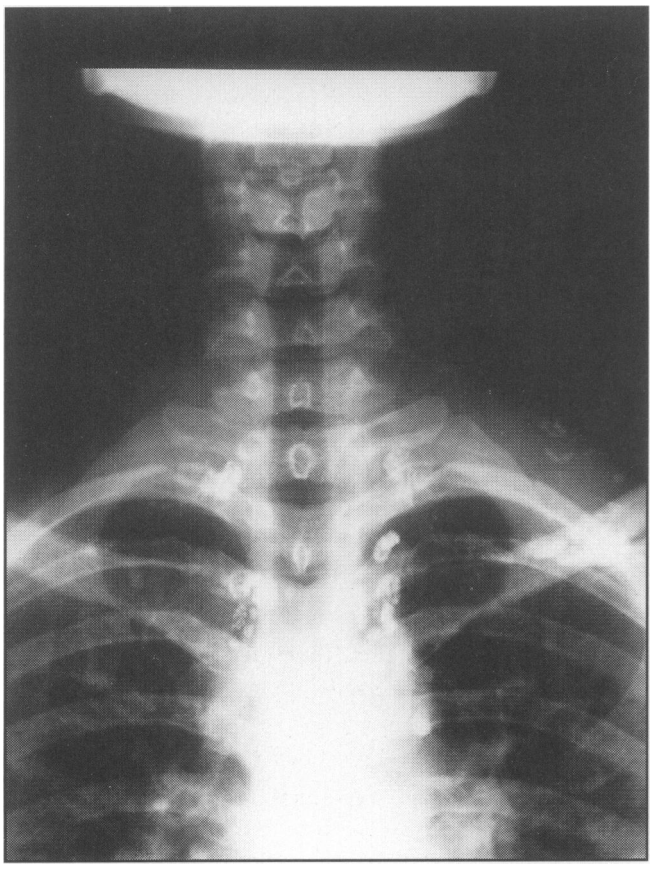

Fig 1. Lymphography of the cervical and chest regions 24 hours after infusion.
Lymphography showed a lymphatic structure toward the lesion, scattered lumph vessels on the cyst surface, and the lymphatic systems in the supraclavicular fossae and the anterior mediastinum, suggesting lymph regurgitation or collateral vessel formation.

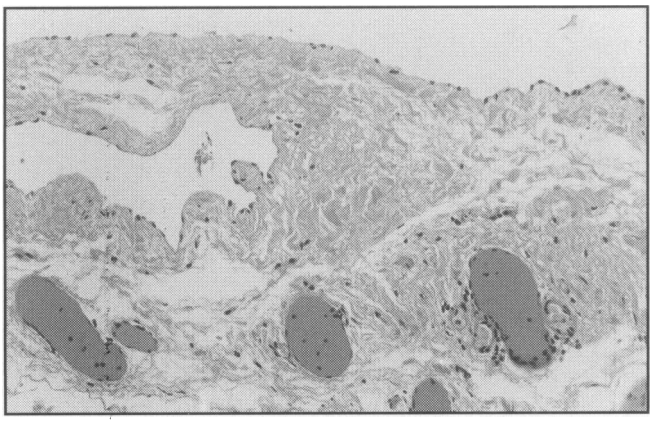

Fig 3. Histopatholpgical findings (Magnification x 100). The cyst was unilocular with an unclear adventitia, lined by a layer of endothelial cells. Smooth muscle bundles were discontinuously observed around the wall of the cyst. There were no findings suggestive of malignancy.

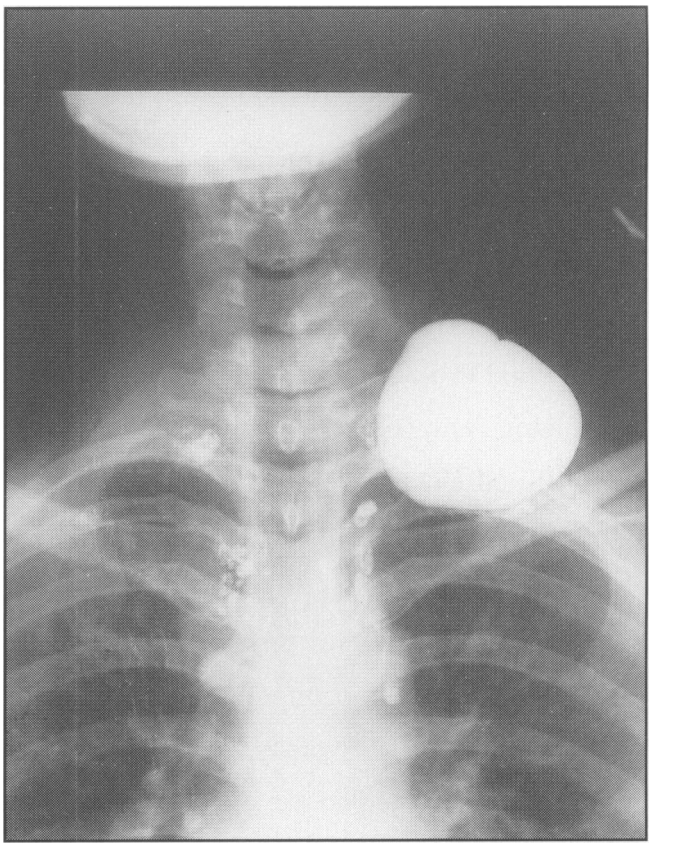

Fig 2. Radiography of the cyst.
Radiography of the cyst demonstrated a unilocular cyst but no communication with the thoracic duct or other organs.

Operative findings: The patient underwent surgery with a preoperative diagnosis of thoracic duct cyst on November 16, 1989. After a collar incision, the platysma and superficial cervical fascia were cut. A cyst containing white fluid, covered with fine lymphatic vessels was observed in the area dorsal-lateral to the sternocleidomastoid muscle. There was no infiltration to the surrounding vasculature or neural system. The cyst was readily dissected. The thoracic duct was observed dorsal to and immediately below the cyst. A restiform structure was present between the thoracic duct and the cyst, but the presence or absence of communication was unclear.

Resected specimen: The tumor was elastic and soft measuring 4.6 x 4.0 x 4.5 cm. There were networks of arterioles, venules and fine lymph vessels on the cyst surface. Granulation-like pieces of tissue were suspended in the cyst fluid. Histopathological findings: The cyst was a unilocular one. It had an unclear adventitia and was lined by a layer of endothelial cells. Smooth

muscle bundles were discontinuously observed around the wall of the cyst. There were no findings suggestive of malignancy. The granulation-like tissues were lymph clots (Fig. 3). Based on these findings, a diagnosis of thoracic duct cyst was made.

DISCUSSION

Well-known cysts in the cervical region include median cervical cyst, lateral cervical cyst and cystic lymphangioma. However, thoracic duct cyst is very rare.[1] In particular, there are only about 20 reported cases of thoracic duct cyst occurring cephalic to the mediastinum. Of them, only three were cysts in the supraclavicular fossa, including one reported in 1965 by Barlow et al. as cystic dilatation of the thoracic duct.[3] The pathogenesis of cyst formation in this area is unknown.

The differentiation of thoracic duct cyst from cystic lymphangioma is most important. In general, cystic lymphangioma is congenital and frequently observed in infants, developing by two years of age in 90% of the cases.[4] The cyst is multilocular and lined by smooth epithelium and contains serous or yellow transparent fluid.[5]

In the present case, the cyst developed at the age of 28 years and was unilocular with a content fluid of lipid-rich chyle. In addition, lymphography showed fine lymph vessels on the cyst surface. These findings strongly suggested thoracic duct cyst. However, such a pathologic state has been noted when cystic lymphangioma became continuous with the thoracic duct due to secondary changes such as inflammation and trauma.[6, 8] In our case, secondary changes of cystic lymphangioma were excluded because of the absence of history of inflammation or trauma in the neck, adhesion of the cyst to the surrounding organs at the time of operation, or inflammatory cell infiltration.

The cyst in this patient may have developed by obstruction of the thoracic duct for some reason at a site where it empties into the left subclavian vein, and a cyst arose from a fragile part of the duct. Concerning the mode of retention of cyst fluid, lymphography showed scattered lymph vessels on the cyst surface, and radiography of the cyst showed a unilocular cyst but no communication with the thoracic duct or other organs. Therefore, retention of chyle in the cyst via parietal lymph tissue cannot be excluded.

