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The Ulster Medical Journal

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Medium and long-term complications of endoscopic sphincterotomy for choledocholithiasis

Helen M Whitehead, F Brennan, F A O'Connor

Accepted 12 June 1989.

SUMMARY

The medium and long-term complications of endoscopic sphincterotomy for choledocholithiasis were examined in patients referred to an endoscopy centre in an area general hospital. One hundred and thirty-eight patients were reviewed between 6 months and 7 years after successful endoscopic sphincterotomy for choledocholithiasis. The procedure was carried out post-cholecystectomy in 69 (50%) and with the gallbladder in situ *in 69 patients. Four post-cholecystectomy patients and 10 with intact gallbladders had died by the time of review. A postal questionnaire was completed by the remaining 124 patients. Sixty-two post-cholecystectomy and 49 with gallbladders still intact remained symptom-free at follow-up. Eight patients had had the sphincterotomy as a preliminary to cholecystectomy. There were persistent symptoms in three post-cholecystectomy and two with intact gallbladders. Medium to long-term complications are uncommon after endoscopic sphincterotomy for choledocholithiasis.*

INTRODUCTION

Endoscopic sphincterotomy is a safe and effective method of removing stones from the common bile duct. We have reported a low incidence of immediate complications and a mortality rate of less than two per cent.[1] With increasing use of this procedure for the treatment of biliary calculi, it is of importance to gain knowledge regarding possible sequelae, and long-term results have been published.[2–5] Follow-up is difficult in view of the advanced age of many patients treated and their referral from many hospitals for the endoscopy procedure. To evaluate the long-term prognosis in this institution a questionnaire was sent to all patients who had had a successful endoscopic sphincterotomy between January 1979 and December 1986.

PATIENTS AND METHODS

All patients who had undergone a successful endoscopic sphincterotomy for choledocholithiasis between January 1979 and December 1986, were traced through hospital records, providing a cohort of 184 patients age range 27–97 years (mean age 68 years); 91 (49·5%) were post-cholecystectomy (mean age

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62 years), and 93 (50·5%) had an intact gallbladder at the time of the procedure (mean age 75 years). In a further 5 patients the procedure was unsuccessful; these patients were referred for surgical treatment. All patients upon initial referral had clinical or biochemical evidence of bile duct obstruction. Those patients who had had a successful endoscopic sphincterotomy were sent a postal questionnaire, enquiring whether they had any return of their original symptoms or any incidence of jaundice, abdominal pain, or shivering attacks since the procedure. Further information on those patients who stated that they had symptoms was obtained from the general practitioner, the referring physician or surgeon, or by a second patient questionnaire.

RESULTS

Follow-up information was obtained on 161 patients (Table I). Twenty-three (12·5%) did not reply to the questionnaire. Twenty-two (12·0%) were known to have persistent calculi in the common bile duct, after the sphincterotomy, which were managed surgically in 13 and by a biliary stent in nine. Although these patients had a successful endoscopic sphincterotomy, they did not have successful treatment of their choledocholithiasis by endoscopic means and have been excluded from analysis. One early death, a patient who died 19 days after a sphincterotomy, with associated ascending cholangitis, has been excluded from the long-term analysis.

TABLE I

Follow-up after endoscopic sphincterotomy in 184 patients

	No. of subjects	
Questionnaire returned	124	(67%)
Failed extraction of calculi	22	(12%)
Early death (1 month)	1	(8%)
Late death (more than 1 month)	14	
	161	
No reply to questionnaire	23	(12%)
	184	

One hundred and thirty-eight patients (69 post-cholecystectomy and 69 with gallbladder *in situ*) had either documented clearance of the common bile duct (81), or presumed clearance (57) — a successful sphincterotomy allowing passage of a 12 mm balloon, the stones being left to pass spontaneously. Eight of these 'presumed clear' patients had their sphincterotomy as a preliminary to cholecystectomy. Fourteen of the 161 had died since the procedure — four post-cholecystectomy and 10 with gallbladder *in situ*. One patient with gallbladder *in situ* died of biliary sepsis 14 months after sphincterotomy, but no other deaths were related to biliary disease.