The general management of asymptomatic thoracic duct cyst is observation of its progress.[8, 9] There are no reports of malignant changes in asymptomatic cases. Surgery is indicated in patients with clinical symptoms such as pain or compression of the surrounding tissue.[2, 3, 6-8] Repeated cyst puncture and infusion of a sclerotic agent into the cyst may be undertaken. However, the risk of infection increases in the former, and there are no precedent cases in the latter. Further evaluation of this method is needed.

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Case Report

Fluoxetine induced bradycardia in presenile dementia

J Anderson, S A Compton

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We recently treated a 65 year old man with a 5 year history of progressive Alzheimer's Disease who developed persistent bradycardia whilst receiving a course of fluoxetine 20 mg daily for an episode of depression. He had no history or evidence of cardiac disease. The patient was admitted for in-patient assessment of withdrawn behaviour and weepiness in October 1994. Cardiovascular examination at that time was normal with a pulse rate of 84 beats per minute and sinus rhythm. A diagnosis of depression was made and fluoxetine was started at a dose of 20 mg daily. His mood improved and he was discharged to a community EMI residential facility at the end of November 1994. Pulse rates had been recorded to be 80-84 beats per minute at various times prior to the commencement of fluoxetine.

His mood remained settled. In June 1995 he was noted to be persistently drowsy with a pulse rate of 53 beats per minute. This was investigated in the local District General Hospital where his level of consciousness was found to be normal, the bradycardia of 53 beats per minute confirmed with otherwise normal ECG, and no cause for the bradycardia described. He was noted to have low pulse rates in full consciousness over the next months. We readmitted him to the dementia assessment unit, Holywell Hospital, for further investigations in September 1995.

Cardiovascular examination was again normal except for a pulse rate of 41 beats per minute, confirmed as sinus rhythm on ECG. Throughout the period he had been taking fluoxetine 20 mg mane and haloperidol 1.5 mg nocte under supervision. There was no evidence of hypotension throughout the period. We withdrew the haloperidol with no change in pulse rate. Fluoxetine was then discontinued on 13 September 1995. His radial pulse rate increased steadily to 76-8 beats per minute during the two weeks subsequent to discontinuation of fluoxetine, and his systolic blood pressure was consistently higher than 110 mm Hg.

The association was notified using the 'yellow card' system. Six months and one year later his resting pulse rate was 72 beats per minute. Neither fluoxetine nor any other antidepressant or neuroleptic has been reintroduced.

DISCUSSION

There have been case reports associating fluoxetine with bradycardia and syncope (Buff et al. 1991;[1] Ellison et al. 1990;[2] Feder 1991;[3] McAnally et al. 1992;[4] Hussein, 1994[5]). Fisch (1985)[6] in a retrospective ECG study showed that there was an association between fluoxetine and bradycardia but this effect was not noted in the elderly cohort. Many of the reported cases were receiving 40-80 mg of fluoxetine daily for treatment of depressive disorder and were noted to have had a history of heart disease or syncopal episodes. The mechanisms proposed in the literature relate to the effect of increased central nervous system serotonin on the medullary regulation of cardiovascular function (Ellison J M, 1990[2]) and to the reported direct inhibition of oxidative metabolism by fluoxetine which may permit drug interaction (McAnally L E, 1992[4]).

The case we report was treated with 20 mg fluoxetine throughout his episode. He had no history or evidence of cardiac disease, and at no time was he hypotensive or subject to syncope. His pulse rate increased 12-14 days after discontinuation of the drug suggesting a direct association.

Holywell Hospital Antrim BT42 2RJ.

J Anderson, MB, MRCPsych, Senior Registrar, Psychiatry of Old Age.

S A Compton, MB, MRCPsych, Consultant Psychiatrist.

Correspondence to Dr Anderson, Knockbracken Healthcare Park, Belfast BT8 8BH.

We have performed a literature search regarding the possible role of haloperidol in the bradycardia but no such association has been reported.

Fluoxetine should be considered a possible cause of sinus bradycardia in the elderly in the absence of cardiac disease and when given in normal doses.

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Abstracts

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NEW MOLECULAR APPROACHES TO THE DIAGNOSIS OF INFECTION

Millar C B, Curran M D, Moore J E, Xu Jiru, Middleton D, Murphy P G.

Molecular Epidemiology Research Unit, Department of Bacteriology, Belfast City Hospital, Northern Ireland.

Although various clinical signs and symptoms, as well as laboratory markers (e.g. pyrexia, raised white cell count, increase in C-reactive protein and other inflammatory markers) may aid in the diagnosis of infection, bacteriological culture is still the single most important laboratory investigation that is carried out. However, in a variety of infections, conventional bacteriological techniques do not detect the presence of any aetiological agent of infection. For example, in approximately 4-24% of cases of endocarditis, the blood culture investigation is negative and hence no microbiological causative agent(s) is identified. Present detection rates in blood culture of inununocompromised febrile patients with haematological malignancies is approximately 40%, thereby leaving the remaining 60% of blood culture with no detectable aetiological agent of infection. Likewise, of 195 patients with aseptic acute meningitis (i.e. raised white cell count with no bacteriological indications in CSF), a virological agent was only detected in 18 (9.2%). Hence in 90.8% of these cases, the causative organism was not identified by conventional microbiological techniques. Overall, this causes difficulties in the clinical management of such patients presenting with culture-negative infections.

The traditional basis for the identification of pathogenic bacteria has been their isolation or propagation in the laboratory. Biochemical, morphological and serological tests usually require growth of the organism. Reliance on these parameters may have significantly limited the awareness of true bacterial diversity and is impractical in many situations.

The rapidly expanding use the polymerase chain reaction (PCR) coupled with the use of I6S rRNA sequences for phylogenetic, evolutionary and diagnostic studies offers an opportunity for alternative approaches. Such an approach has led for example to the identification of previously uncharacterised pathogens, in bacterial angiomatosis in leukaemia. Hence, the study of such newly characterised pathogens with broad-range 16S rRNA PCR oligonucleotide primers necessitates sequence determination, so that specific PCR protocols may be developed for individual pathogens that may be targeted in such circumstances.

Various different PCR broad-range I6S rRNA specific primer pairs have been screened with a wide variety of Gram-positive and Gram-negative flora. Identification of each bacterial strain was confirmed prior to PCR by the use of the appropriate API identification test strip (Biomerieux, France). Each I6S rRNA amplicon was further characterised by generating a database of SSCP profiles. To date, 41 culture-negative cerebrospinal fluid (CSF) specimens from patients with suspected meningitis have demonstrated bacterial presence in 7 (7/41; 17%) and are being currently sequenced in order to establish the bacterial identity of the infecting organism.

Overall these new approaches to difficult diagnosis will to help give a rapid "real-time" laboratory diagnosis of culture-negative infection and thereby aid the clinician in the clinical management of such patients.

BURKHOLDERIA CEPACIA COLONISATION IN PATIENTS WITH CYSTIC FIBROSIS (CF)

Moore J E,[1] Elborn J S,[2] Xu Jiru,[1] Curran M D,[3] Murphy P G.[1]

[1]Molecular Epidemiology Research Unit, Department of Bacteriology, Belfast City Hospital, [2]Northern Ireland Adult Regional Cystic Fibrosis Centre, Department of Respiratory Medicine, Level 8, Belfast City Hospital, [3]Northern Ireland Tissue Typing Laboratory, Belfast City Hospital, Belfast.

Polymerase chain reaction (PCR) amplification has proven useful in the detection of a number of

respiratory pathogens, including *Mycobacterium tuberculosis, Pneumocystis carinii and Chlamydia pneumoniae*. The main success of such molecular diagnostic approaches has been where there has been an underlying problem relating to the conventional culture and diagnosis of these organisms, e.g. speed, nutritional requirements, etc. *Burkholderia cepacia* is a Gram-negative rod, which can lead to a rapidly fatal condition in the CF lung. Recently there has been a call for an improvement in the ability to detect *Burkholderia cepacia*, in particular to establish specific and sensitive methods for better identification of B. *cepacia* in clinical specimens using diagnostic molecular techniques, so that a clearer understanding of the problems relating to cross-infection and epidemiology of this organism is known.

Prior to a rapid decline in pulmonary function of the CF lung, B. *cepacia* may exist at very low numbers which are non-detectable using conventional bacteriological culture techniques. Employment of sensitive molecular DNA amplification techniques has demonstrated the presence of B. *cepacia* in the lungs of CF patients, which are regarded as non-cepacia colonised. From time to time, conventional bacteriological techniques have misidentified other Gram negative organisms such as *Stenotrophomonas maltophilia* as B. *cepacia*, due to colonial and phenotypic similarities. In addition, due to close phylogenetic relationships, separation of closely-related taxa is very difficult with conventional techniques but is of extreme importance, as categorisation with B. *cepacia* infection has major significance in terms of infection control, psychosocial issues and patient management.

Various DNA extraction protocols have been investigated with CF sputum in order to optimise the recovery of chromosomal DNA from B. *cepacia* in sputum prior to PCR amplification. Using a modified PCR method, all confirmed culture-positive isolates of B. *cepacia*, as well as all atypical colonies, from the Northern Ireland Adult Regional Cystic Fibrosis Centre, Belfast City Hospital, were confirmed using this methodology. In addition, on examination of sputum from CF patients who were classified as culture-negative for B. *cepacia* by conventional culture techniques, some were shown to be positive for this organism by PCR. Of three centres examined, we detected 12/13 (92.3%) PCR-positive/culture-negative patients within the Belfast centre and at the Manchester Adult CF Centre, 13/18 (72.2%) patients were PCR-positive/culture-negative. At the Cardiff CF centre, where there is an extremely low incidence of B. *cepacia*, we were unable to detect B. *cepacia* by PCR in 31/31 culture-negative sputa examined.

These studies, therefore, demonstrate the presence of probably low numbers of organisms in the CF lung and hence the need for further investigations in order to ascertain the clinical significance of the molecular detection of low numbers of B. *cepacia* and thus help to direct appropriate cross-infection control procedures, as well as other factors associated with B. *cepacia* colonisation/infection.

CASE REPORT: HAEMOCHROMATOSIS AND COELIAC DISEASE

Feeley K M, Heneghan M A, Little M P G, McCarthy C F.

Departments of Pathology and Gastroenterology, University College Hospital, Galway.

A 61 year old female presented at time zero with malabsorption and a diagnosis of Coeliac Disease was made after the appropriate investigations. Haemoglobin at this time was 11 g/dl and serum ferritin was moderately raised at 462 ng/ml. Liver function tests were normal. Gluten-free diet was instituted and the patient remained well for 3 years, until she re-presented with fatigue. Haemoglobin was now 15.6 g/dl and serum ferritin was grossly elevated at >1000 ng/ml; liver function tests also were grossly abnormal. Liver biopsy confirmed haemochromatosis. The patient has remained well since over a 5 year period on gluten-free diet and with regular venesection. It is possible that treatment of Coeliac Disease in this patient resulted in the manifestation of underlying hereditary haemochromatosis and that Coeliac Disease has prevented against the severe end-organ damage of haemochromatosis. Coeliac Disease is associated with several HLA haplotypes and recent evidence has suggested a link between it and certain non-HLA loci, the most common being on chromosome 6.30 cM telomeric from HLA. Hereditary haemochromatosis is thought to be due a mutation in a gene on chromosome 6 recently identified to be 6 eM telomeric from HLA and termed HLA-H. It is possible that these two loci (HLA H and the Coeliac-associated non-HLA locus) also are linked and that heterozygosity for HLA-H may be a cause of the liver damage seen frequently in Coeliac Disease.

P53 STAINING IN LYMPH NODE METASTASIS IN PRIMARY BREAST CANCER

O'Donnell M, Madden M

Department of Histopathology, Altnagelvin Hospital, Derry.

Nuclear P53 immunoreactivity has usually been considered to be an indirect indication of P53 gene missense mutations and has been described as P53 over-expression/accumulation.

In invasive breast cancer P53 over-expression is usually associated with large tumour size, ductal type, high histological and nuclear grade, lack of oestrogen receptors, high proliferative activity, expression of epidermal growth factor receptor and aneuploidy. Several investigators have suggested the possible prognostic value of p53 immunohistochemical expression in breast carcinomas; however, the result of these studies in breast carcinomas are at least partly in conflict and it is difficult to compare the result obtained by different studies because of methodological and technical diversities.

Twenty six breast cancers and their concurrent lymph node metastasis were selected from archival material over a one year period from 1986 to 1987 for P53 staining. The method employed included microwave antigen retrieval, and the antibody used was MABD07 from DAKO. The results of the staining in 26 samples of primary breast cancer and their concurrent lymph node metastasis were compared. Brown/black nuclear staining of the tumour cells is regarded as positive and they scored semiquantitively for both the intensity and proportion of tumour cells stained. The proportion of cells stained were given scores from 0 to 4 (1% to 25% = 1, 26% to 50% = 2, 51% to 75% = 3 and 75% or more = 4). The intensity was scored 1 to 3. The slides were independently scored by two people and any discrepancies were resolved with subsequent consultation.

In 14 of the 26 cases the appearances matched exactly. All other cases showed only 1 point difference in either the intensity or proportion between the primary lesion and lymph node metastasis. Of the primary breast tumours only two were negative, although their concurrent metastases showed grade 1 positive staining for both intensity and proportion of cells stained. One breast cancer scoring 1 for intensity and proportion of cells stained was completely negative in the lymph node metastasis.

Bhargava et al[1] demonstrated complete concordance between P53 immunopositivity of primary invasive lesions and concurrent lymph node metastasis in 24 cases examined. Davidoff et al[2] demonstrated identical expression levels of P53 in primary breast tumours and lymph node metastasis by sequence analysis in 11 cases. In the latter study only cases showing intense wide-spread immunostaining, however, were selected.

With microwave antigen retrieval which lowers the threshold for immunohistological detection of antigens there is still striking concordance between the expression of P53 in primary breast carcinomas and their lymph node metastases, but further evaluation of minor differences by molecular studies would improve our understanding.

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COLORECTAL CANCER REPORTING IN CORK: AN AUDIT

Loane J.

Histopathology Department, Cork University Hospital, Wilton, Cork.

We used the criteria applied by Bull et al. in the recent audit of Welsh pathology departments to audit our own reports for the year 1993. Our results compared favourably with those of the Welsh laboratories, although there are weaknesses in applying their criteria directly. The results overall leave room for improvement, and highlight specific areas which need particular attention. The use of audit is a valuable tool in improving the quality of pathology reports. Proformas may be useful in reducing "errors of omission". Clinicopathologic co-operation is important in defining useful information to be included in pathology reports.

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CHRONIC HCV LIVER DISEASE: HISTOPATHOLOGICAL DIFFERENCES BETWEEN ANTI-D AND BLOOD TRANSFUSION ACQUIRED GROUPS

Loane J, Sheehan M, Doyle C T, Hogan J, Whelton M,*Kenny-Walsh E.

Departments of Pathology and Hepatology*, Cork University Hospital, Wilton, Cork.

The aim of this study was to compare the severity of liver disease in two patient groups with chronic HCV infection. The study population included 21 females infected with HCV via contaminated anti-D immunoglobulin and 21 age-matched patients (14 female, 7 male) with blood transfusion acquired HCV infection. All of the anti-D patients showed infection with type 1b HCV genotype. The blood transfusion group showed several different HCV genotypes but with a predominance of type 3(n=9) and type 2b(n=5). Liver biopsy taken from patients was formalin fixed and stained with H+E, PAS, PAS-D, Massons Trichrome, Perls and Reticulin stains. Histological assessment of the degree of disease activity was carried out by looking at necroinflammatory disease activity (grading) and architectural features (staging), using the semiquantitative method of Ishak et al.[1] Accordingly the two patient groups were compared for the following parameters: interface hepatitis, confluent necrosis, spotty necrosis/ apoptosis, portal inflammation and architecture. Statistical analysis of the resulting scores achieved for each biopsy was carried out using the non-parametric paired t-test (Wilcoxin signed rank test). This indicated a statistically significant difference between the two groups for piecemeal necrosis (p=0.002) and stage (p=0.0001) with greater histological abnormality seen in patients with blood transfusion acquired chronic HCV.