The follow-up period ranged from 6 months to 7 years, 50% being greater than three years. Of the 124 patients who completed the questionnaire, 62 post-cholecystectomy and 49 with gallbladder *in situ* remained symptom free. Three post-cholecystectomy and two with gallbladder *in situ* continued to have

symptoms after the sphincterotomy (Table II). One was a post-cholecystectomy patient who had a surgical common bile duct exploration and removal of a stone at another institution one month after endoscopic sphincterotomy; one continues to have mild intermittent symptoms of abdominal pain and shivering without jaundice for three years after sphincterotomy but these symptoms have settled spontaneously without medical intervention. Both of these patients had 'presumed clear' ducts at the end of their endoscopic sphincterotomy. The remaining symptomatic post-cholecystectomy patient initially presented with the 'sump syndrome' of upper abdominal pain associated with pyrexia and jaundice following choledochoduodenostomy: a small sphincterotomy was initially made at the site of the major papillae, but his symptoms recurred five months later and the sphincterotomy was extended. This allowed food debris to flow from the sump which relieved his symptoms and he remained asymptomatic eight months later. One patient with gallbladder *in situ* required a cholecystectomy 12 months after sphincterotomy. One continued to have symptoms after six months, but repeat endoscopic retrograde cholangiopancreatography (ERCP) showed no stones in the common bile duct.

TABLE II

Follow-up 6 months to 7 years following endoscopic sphincterotomy as a sole procedure with or without the presence of the gallbladder

Status at follow-up	*Gallbladder present*	*Gallbladder previously removed*
No symptoms	49	62
Symptoms	2	3
Died	10	4
Total	61	69

A further 8 patients had endoscopic sphincterotomy carried out as a preliminary to elective cholecystectomy.

DISCUSSION

Endoscopic sphincterotomy is now an accepted mode of treatment for choledocholithiasis. While initially the procedure was restricted to patients who had had a previous cholecystectomy, it is increasingly carried out in patients with their gallbladders *in situ.*

Half of our follow-up patients had their gallbladder *in situ,* a figure similar to the 57% quoted by Escourrou et al[4] and 58% by Leese et al.[6] The 80 per cent figure (49/61) of those treated by this method alone for choledocholithiasis who remained asymptomatic at long-term follow-up compared favourably with the 78% to 87% 'improved or symptom-free' at long-term follow-up found by Riemann et al,[7] Escourrou et al[4] and Olaison et al.[8] Our experience supports the view of these authors that elective cholecystectomy is not necessary after endoscopic sphincterotomy in patients with their gallbladder *in situ.*

Eight patients had their procedure as a preliminary to elective cholecystectomy to relieve obstructive jaundice. The presence of clinical jaundice on admission in patients surgically treated is associated with a higher mortality than that encountered in the non-icteric patient.[9] A study by Carr-Locke and colleagues[10]

showed that preoperative sphincterotomy reduced the mean hospital stay but not the mortality, although patient numbers were small.

In our patients with their gallbladder *in situ* who were treated by endoscopic sphincterotomy alone for choledocholithiasis, about five per cent developed symptoms or complications related to biliary disease, and the mortality rate was 1·6%. Other workers have found a small number varying from 2 to 11% of their patients who required subsequent treatment for gallbladder stones, surgical treatment if necessary being usually carried out within 12 months.[4, 11, 12] It has been suggested that the presence of a non-filling gallbladder at ERCP may be a risk factor,[11] though others have disagreed.[13]

With regard to the natural history of gallstone disease, Wenkert and Robertson [14] followed untreated patients with documented gallstone disease over 11 years, and reported an 18% incidence of complications, a 33% incidence of symptoms, leading to cholecystectomy in two-thirds of these, and a 1·7% mortality rate. In those patients aged over 60 with a non-functioning gallbladder, the incidence of severe complications was 27%. Endoscopic sphincterotomy in elderly patients who still have their gallbladder carried less morbidity and mortality than surgical treatment,[15–19] and the majority remain asymptomatic at long-term follow-up. In those patients with continued symptoms the benefits and risks of surgical intervention must be weighed against the risks of non-intervention. Of our post-cholecystectomy patients, 90% remained asymptomatic at long-term follow-up, but 4·3% developed symptoms or complications, which in hindsight were likely to be related to inadequate drainage of the ducts at the time of the procedure. The practice of active extraction of all common bile duct stones, although not always possible (90% clearance in the best centres [20]), should help to reduce this low incidence of long-term morbidity and mortality even further.