We suggest possible explanations for this difference between the two patient groups may include differences in viral load at the time of initial infection or differences in the pathogenic effect of infection with viral genotypes of HCV.

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CRYPTOSPORIDIOSIS – AN IMPORTANT ENTERIC DISEASE IN HIV POSITIVE PATIENTS

Nolan M, Crowley B, Keane C T, Mulcahy F, O'Briain D S

Department of Microbiology, St James's Hospital, Dublin 8.

Cryptosporidium is increasingly being recognised as an important enteric pathogen both in the general population and especially in the immunosuppressed. We studied crytosporidial infection in HIV positive patients to determine the pathology and demography of infection in this group. Patients were HIV-positive and attending the Genitourinary Medicine service between 1992 and 1996. They had tested positive for enteric cryptosporidiosis on intestinal biopsy and/or faeces testing. Cryptosporidia were identified by intestinal biopsy using H/E staining and electron microscopy in selected cases. Faeces testing was performed using phenolauramine staining and subsequent modified acid-fast, or kinyoun staining. Twenty-one patients were identified (17 male; 4 female). The age group was evenly distributed from 25-45 years and risk group showed a slight preponderance in the I.V.D.A group – a pattern largely similar to the HIV group as a whole. Ten of the twenty-one patients had both biopsy and faeces testing performed – all tested positive by both means, showing good correlation between histological and microbiological findings. Fifteen patients reviewed had greatly reduced CD4 counts (all had counts less than 60 per c.m.m and nine less than 10 c.m.m). All positive biopsies in our patient group were from the upper GIT (5 gastric; 7 duodenal; 2 biliary tract). Some patients were positive at multiple sites but two patients had positive gastric biopsies, with no evidence of the organism in the duodenum. In some cases the organisms colonised the epithelial surface but in the majority their presence was associated with tissue damage and an inflammatory infiltrate, which was most severe where the number of organisms was greatest. Thus, cryptosporidia can be effectively identified by phenolauramine faecal staining and/or biopsy with H/E staining. We conclude that in the severely immunocompromised the organism is seldom simply a surface coloniser but is frequently responsible for substantial epithelial damage and inflammation.

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Abstracts

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COMPLEX VISUAL HALLUCINATIONS IN THE ELDERLY WITH MACULAR DEGENERATION

S White, A J Jackson & J Logan

Department of Ophthalmology, Royal Victoria Hospital, Belfast.

Objective: To evaluate the incidence and characteristics of complex visual hallucinations in an elderly population with visual impairment from macular degeneration.

Method: The study was carried out on 100 consecutive patients referred with visual impairments to the Low Visual Aid Clinic at the Royal Victoria Hospital. A detailed questionnaire was administered to each patient, including questions to elucidate their general health, alcohol-related or psychiatric problems. Questions regarding the nature of their ophthalmic disease, visual acuity and the time-course of their deterioration were also asked. Most importantly there were questions on the characteristics and frequency of any spontaneous visual phenomena they experienced.

Results: The patients had a mean age of 78.9 years with a visual acuity range of 6/12 part to 1/60. Females predominated. Thirty-four of the 100 patients experienced visual hallucinations of some type and 22 of these were complex (formed hallucinations) in type. Of those patients with complex hallucinations the most common percept was of animals of various types, and these were experienced by 12 patients. Other patients saw faces or people and a few patients saw inanimate objects.

Conclusions: We concluded that complex or formed visual hallucinations are a common phenomenon in elderly people with visual impairment from macular degeneration. Many patients discussed their experiences for the first time with us and were relieved not to be considered 'mad'. We felt that it would always be useful to question and reassure patients with blindness about spontaneous visual phenomena.

OPHTHALMIC FINDINGS IN FRAGILE X SYNDROME

P W Sellar, J S Wenselaar, J R M Cruysberg

Ophthalmology Department, Maasziekenhuis, Boxmeer, The Netherlands.

Method: We were able to trace 36 patients diagnosed as having Fragile X syndrome and to examine them for ophthalmic abnormalities.

Results: Of the 36 Fragile X syndrome patients (aged 3-50) (33 male: 3 female) studied in this survey, significant refractive abnormalities were found in 42%. These consisted mainly of anisometropic defects (11%) and astigmatism (14%). Most patients were hypermetropic (83%). Only one myopic patient was found (3%).

Significant ophthalmic abnormalities were found in 55% of the patients. Strabismus was present in 33% with slightly more esotropias than exotropias. Cataract was found in two of the older patients (6%). One patient had a major optic disc abnormality (3%) and another had congenital nystagmus (3%). Eight (22%) were photosensitive or avoided direct eye contact.

Conclusions: Although ophthalmic abnormalities are not diagnostic for the Fragile X syndrome, an awareness of the frequent association of Fragile X with hypermetropic astigmatism, anisometropia and strabismus may help lower the threshold of suspicion for the syndrome when investigating infants who are thought to be mentally retarded. Presenile cataract may occur more frequently than previously appreciated over the age of 40.

ANTICOAGULANTS IN CATARACT SURGERY

P W Joyce & J R Villada

St Helens Hospital, St Helens, Merseyside.

The continuation of anticoagulants during cataract surgery is controversial. Several reports have suggested no change is required. A questionnaire

was sent to all European Eye Surgeons who had attended the European Society of Cataract and Refractive Surgeons Meeting in Amsterdam in 1995 enquiring about their approach.

Two-hundred-and-sixty-five questionnaires were analysed. Thirty-six per cent of respondents made no change. A further 36% stopped the anticoagulants. Twenty-two per cent altered their therapy to heparin, 2% gave a vitamin K injection and 4% altered the treatment according to the patient's general condition.

The following guidelines are suggested:

1. Check for International Normalised Ratio (INR) at least four hours prior to surgery to ensure the level is within the therapeutic range.
2. For patients who have a mechanical heart valve the INR should not be less than 1.8.
3. If anticoagulants must be discontinued, this should be done no longer than three days prior to surgery and recommenced on the day of surgery after cataract extraction.
4. A corneal section is advisable.

THE ROLE OF TACROLIMUS (FK506) IN THE TREATMENT OF POSTERIOR UVEITIS

C M L Sloper, R J Powell & H S Dua

Department of Ophthalmology, University Hospital, Nottingham.

The efficacy and side-effects of Tacrolimus, a potent immunosuppressive macrolide antibiotic, have been assessed in the treatment of sight-threatening posterior uveitis. Five patients, who required systemic immunosuppression with Tacrolimus for control of uveitis, were followed. Three patients had Behçet's Disease, one had idiopathic retinal vaculitis and one had microscopic polyangiitis. Three patients were started on Tacrolimus as cyclosporin was failing to control their ocular inflammation and they were experiencing side-effects. Two patients were changed from cyclosporin to Tacrolimus due to cyclosporin toxicity. Two patients with Behçet's Disease showed a modest improvement in visual acuity in the affected eye and had no disease activity in the other eye. One patient with Behçet's Disease showed a marked improvement in best-corrected visual acuity from 1/60 to 6/24. The patient with microscopic polyangiitis was symptomatically improved and there was no progression of the posterior uveitis. The patient with retinal vasculitis showed regression of neovascularisation on Tacrolimus. Side-effects were less troublesome than with cyclosporin. It is concluded that Tacrolimus (FK506) has a useful role as an immunosuppressive agent for the treatment of posterior uveitis, especially in patients with cyclosporin intolerance or where cyoclosporin has failed to control the inflammation.

THE CONJUNCTIVAL IMMUNE RESPONSE TO ENCOUNTERED ANTIGEN

P D Gormley, A O R Powell-Richards, H S Dua

Department of Ophthalmology, Queen's Medical Centre, Nottingham.

Purpose: Immunomodulation via mucosa associated lymphoid tissue of gut and bronchus is a recently recognised concept. It is believed that tolerance is mediated by the CD8 + lymphocyte subset. The conjunctival mucosa can also induce tolerance to antigen instilled into the conjunctival sac but the cellular immune response in this tissue has not yet been studied. The purpose of our study was to determine the kinetics of lymphocyte subsets in conjunctival associated lymphoid tissue (CALT) induced tolerance.

Methods: Ten female adult Lewis rats were studied. Five rats (group 1) received one drop (5 µl) of retinal S antigen (500 ug/ml in phosphate buffered saline, PBS) instilled on to the lower forniceal conjunctiva twice daily for 10 consecutive days. Five rats (group 2) received PBS only and served as controls for the experiment. Two days after the last instillation the rats were sacrificed. The orbital tissue was snap frozen and embedded in cryomatrix. 5um sections were cut with a cryostat and prepared for immunohistochemical staining. A panel of monoclonal antibodies was used: CD3, CD4, CD8, CD25 and ED2. The number of positive cells were counted through the entire section including palpebral, forniceal and bulbar conjunctiva of both upper and lower eyelids.

Results: There was a significant increase in the number of CD8 + lymphocytes in the conjunctiva of animals receiving S antigen when compared to control animals ($p<0.02$).

Conclusions: Topical instillation of retinal S antigen causes a significant increase in the CD8 + lymphocyte subset in the conjunctival mucosa. This effect may be involved in the induction of tolerance to encountered antigen.

THE VALUE OF CORNEAL TOPOGRAPHY IN THE MANAGEMENT OF GRAFTED KERATOCONUS

S E Johnston, D G Frazer & A J Jackson

Department of Ophthalmology, The Royal Victoria Hospital, Belfast.

Objective: To assess the impact that corneal mapping has had on post-keratoplasty rehabilitation time and visual outcome in grafted keratoconic patients.

Methods: Records of 20 keratoconic patients who underwent penetrating keratoplasty (22 grafts) between 1992 and 1996 were identified and reviewed. Nine grafts were managed prior to corneal mapping being available and had suture removal guided by retinoscopy only. The remaining 13 had sequential corneal mapping as an intrinsic part of their management in planning selective suture removal.

Results: Selective suture removal assisted by corneal mapping improved post-operative management. The mean astigmatism at first definitive refraction was substantially reduced and all patients achieved corrected visual acuity of 6/12 or better. The mean time for visual rehabilitation was appreciably reduced. The number of interventions for refractive suture removal was similar for each group, but the removals in the mapping group took place over a shorter period of time.

Conclusions: Post-operative selective suture removal assisted by corneal mapping in keratoconic patients undergoing uncomplicated penetrating grafts allows more rapid visual rehabilitation and substantial reductions in post-operative astigmatism as measured at first definitive refraction.

THE DISTRIBUTION OF VASCULAR ENDOTHELIAL GROWTH FACTOR (VEGF) AND ITS RECEPTORS IN OCULAR NEOPLASMS

D A C Simpson, A W Stitt, T A Gardiner, C Mahon & D B Archer

Department of Ophthalmology, The Queen's University of Belfast.

Purpose: To study the gene expression of vascular endothelial growth factor (VEGF) and its cognate tyrosine kinase receptors, Flt-1 and KDR, in intraocular tumours. Tumour-related alterations in VEGF/VEGF-receptor expression have also been examined in spatially separated, uninvolved retina of the same eyes.

Methods: Formalin-fixed archived eyes previously diagnosed as having retinoblastoma (n=10) or choroidal melanoma (n=10) were embedded in paraffin wax and sectioned. Non-neoplastic enucleated eyes were used as controls. Sections were processed for *in situ* hybridisation and probed using digoxygenin-labelled sense and antisense riboprobes to $VEGF_{165}$, Flt-1 and KDR.

Results: In neoplastic eyes, high levels of VEGF gene expression were observed within the vascularised regions of the tumours while the adjacent retina showed increased VEGF levels when compared to normals. Flt-1 and KDR gene expression occurred in VEGF-expressing cells in normal eyes while the endothelium of retinal blood vessels stained most strongly with Flt-1. Within the intraocular tumours, VEGF-receptor mRNA was evident in the endothelial cells and also in cells close to the vessels while in the adjacent retina, Flt-1 and KDR levels were elevated over normal, most strikingly in ganglion cells.

Conclusions: VEGF, Flt-1 and KDR are expressed by neural, glial and vascular elements within normal human retina. Intraocular tumours demonstrate a high level of VEGF and VEGF-receptor expression, however, within spatially separate retina in the same eyes; expression of these genes is also elevated. This increased expression of VEGF-receptors by several retinal cell types may be in response to high intraocular levels of VEGF, a phenomenon which could have relevance to neoplasm-related ocular neovascularisation pathologies.

MORBIDITY AND MORTALITY IN PATIENTS WITH OCULAR-MOTOR NERVE PALSIES

M Murphy & A B Page

Department of Ophthalmology, The Royal Victoria Hospital, Belfast.

We reviewed the notes of all cases of ocular motor nerve palsy that presented to this hospital 10 years ago. Twenty-five cases of idiopathic adult cranial nerve palsies were identified.

(VI = 17, III = 6, IV = 2). The patients were contacted again to record their subsequent medical history.

The most common risk factors known at the time of presentation were smoking, hypertension, ischaemic heart disease and stroke. The most common illnesses to develop were myocardial infarction and angina, but others included hyperlipidaemia, stroke, hypertension, peripheral vascular disease and diabetes.

Nine patients had died over the 10 year period. Using abridged life expectancy tables the normal years of life expectancy for each case was calculated based on age at presentation. Eight deaths occurred before what would be normally expected by an average of 2.8 years (one death occurred just as would be expected by the normal range tables).

In conclusion, we have identified that adult idiopathic ocular motor nerve palsies are associated with significant morbidity and mortality.

UTILISING POLYMORPHIC MARKERS IN THE GENETIC ANALYSIS OF DIABETIC RETINOPATHY

K M Warpeha, A E Hughes, W Xu* and U Chakravarthy§

Department of Medical Genetics and §Department of Ophthalmology, Queen's University, Belfast; *Cruciform Project, London.

Retinopathy is a vascular disease which primarily affects the capillaries and arterioles of the retinal circulatory bed. Individuals with NIDDM (Non-Insulin Dependent Diabetes Mellitus) or IDDM (Insulin Dependent Diabetes Mellitus) can be affected by this condition. While there are associations between hyperglycaemia and retinopathy, some individuals with very poor dietary control never develop retinopathy.

It is thus thought that there are genetic factors influencing the occurrence of retinopathy. In a Northern Ireland population we have examined "controls," individuals with diabetes (NIDDM or IDDM) for a long period of time (>16 years) who developed no signs of retinopathy; and "affecteds" who have severe retinopathy. Several gene families which may be important in determining retinopathy susceptibility were assessed for polymorphisms. Polymorphisms are variable DNA sequences which can be used to track the inheritance of a particular sequence of a chromosome through a family.

The nitric oxide synthase (NOS) gene family (vasodilators) and the endothelin (EDN) gene family (vasoconstrictors) were analysed for polymorphic regions. Numerous markers were determined for genetic analysis. The NOS genes in particular have several microsatellite (short repeat sequence) markers which are highly polymorphic. In the Northern Ireland patients both the NOS2 (inducible form) marker and the NOS3 (constituitive endothelial) marker were highly polymorphic. Preliminary data with these two markers suggest that there are more rare alleles appearing in the control population when directly compared to the affected individuals.

ADVANCED GLYCATION ENDPRODUCT FORMATION ON THE VITREOUS COLLAGEN NETWORK IS INCREASED DURING DIABETES AND HYPERGLYCAEMIA

Moore J,† Stitt A W,§* Simpson D,§ Sharkey J A,† Early O,† Vlassara H,* Archer D B§

§ Department of Ophthalmology, The Queen's University of Belfast, Northern Ireland, † Eye Department, The Royal Victoria Hospital, Belfast, Northern Ireland & * The Picower Institute for Medical Research, Manhasset, New York, USA.

Advanced glycation endproducts (AGES) form irreversible crosslinks with long-lived proteins and have been shown to accumulate in tissues at an accelerated rate in diabetes. Using an AGE-specific ELISA we have investigated AGE formation in vitreous samples obtained after 3-port vitrectomy on non-diabetic and diabetic patients. In addition, we have utilised an *ex vivo* model of vitreous-AGE formation in which whole porcine vitreous humour was incubated in high glucose, high glucose with aminoguanidine, or normal saline for up to 8 weeks.