Endoscopic sphincterotomy for choledocholithiasis appears to be safe in the long term, with a low incidence of complications. Complications which do arise are likely to result from retained or recurrent stones. Re-stenosis is not common (4–9% [20]) and was not experienced in our follow-up. Papillotomy predisposes to reflux of duodenal juices [4] and to ascending bacterial invasion of the bile ducts.[21] We found no evidence to suggest that these caused any major problems, but their occurrence remains unknown and may only be discovered when longer follow-up data are available.

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Radiological examination of the small bowel

A M Gilchrist, J O M Mills

Accepted 18 July 1989.

SUMMARY

A retrospective study was made of 100 consecutive dedicated per-oral small bowel examinations. 33% of the studies were abnormal, of which almost half were due to Crohn's disease. When grouped according to clinical suspicion, 73·5% of those studies with a high index of clinical suspicion were abnormal. In the abnormal group a correct diagnosis was made in 90%, with two false positives. In the normal group a correct diagnosis was made in 91%, with no false negatives. It is suggested that the dedicated small bowel series offers a justifiable and practical alternative to other techniques such as intubation and direct infusion of contrast medium into the small bowel, or enteroclysis.

INTRODUCTION

Adequate demonstration of the small bowel remains one of the most difficult tasks facing the radiologist. A multiplicity of techniques is available, and the wide ranging arguments concerning the validity of these techniques are well documented. Scientific proof of the superiority of one technique over another is not available, although the inferiority of the traditional follow-through is well established.[1, 2, 3]

The most important factor is that small bowel radiography requires an interested and committed radiologist and technical staff, and a dedicated small bowel technique. In this hospital we employ a per-oral method, the dedicated small bowel series, paying meticulous attention to technique. The importance of technique is stressed by Chrispin,[4] who gives a detailed description of the method used in children. There are only a few recent comprehensively descriptive reports.[1, 5, 6] We believe that if the examination is conducted carefully, it offers a justifiable alternative to the well documented intubation methods.

PATIENTS AND METHODS

A retrospective study was made of the clinical and pathological records of 100 consecutive patients who had undergone the dedicated small bowel series during a three month period, two years prior to the analysis. Comparison was made with the initial radiological findings and diagnosis. There were 65 females and 35 males, mean age 43 years. All examinations were supervised by a senior registrar or consultant with special gastrointestinal interest, and were carried out by the same senior radiographers.

All patients were fasted over-night. No colonic preparation was used. Both inpatients and outpatients attended the department early in the morning.

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Rapid-Transit E-Z-paque barium (E-Z-EM Company Inc.) 300ml of 60% w/v, with 5ml Gastrografin (Schering Pharmaceuticals) were administered. The patient was encouraged to drink this as continuously and quickly as possible, under the supervision of the radiographer. The patient was positioned on the right side, to produce a continuous bolus effect through the pylorus. Metoclopramide was not used.

The first film was taken at 15 minutes (Fig 1). Films were taken prone to separate small bowel loops and to diminish magnification. The initial film was assessed by the radiologist, who then decided the timing of the next study. Throughout the series, each film was assessed by the same radiologist, who decided the timing of subsequent films upon inspection of the films already obtained.

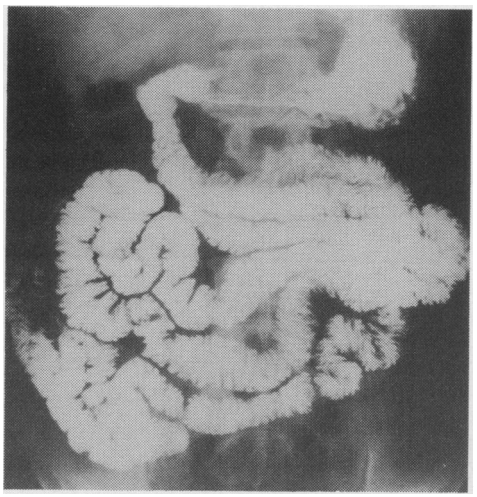

Fig 1. Normal study: dedicated small bowel series. First film taken at 15 minutes: a continuous filling of the small intestine is seen.

Screening was carried out at any stage for further evaluation of any suspected abnormality, or to improve visualization of obscure segments (Fig 2a and b). Compression and cranio-caudal X-ray tube tilt were used to separate overlying loops. Positioning the patient head down was occasionally used to separate pelvic loops. Compression was also used to assess fixity of loops. In addition, when there was a suspicion of fixation of segments, the patient was asked to cough or perform a Valsalva manoeuvre, thus rendering loops bound down by adhesion or inflammatory disease more obvious.

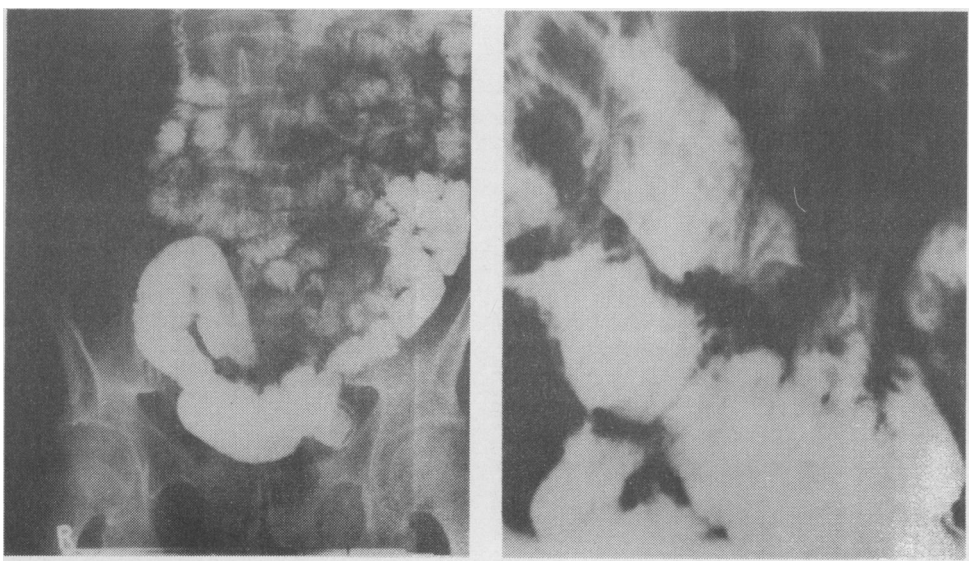

Fig 2a and b. Ileal carcinoid. A partially obstructing tumour suspected on the 45 minute film (a) is confirmed by screening with compression (b).

Close attention was given to the pattern of peristalsis and to identification of constantly narrowed segments.

The examination was not necessarily terminated when the ileocaecal region was reached, as constant deformities were sometimes more readily appreciated on further films, which frequently showed loops of bowel previously obscured (Fig 3a and b). Finally, all the films obtained throughout the series were carefully inspected before the examination was terminated.

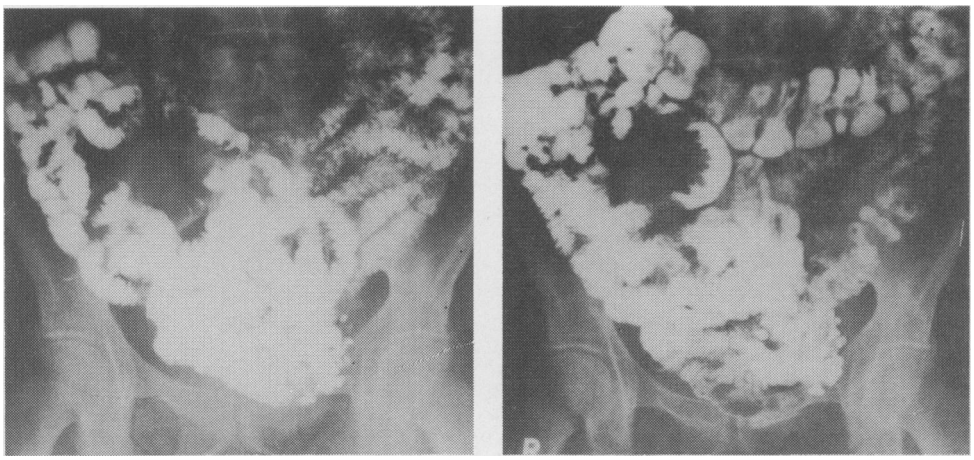

Fig 3a and b. Metastatic glands. (a) Barium has reached the terminal ileum, with early filling of the right colon. Residual barium present in sigmoid diverticula from a barium enema. Further film one hour (b) later, confirming displacement of a loop of ileum around a soft tissue mass which is not immediately apparent on the first film.