AGEs occurred at significantly increased levels in vitreous collagen from diabetics when compared to non-diabetic controls ($p<0.05$). As observed ultrastructurally using immunogold labelling, AGEs formed on porcine vitreous collagen fibrils after incubation in high glucose. Using SDS-PAGE and immunoblotting with type II collagen antibody, AGE-formation correlated with increased cross-linking of the high glucose-

incubated vitreous collagen while aminoguanidine inhibited this process. Furthermore, the molecular weight of vitreous hyaluronan decreased with glucose incubation, a phenomenon also inhibited by aminoguanidine.

This study suggests that AGEs form on vitreous collagen as a consequence of diabetes and hyperglycaemia. Advanced glycation and AGE-crosslinking of the vitreous collagen network and an accompanying shift in hyaluronan molecular weight may help to explain the vitreous abnormalities characteristic of diabetes.

THE EFFECT OF CHLOROQUINE ON RECEPTOR MEDIATED ENDOCYTOSIS IN RPE CELLS

Mahon G J, Connolly J, Gardiner T A and Archer D B

Receptor mediated endocytosis (RME) is a cellular function regulating the uptake of exogenous molecules from the environment via plasma membrane derived vesicles. Chloroquine has been reported to interfere with this function. This study investigates the effect of chloroquine on the RME of insulin in cultured retinal pigment epithelial (RPE) cells. 10 nm gold particles conjugated with insulin were presented to RPE cells in the presence or absence of chloroquine and the cells examined in the electron microscope. Preliminary results indicate that there is a depression of RME in the presence of chloroquine. Such inhibition of RME may reflect the ability of chloroquine to elevate the functional acidic pH of the endosome. Alkalisation of the endosome would interfere with normal receptor recycling and lead to depletion of insulin receptors at the plasma membrane.

SMALL VERSUS LARGER INCISION COMBINED CATARACT EXTRACTION WITH TRABECULECTOMY. HOW SUCCESSFUL ARE THEY?

S J Houston & D C Frazer

Department of Ophthalmology, The Royal Victoria Hospital, Belfast.

Small incision cataract surgery by phacoemulsification offers the theoretic advantage of reduced conjunctival dissection and decreased post-operative inflammation. These factors may reduce excessive wound healing and decrease the risk of subsequent filtering bleb failure in combined cataract extraction with trabeculectomy procedures. There is some evidence to indicate smaller scleral incision in combined procedures is associated with better intraocular pressure (IOP) control.

We reviewed our clinical experience of a consecutive series of patients who underwent combined larger incision (10 mm), n = 21, or small incision (5 mm), n = 23, cataract extraction with trabeculectomy. Success was defined as an IOP 5-21 mm/Hg range with or without glaucoma medications at one year follow-up and no additional glaucoma surgery. Ninety-eight per cent were successful, one patient requiring re-operation for IOP control. Fifty-seven per cent of large incision group and 91% of small incision group had IOP control without post-operative medication at one year follow-up. Mean IOP was similar during the first post-operative day and stabilised at 2-3 months follow-up in both groups. The complication rate was 33-43%. Posterior capsule opacification within one year of surgery and hyphaema were the most common complications.

Selection bias invalidates use of formal statistical comparisons between groups. While acknowledging this our study suggests small and larger incision combined procedures are effective in controlling IOP and restoring vision. Interestingly more patients had IOP control without medication in the smaller incision group which may suggest better filter functioning.

THE EFFECT OF CHLOROQUINE ON NITRIC OXIDE PRODUCTION IN RETINAL PIGMENT EPITHELIAL CELLS *IN VITRO*

J Connolly, G J Mahon, T A Gardiner & D B Archer

Retinal pigment epithelial cells (RPE) have been found to produce nitric oxide (NO) in response to cytokine exposure *in vitro*. NO is involved in a diverse range of physiologic and pathologic processes. It functions as a neurotransmitter, operates as a vasodilator, is involved in modulating inflammation and can oxidise many compounds. Chloroquine has a number of properties which may influence the production and action of NO in the RPE.

The effects of tumour necrosis factor-α (TNF-α), interferon-γ(IFN-γ) and lipopolysaccharide (LPS) on NO production in vitro were examined individually, in combination and in the presence

of chloroquine. Stimulation of NO production was achieved by a combination of the cytokines in the presence of chloroquine. However chloroquine appeared to inhibit the action of TNF-α.

These results show that although chloroquine may be able to inhibit the effect of individual cytokines on RPE cells, the combination of chloroquine with various cocktails of cytokines appears to promote NO release. This effect of chloroquine may be mediated through interference with the trafficking of cytokine receptors.

THE ROLE OF ADVANCED GLYCATION IN DIABETIC RETINOPATHY

Alan W Stitt

Department of Ophthalmology, The Queen's University of Belfast, Northern Ireland.

The pathogenesis of diabetic retinopathy remains largely unknown, although advanced glycation endproducts (AGEs), formed from the nonenzymatic glycation of proteins and lipids with reducing sugars, have been implicated in many diabetic complications. Recent studies suggest that the cellular actions of AGEs may be mediated by AGE specific receptors (AGE R). We have examined the immunolocalization of AGEs and AGE-Rs in the retinal vasculature of streptozotocin (STZ) diabetic (Db) rats at 2, 4 and 8 months post-induction as well as non-diabetic rats (infused with AGE-Albumin for 2 weeks). Age and sex matched non diabetic rats and a group which had been injected with unmodified albumin were also examined. The retinae were sectioned or the vasculature was isolated by trypsin digestion. Using a monoclonal antibody specific for AGEs and polyclonal antibodies raised against the AGE-receptor proteins, immunoreactivity (IR) was examined in the complete retinal vascular tree. In diabetic rats, there was a progressive increase in AGE-IR after 2 and 4 months of diabetes, with most AGEs appearing basement membrane (BM) associated. After 8 months of diabetes, rats showed intense AGE-IR in the pericytes, smooth muscle, endothelium and BM of the retinal vessels. In AGE-infused rats, AGE-IR was most intense in smooth muscle cells and pericytes, while generally, the BM was much less immunoreactive than in the Db group. The retinae of normal and albumin infused rats were largely negative for AGE-IR. AGE-Rs were localized to the vascular endothelium, pericytes and smooth muscle of normal rat retinae, and this distribution did not alter with AGE infusion or diabetes. This study indicates that retinal vascular smooth muscle cells and pericytes preferentially accumulate AGEs after long term diabetes or short term AGE infusion. The co-localisation of AGEs and AGE-Rs in the retinal vascular cells suggests that a receptor mediated interaction with AGEs may be involved in the pathogenesis of diabetic retinopathy.

LOCALISATION OF A GENE FOR CENTRAL AREOLAR CHOROIDAL DYSTROPHY TO CHROMOSOME 17P

Andrew J Lotery†, Kevin T Ennis, Giuliana Silvestri†, Suzanne Nicholl, David McGibbon, Alan D Collins† and Anne E Hughes

Department of Medical Genetics and †Department of Ophthalmology, The Queen's University of Belfast BT9 7AB, Northern Ireland, UK.

Central areolar choroidal dystrophy (CACD) is a rare inherited retinal disease which causes progressive profound loss of vision in patients from their 4th decade onwards. We have identified a Northern Ireland family with eighteen affected individuals in 3 living generations. We have performed a total genome search and demonstrated linkage of CACD in this family to chromosome 17p (multipoint Zmax = 6.3 at D17S1832). The genes for phosphatidylinositol transfer protein (PITPN), retinal guanylate cyclase (GUC2D), β-arrestin 2 (ARRB2), pigment epithelium-derived factor (PEDF) and recoverin (RCV1) map to this region and are candidate genes for retinal disease. Analysis of the coding region of the PITPN, GUC2D and PEDF genes failed to reveal any mutations in this family. The ARRB2 and RCV1 genes were excluded as the cause of CACD by fine mapping of the critical CACD gene locus.

The mapping of CACD to this region represents a new locus for this disease. It demonstrates that CACD may be genetically heterogeneous and provides a new locus for candidate genes for macular dystrophies and also for age related macular degeneration.

VISUAL EVOKED POTENTIALS AND STEREOPSIS IN DUANE'S SYNDROME

Sloper J J, Garnharn C, Plunkett D, Dyason R and Gous P.

Moorfields Eye Hospital and University Hospital, Nottingham.