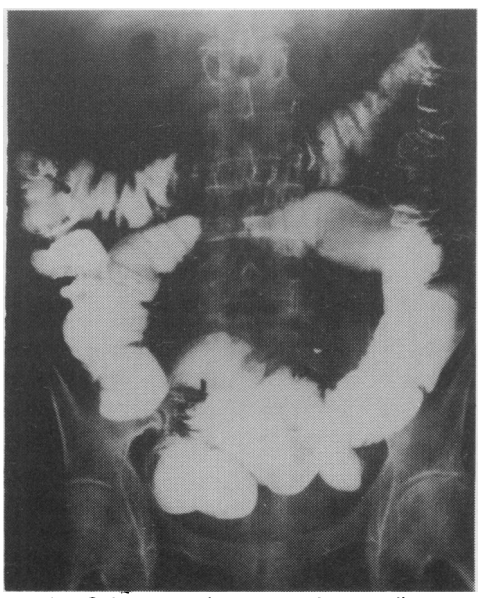

Fig 4. Sub-acute obstruction due to adhesions following ileocolic anastomosis for Crohn's disease.

RESULTS

The clinical notes were reviewed to assess the accuracy of the examination. Sixty-seven of the examinations were radiographically normal. This conclusion was confirmed by other investigations and by the clinical course following the dedicated small bowel series. In no case was the radiographic exclusion of an abnormality found to be incorrect, up to two years after the examination.

Thirty-three of the 100 patients had an abnormal dedicated small bowel series. In 30 of these, the diagnosis was confirmed by surgery or other investigations, and the subsequent clinical course. Crohn's disease was the most common abnormality (48%), with malabsorption (15%) and mechanical obstruction (12%) the next most frequently encountered diagnoses. In

cases of mechanical obstruction, the level of obstruction could be accurately assessed and often the cause of the obstruction was identified (Fig 4).

In only three cases considered to be abnormal was the diagnosis found to be incorrect. In one, a Meckel's diverticulum was suggested, but this was not confirmed by other investigations and an alternative cause for the patient's symptoms was identified outside the bowel. In a second case Crohn's disease of the transverse colon was suggested, but a barium enema demonstrated a normal colon. The third case was lost to follow-up and the clinical diagnosis of malabsorption could not be confirmed.

Using the clinical notes and request forms, patients were subdivided into groups according to a high, medium or low index of clinical suspicion for small bowel disease. In the group with a high index of suspicion, 25 abnormal studies resulted from 34 examinations (73·5%). Of 37 in the group with a low index of suspicion, only one was considered abnormal and this was later disproved by other investigations.

The average number of films per study was four overhead and two spot films. The average time taken to reach the terminal ileum was one hour 20 minutes, and the average duration of the examination was three hours 25 minutes. Each examination was graded for quality: it was considered to be of high quality when all loops of small bowel had been demonstrated by a continuous column of barium, without overlapping and without disruption of barium column (Fig 5a), and to be of poor quality when there was interruption of the barium column, overlapping and obstruction of loops, in particular with a low lying caecum (Fig 5b), or if there was failure of distension of all loops. An intermediate but diagnostic study was considered to be of adequate quality. Sixty-eight studies were of high quality, 26 were of adequate quality and six were of poor quality. Of these six, three were still considered diagnostic in the clinical setting, but three were diagnostically inadequate.

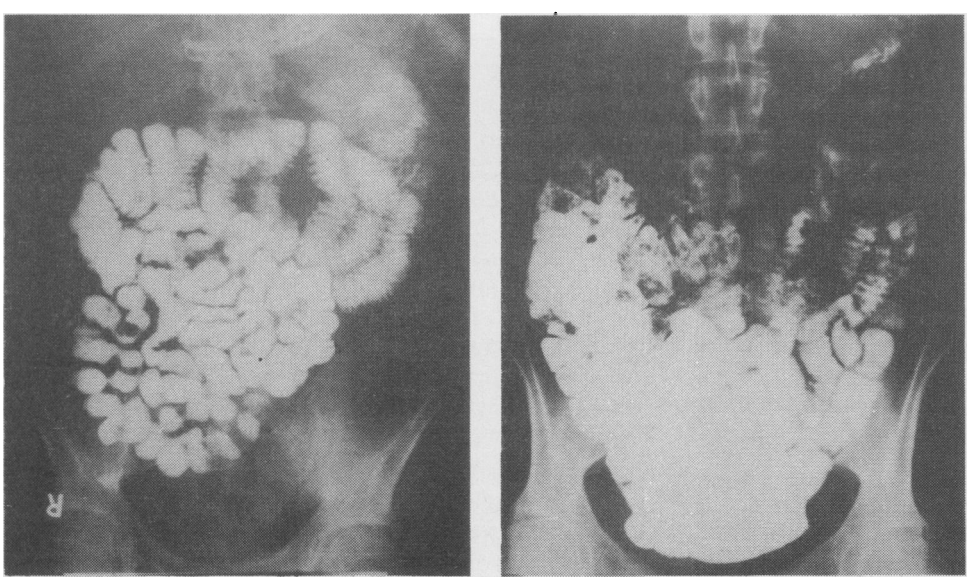

Fig 5a and b. (a) High quality study with clear demonstration of jejunum and ileum. (b) Poor quality study in which a low lying caecum and overlapping loops of pelvic ileum obscure detail.

DISCUSSION

The most important factors in the success of small bowel radiology are the selection of patients and the performance of a specific, tailored small bowel examination.[2] The clinical indications for investigation of the upper gastrointestinal tract and the small bowel are usually quite different. In their efficacy study Rabe et al[7] do not detail their technique and have a low abnormality rate. However, they show an increase in abnormality rate from 9% to 14% when the index of suspicion is high. By using very specific criteria, Fried et al,[8] record a 48% abnormality rate. We found an overall abnormality rate of 33%, but when subdivided according to the index of suspicion for small bowel disease, the high index group had an abnormality rate of 74%. Selection of patients for small bowel study is therefore important, and casual referrals should be discouraged.[7] Clinicians in this hospital no longer confuse investigation of the upper gastrointestinal tract and the small bowel, and our referrals are separate and specific.

To perform a specific, tailored examination of the small bowel the radiologist has several choices. The multiplicity of techniques available have recently been documented. Per-oral examinations include (i) the traditional follow-through as an adjunct to upper gastrointestinal examination: (ii) follow-through supplemented by administration of up to one litre of CO_2, and (iii) the dedicated small bowel series. Intubation or enteroclysis methods used include administration of barium directly into the upper jejunum in single contrast, or as a double contrast technique using either methylcellulose solution or air. A retrograde technique may also be used, which involves filling the colon with two litres of barium followed by 2·5 litres of water, causing contrast to reflux into the small bowel. This wide variety of approaches suggests that no single technique is regarded as superior.[1]

Agreement is growing, however, that the small bowel follow-through is outdated.[4, 9] This technique was initially developed as an adjunct to the single contrast barium meal, but with newer barium preparations and double contrast upper gastrointestinal studies, it has been superseded by small bowel specific techniques. The retrograde technique understandably has not found many supporters.

Two techniques are emerging as valid alternatives and discussion continues between those favouring the intubation methods and those favouring a per-oral technique. The rate of intubation failure ranges from 4·6% – 8·8%,[4, 10] with the exception of one report as low as 2%.[11] Incorrect positioning, gastric surgery and high small bowel obstruction may lead to failure of the intubation technique. The flow rate is critical and too much barium will obscure detail.[12] This makes it a difficult technique to master, which is important as small bowel pathology is uncommon in the clinical setting of general radiology practice. The small bowel enema is more expensive and the radiation exposure is five times greater than for the dedicated small bowel series.[13] This is relevant as many of these patients are young and have inflammatory bowel disease, and may require repeated studies.

The dedicated small bowel series performed in this institution is a simple reproducible study with high patient acceptance. It is less operator dependent than intubation methods. We use Gastrografin as an accelerating agent and to maintain the barium in suspension throughout the examination. Some radiologists use 10 ml of Gastrografin in 440 ml of barium 45% w/v,[2] but we have found 5 ml Gastrografin in 300 ml of barium to give optimum results. In common with

Garvey et al[6] we have not found that colonic residue delays transit. Colonic residue was regarded as the major factor contributing to an unsatisfactory examination in only one case.

The overall performance time for a small bowel enema is 30–45 minutes, which is shorter than for the dedicated small bowel series (average duration three hours 25 minutes). However, the enema is performed with continuous fluoroscopy which fully occupies a screening room and makes considerable demands on a busy department. With the dedicated small bowel series room occupancy and the demand on the radiologist's time are considerably reduced.