Patients with Duane's Retraction Syndrome have restricted eye movements, but many of them are able to maintain binocular function by using an abnormal head posture to compensate for this. This study has examined whether this has any effect on the development of binocular visual function.

Visual acuity, stereoacuity and eye movements have been studied and binocular beat VEPs recorded in 10 patients with Duane's Syndrome and 10 age-matched normal control subjects. The patients with Duane's Syndrome were found to have reduced stereoacuity compared to the normal group. (TNO mean 80 sec of arc c.f. 37.5 sec of arc. Titmus mean 143 sec of arc c.f 44 sec of arc). The binocular beat VEPs showed that the difference beat response at 2 Hz was significantly reduced in the patients with Duane's Syndrome compared to the normal age-matched group (mean signal-to-noise ratio 2.40 ± 1.05 c.f 4.30 ± 2.66; $t = 2.21$, d.f = 18, $P<0.05$). Although many patients with Duane's Syndrome maintain binocular single vision by using an abnormal head posture they have reduced stereoacuity and show electrophysiological evidence of reduced cortical binocularity. This indicates that the restricted eye movements in this condition affect the development of cortical binocular function.

STEREOLOGICAL ANALYSIS OF CHANGES IN RETINAL CAPILLARIES DURING DIABETES AND THE EFFECT OF SULINDAC TREATMENT

H R Anderson, T A Gardiner and D B Archer

Department of Ophthalmology, The Queen's University of Belfast.

Stereological analysis was used to determine early quantitative changes in the 3-dimensional structure of retinal capillaries during diabetes and following treatment with sulindac (a non steroidal anti inflammatory drug and inhibitor of aldose reductase activity).

Experimental diabetes was induced in 22 male beagle dogs by a single injection of an alloxan/ streptozotocin mixture and blood glucose levels maintained at 15-20 mmol/l. Sulindac (10 mg/ kg) was administered daily to 12 dogs chosen at random from the diabetics. After 4 years duration of diabetes all the diabetic animals together with 8 age-and sex-matched controls were sacrificed, the eyes enucleated and processed for transmission electron microscopy. Stereology was then carried out to estimate quantitative morphological changes in the retinal capillaries (Anderson et al. 1994). Results show that the total volumes of retinal capillaries and capillary basement membrane as well as the total surface area of basement membrane were significantly increased in the untreated diabetics compared to the sulindac treated-diabetics or controls ($p \leq 0.05$). There was no significant difference in the above stereological parameters between the sulindac-treated diabetics and the controls.

Biochemical analysis showed that there were no significant differences in the red blood cell levels of sorbitol between the sulindac-treated diabetics and the untreated diabetics. Also, sulindac treatment did not affect the increased levels of fructoselysine (a glycation product) or N^{ϵ}-(carboxymethyl) lysine (an advanced glycosylation end product, AGE) which occur in the untreated diabetics, nor was there any significant differences in the total antioxidant potential or levels of malondialdehyde between the sulindac-treated and the untreated diabetics.

This study shows that, while sulindac treatment prevents the development of some of the early morphological changes which occur during the development of diabetes, it does not inhibit aldose reductase activity or the formation of AGES, nor does it affect oxidative stress.

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THE EFFECT OF INCREASED INTRATHORACIC PRESSURE ON PULSATILE OCULAR BLOOD FLOW

Lacey B A, Rankin S J A

Department of Ophthalmology, Royal Victoria Hospital, Belfast, Northern Ireland.

Purpose: To determine whether increased

intrathoracic pressure affects the Pulsatile Ocular Blood Flow (POBF) in healthy subjects.

Methods: POBF was measured using a pneumotonograph (OBF systems UK). Subjects were evaluated while achieving a steady expiration at 20 mmHg (and where possible 40 mmHg) using a mouth-piece attached to an aneroid manometer. Values were obtained for ocular Pulse Amplitude PA, intraocular pressure IOP and POBF.

Results: There were twenty subjects in the age ranges 20-34, 35-49, 50-64 and 65-80 years. A significant decrease in PA and POBF was noted. This appears to be proportional to the elevation of intrathoracic pressure. At 20 mmHg the mean reduction in POBF was 33% (56% reduction at 40 mmHg). PA was reduced by 44% at 20 mmHg (60% reduction at 40 mmHg). The IOP response varied as a function of age, tending to rise in younger subjects but falling in the older group.

Conclusions: These results show profound changes in POBF and PA in response to moderate fluctuations of intrathoracic pressure. These may reflect changes in central venous pressure and/or alterations in autonomic tone. Information on the ocular blood flow response to this stressed cardiovascular state may be helpful in evaluating ocular blood flow regulation in glaucomatous eyes.

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Book Reviews

Helicobacter pylori. Basic Mechanisms to Clinical Cure 1996. Edited by R N Hunt and G N J Tytgat. Kluwer Academic Publishers Group, pp 419. Price £128. ISBN 0-7923-8717-1.

Since the original description of *Helicobacter plyori* by Warren and Marshall in 1983 there has been a virtual explosion in interest in this organism. It is now causally linked to chronic gastritis, peptic ulcer disease, gastric mucosa-associated lymphoid tissue lymphoma and possibly gastric cancer. It has proved to be the single most important advance in modern gastroenterology. This book is a compilation of the proceedings of an international meeting held in June 1996 in Ottawa. There are forty contributions from renowned experts and three prize-winning posters.

It is an impressive collection of papers covering the full range of relevant topics. Basic scientists consider microbiological aspects – it is the most diverse bacterium known to infect humans, the virulence factors which make some strains more pathological than others and the host response. The immunological response is examined in detail by several authors since the organism's prolonged coexistence in the gastric mucosal layer, largely unscathed, presents a challenge to conventional immunological theory and for the development of protective vaccines.

From the clinical perspective the issues of H pylori related lymphoma, gastric cancer and eradication treatment are considered in depth. Papers on failure of treatment are perhaps the most useful for the practising gastroenterologist who is not uncommonly faced with this situation. The perspective of the general practitioner is a so considered – there is no doubt that the rapidly changing protocols for treatment and the development of non invasive approaches to dyspepsia make this a difficult and challenging area.

This book represents a collection of superb reviews by talented experts in the field. At a cost of £128 it is unlikely to be a book which many people would buy for their private collection but as state of the art it is superbly referenced and will be a very welcome addition to any medical library or academic department. Within a single volume it presents data which would otherwise require many hours searching the literature. *Helcobacter pylori* is a new discovery. Every chapter in the book discusses new developments but without exception they also clearly define the limits of knowledge. This is perhaps the book's greatest contribution. By getting its readership "up to speed" it stimulates others to research and think critically about this fascinating area.

PETER WATSON

'When I dropped the knife'. Owen L Wade. The Pentland Press Ltd, Bishop Auckland, Durham. Price £17.50. ISBN 1 85821 418 1.

Owen Wade is arguably the man who brought modern pharmacology and therapeutics to Queen's University. He has now published an autobiography which should be of interest to everyone involved in drug use, from clinical pharmacologists to general practitioners. A substantial proportion of the book relates to his time in Belfast, and many notable local university and hospital personalities feature prominently in its pages. The style is good and the content fascinating, partly as an historical record of the steps by which modern pharmacology, therapeutics and drug regulation have developed.

The book begins with a description of Wade's boyhood in the Welsh valleys, accompanying his surgeon father on trips to perform emergency operations in outlying cottage hospitals when as a teenager he sometimes had to assist as a teenager in rag and bottle anaesthesia. There follows his experiences as a medical student in war-torn London, when part of the student's duties included fire-watching from the hospital roof. After qualification, he travelled to Johns Hopkins Medical School and was in at the beginning of cardiac catheterisation, which he brought to his next post in Birmingham. From there, he joined the Medical Research Council team working on lung function and pneumoconiosis in coalminers, which resulted in the classification of miners' lung as an industrial disease. His appointment as a very young Professor of Therapeutics and Pharmacology at Queen's is covered in detail, with the many problems of instituting proper scientific teaching of pharmacology and therapeutics to medical students, including his famous final-year case conferences. It was at Queen's that Professor Wade realised the need for risk assessment of drugs, following the thalidomide disaster. Not only was he a founder member of the Committee on Safety of Medicines, the Committee on Review of Medicines, the Medicines Commission, but for several years, became the Chairman of the new British National Formulary Committee. He also founded the new discipline of drug use research, together with colleagues in Norway, Sweden and Czechoslovakia. His years at Birmingham, as Professor and then Dean of the Medical Faculty include the horrendous smallpox scandal which greeted him on his first day as Dean and resulted in the partial closure of the Medical School.