Maglinte et al[14] analysed the reasons for missed lesions on the small bowel follow-through. They found that the majority of lesions were missed due to technical inadequacies. We found 3% of our studies to be technically unsatisfactory and non diagnostic. Lintott and Herlinger[2] quote a similar failure rate. The most frequent problem was due to overlapping loops of ileum and overlying caecum when situated low in the pelvis. We have found filling the bladder to be of little benefit, but the tilt or head down tilt with compression may assist with the separation of such loops.

No acceptable evidence has been presented to confirm that the small bowel enema is a superior technique.[1] Reports are often presented comparing intubation methods with a follow-through or other poorly documented techniques. Sanders and Ho[15] claim the small bowel enema is more accurate, but their comparison is with the follow-through. Ekberg[16] claims the enema technique to be superior in the assessment of Crohn's disease, but while comprehensive details of the intubation technique are given, the oral technique used is not described.

The rate of abnormality identified in this series is 33%, which is comparable to other studies. Vallance[10] reported an abnormality rate for the small bowel enema of 31%, Diner et al[3] 33%, Gurian et al[11] 37% and Antes and Lissner[17] 29%. The sensitivity of the per-oral examination is comparable to that of the intubation methods.[3, 18] In our study, there were no false negative examinations, and although this is a relatively small sample, this means a sensitivity of 100%.

The most common conditions which occur in the small bowel are Crohn's disease, obstruction and malabsorption. The dedicated small bowel series is sensitive in the diagnosis of Crohn's disease.[19] With lower radiation dose than the small bowel enema and good patient tolerance, it is a readily repeatable technique for this chronic condition. In cases of small bowel obstruction our patients are often treated surgically. The level of small bowel obstruction is identifiable on the dedicated series and often the cause of the obstruction can be determined. Radiology has a limited role in malabsorption. The small bowel enema may disguise subtle changes of lumen calibre,[10] and transient intussusception occurring in 20% of adult coeliac patients were not identified.[2] The dedicated small bowel series provides a simpler alternative for establishing the diagnosis, for monitoring response to treatment and for the assessment of complications. Consideration may however be given to performing a small bowel enema if two consecutive dedicated series are found to be negative, and where there is a high index of suspicion for small bowel disease.

There is a need for a prospective comparative study of the highest quality intubation and per-oral techniques. Although the small bowel enema can be seen as a superior art form, this may have little clinical relevance.[1] We have shown that the dedicated small bowel series is sensitive and specific in the diagnosis of small

bowel disease. When technique is meticulous the results are comparable. The dedicated small bowel series has several advantages and is a more practical investigation in a busy radiology department.

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Mortality in the elderly during respite hospital care

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SUMMARY

This study examined the mortality in the elderly during 243 respite hospital admissions. Sixty-four dependent elderly patients entered a regular respite care scheme and were admitted to hospital for a period of 4 weeks out of every 12 weeks. The mortality rate in hospital was one death per 976 days, in comparison to one death per 1296 days at home. This small increase in mortality should not deprive patients and their carers from access to respite care.

INTRODUCTION

Increasing numbers of disabled elderly patients are cared for in the community. Hospital respite admissions to provide these carers with a break are an important and long established source of support.[1] Some authors have reported that admission of frail elderly people to hospital is associated with dangers,[2] including an increased morbidity and mortality, and should therefore be discouraged,[3] whilst others disagree.[4, 5]

This geriatric medical unit runs a respite care scheme whereby dependent elderly patients cared for at home are admitted to hospital for a period of 4 weeks out of every 12 weeks. Such patients would otherwise be deemed to require long-term hospital care if they did not have a carer at home. The purpose of this study was to ascertain if respite admissions to hospital are associated with an increased mortality rate by comparing the mortality rate during respite admissions with that at home. As each patient experienced care at home and hospital, such a comparison may have increased validity.

METHOD

The medical records of all patients included in the scheme between September 1981 and June 1988 were analysed. Patients were referred for inclusion in the scheme after a full multi-disciplinary assessment. Patients considered fit for residential care were referred to social services, and confused but physically fit ambulant patients referred for psychogeriatric care. Therefore, those entering the scheme were physically dependent, unable to walk unaided and requiring assistance with activities of daily living. The cause and date of death were obtained from death certification or hospital records.