This reasonably priced book, a personal account of a remarkable life, will provide doctors, pharmacists and medical students with hours of bedtime reading and some insights into events that are now part of our recent history. It is a book to read, keep and reference.

HUGH McGAVOCK

Mutation Detection. Richard G H Cotton. Oxford University Press. pp198. Price £22.50. ISBN 019 8548893

Mutation detection has become the standard methodology and technology in molecular genetics. Several genes are cloned every week, allowing many clinical and research applications of such technology. This book is written by Richard Cotton, editor of *Human Mutation*, one of the fastest growing molecular biology journals, so his credentials are well proven.

Mutation detection is a recent invention, therefore the introductory chapter is short and concise, and also packed with useful tables including controversial issues in genetic testing, and recommendations for later onset disease testing including Huntington's disease and familial cancers. The next five chapters are a concise and in depth account of the main methods used, covering: sequencing methods, scanning

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It is an impressive collection of papers covering the full range of relevant topics. Basic scientists consider microbiological aspects – it is the most diverse bacterium known to infect humans, the virulence factors which make some strains more pathological than others and the host response. The immunological response is examined in detail by several authors since the organism's prolonged coexistence in the gastric mucosal layer, largely unscathed, presents a challenge to conventional immunological theory and for the development of protective vaccines.

From the clinical perspective the issues of H pylori related lymphoma, gastric cancer and eradication treatment are considered in depth. Papers on failure of treatment are perhaps the most useful for the practising gastroenterologist who is not uncommonly faced with this situation. The perspective of the general practitioner is a so considered – there is no doubt that the rapidly changing protocols for treatment and the development of non invasive approaches to dyspepsia make this a difficult and challenging area.

This book represents a collection of superb reviews by talented experts in the field. At a cost of £128 it is unlikely to be a book which many people would buy for their private collection but as state of the art it is superbly referenced and will be a very welcome addition to any medical library or academic department. Within a single volume it presents data which would otherwise require many hours searching the literature. *Helcobacter pylori* is a new discovery. Every chapter in the book discusses new developments but without exception they also clearly define the limits of knowledge. This is perhaps the book's greatest contribution. By getting its readership "up to speed" it stimulates others to research and think critically about this fascinating area.

PETER WATSON

'When I dropped the knife'. Owen L Wade. The Pentland Press Ltd, Bishop Auckland, Durham. Price £17.50. ISBN 1 85821 418 1.

Owen Wade is arguably the man who brought modern pharmacology and therapeutics to Queen's University. He has now published an autobiography which should be of interest to everyone involved in drug use, from clinical pharmacologists to general practitioners. A substantial proportion of the book relates to his time in Belfast, and many notable local university and hospital personalities feature prominently in its pages. The style is good and the content fascinating, partly as an historical record of the steps by which modern pharmacology, therapeutics and drug regulation have developed.

The book begins with a description of Wade's boyhood in the Welsh valleys, accompanying his surgeon father on trips to perform emergency operations in outlying cottage hospitals when as a teenager he sometimes had to assist as a teenager in rag and bottle anaesthesia. There follows his experiences as a medical student in war-torn London, when part of the student's duties included fire-watching from the hospital roof. After qualification, he travelled to Johns Hopkins Medical School and was in at the beginning of cardiac catheterisation, which he brought to his next post in Birmingham. From there, he joined the Medical Research Council team working on lung function and pneumoconiosis in coalminers, which resulted in the classification of miners' lung as an industrial disease. His appointment as a very young Professor of Therapeutics and Pharmacology at Queen's is covered in detail, with the many problems of instituting proper scientific teaching of pharmacology and therapeutics to medical students, including his famous final-year case conferences. It was at Queen's that Professor Wade realised the need for risk assessment of drugs, following the thalidomide disaster. Not only was he a founder member of the Committee on Safety of Medicines, the Committee on Review of Medicines, the Medicines Commission, but for several years, became the Chairman of the new British National Formulary Committee. He also founded the new discipline of drug use research, together with colleagues in Norway, Sweden and Czechoslovakia. His years at Birmingham, as Professor and then Dean of the Medical Faculty include the horrendous smallpox scandal which greeted him on his first day as Dean and resulted in the partial closure of the Medical School.

This reasonably priced book, a personal account of a remarkable life, will provide doctors, pharmacists and medical students with hours of bedtime reading and some insights into events that are now part of our recent history. It is a book to read, keep and reference.

HUGH McGAVOCK

Mutation Detection. Richard G H Cotton. Oxford University Press. pp198. Price £22.50. ISBN 019 8548893

Mutation detection has become the standard methodology and technology in molecular genetics. Several genes are cloned every week, allowing many clinical and research applications of such technology. This book is written by Richard Cotton, editor of *Human Mutation*, one of the fastest growing molecular biology journals, so his credentials are well proven.

Mutation detection is a recent invention, therefore the introductory chapter is short and concise, and also packed with useful tables including controversial issues in genetic testing, and recommendations for later onset disease testing including Huntington's disease and familial cancers. The next five chapters are a concise and in depth account of the main methods used, covering: sequencing methods, scanning

methods, diagnostic methods, associated techniques and strategies for mutation detection. All these chapters provide an overview of the common techniques involved and protocols for their implementation. with succinct references. The final chapter comments on "Current strengths, weaknesses and future requirements for mutation detection methods" and outlines problems with such methods and the best choices in different situations.

There are small areas I would like to see improved – the preface is dated April 1995 and for a book published in 1997, the delay is too long. None of the main text is out of date as it stands, but the fast implementation and usage of the recent "chip" technology is only mentioned in chapter 5 as being "some years away" and this is the one chapter that needs an immediate second edition.

Who will use this book? Most molecular geneticists will be familiar with the contents and will require more detail. There are two groups of people who will want to purchase a personal copy. Firstly, MD or PhD students undertaking research involving molecular genetic techniques will find this book is an excellent starter. The second group will be their clinical supervisors and examiners who will need a copy to understand what their students are doing, and to steal the advantage in the knowledge race. As no doctor who graduated before 1990 has had undergraduate teaching of modern molecular biology techniques, they would benefit from a quick glance through this book in the library.

PATRICK J MORRISON

"On-the-job training for surgeons". D H Hargreaves, M G Bowditch, D R Griffin. Published by The Royal Society of Medicine Press, May 1997. Price £17.50, paperback, printed in 2 colours. ISBN 1-85315-314-1.

This book is published by the Royal Society of Medicine Press. The authors include two Specialist Registrars in Orthopaedic and Trauma Surgery, both of whom are associated with the University of Cambridge "Project on Training of Doctors in Hospital". The senior author, David Hargreaves, is Professor of Education at the University of Cambridge and Director of this project.

The book is designed to be a practical guide for trainers and trainees explaining principles and practice of on-the-job training for surgeons. There is no doubt that it succeeds in this aim very effectively indeed.

The book is well structured and jargon-free. Indeed I found it not only readable but extremely enjoyable and I would commend it to all surgeons interested in providing good quality training. It is enhanced by comments from trainers and trainees, illustrating further the authors' points and by short vignettes demonstrating the application of on-the-job training in a practical way.

The book quotes a Consultant Surgeon who tells his trainee "I am going teach you how to swim just exactly one foot out of your depth". For those trainers who feel out of their depth in trying to marry the apparently conflicting needs of service and training, and for those trainees who feel that their training lacks structure this is an excellent starting point. Whether the reader chooses to digest the book from cover to cover or simply to delve in and read individual sections, the lessons learned are invaluable.

I commend this book to surgical trainers and trainees alike. Indeed the title belies the fact that there are lessons to be learned by all trainers, not just surgeons.

S T IRWIN

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S T IRWIN

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ERRATUM:

Cancer in Northern Ireland by 2002, A T Gavin and D O'Reilly. Ulster Medical Journal 1996; 65: 106-112. This paper contained various data errors. The authors have apologised for this. The authors will supply correct data sets and should be contacted directly.