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RESULTS

A total of 64 patients (17 male, 47 female) participated in the scheme between September 1981 and June 1988, and 243 respite admissions occurred. Their mean age was 81 (SD ± 7) years with a mean time in the scheme of 11 ± 9 months. Of these, eight died during relief admissions, five died at home and seven died after acute admission to hospital from home. The mean time in hospital for all participants was 122 (88) days and the mean time at home was 243 (190) days. Therefore, for all participants, one death occurred per 976 days in hospital and one death per 1296 days at home. Alternatively, 40% (8 out of 20) deaths occurred at home compared with the 33% expected, had the death rate been identical at home and in hospital. However, 95% confidence limits for the true proportion dying at home were 19% and 64%. These limits are wide, so although the 40% does not differ significantly from the expected figure of 33%, there is some possibility of an important difference being overlooked (ie a type II error). Details of all patients who died while participating in the scheme are given in the Table.

TABLE

Details of patients who died

	Hospital	*Home*
Number of patients	8 (13%)	12 (19%)
Sex (F, M)	6 : 2	9 : 3
Mean age in years ± SD	79 ± 6	80 ± 8
Mean time in scheme in months ± SD	11 ± 8	13 ± 13
Diagnosis		
Cerebrovascular disease	3	7
Dementia	3	3
Multiple sclerosis	–	1
Paget's disease of bone	–	1
Osteoarthritis	1	–
Normal pressure hydrocephalus	1	–
Cause of death		
Bronchopneumonia	3	7
Cerebrovascular accident	2	4
Myocardial infarction	2	0
Cardiac failure	–	1
Renal failure	1	–

Hospital = Patients who died during hospital relief admissions.
Home = Patients who died at home or during acute hospital admission from home.

DISCUSSION

The patients accepted for this scheme were deemed to require social admission for respite for their carers as a consequence of established illness and disability. Although the death rate in hospital of one death per 976 days was higher than the death rate at home of one death per 1296 days, it was not statistically significantly

greater. The patients who died in hospital during respite admissions did not differ from those who died at home or after acute admission to hospital in terms of age, mean time in scheme, female to male ratio, diagnosis or cause of death. The increased mortality and morbidity following relocation of the elderly have been highlighted previously[6] and appear greatest in the very elderly, confused and incontinent.[2] The causes of the increased risks are uncertain, but are likely to include exposure to multi-antibiotic resistant hospital bacteria, and to the social and psychological effects of a change in environment[6] and patterns of care. Our findings do not support the view that admitting elderly people for respite care should be discouraged because of very high mortality rates in hospital. This is in contrast to the study of Rai et al[3] who reported that 13% of patients admitted to hospital for holiday relief and 35% of patients admitted for social reasons died, and therefore concluded that admission should be discouraged because of the very high mortality. This latter group did not provide evidence of expected mortality for these patients if they had remained at home, and it is likely that their high mortality in part reflected medical factors rather than social factors alone precipitating need for hospital admission. It is in our judgement often difficult to separate the intertwined medical and social factors contributing to the need for hospital admission, and deteriorating physical independence may be mistakenly interpreted as a need for relief admission rather than active appropriate medical intervention.

The patients accepted for the Royal Victoria Hospital scheme were severely physically disabled. Their mortality of approximately 30% per annum is much higher than the estimated overall mortality of 80-year-olds which is approximately 4% per annum (Registrar General's Report, Northern Ireland) but is in keeping with the 37% per annum reported for elderly patients with similar disabilities.[5]

Our results indicate that the elderly dependent patients represented in this study have a high overall mortality whether at home or in hospital. The small increase in mortality which occurs following admission to hospital should not deprive informed patients and carers of their access to respite, if alternate support in the community is inadequate or unforthcoming.

We gratefully acknowledge the help of nursing, paramedical and social work staff of the geriatric units situated in the Belvoir Park, Musgrave Park, Royal Victoria and Throne Hospitals. We acknowledge the foresight of Dr T J Ryan and Mrs June Gordon in establishing this scheme, and thank Dr C C Patterson for statistical advice.

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Mortality rates of patients admitted to a psychogeriatric assessment unit

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SUMMARY

Admission of elderly people to a geriatric hospital may carry an increased risk of death. In this study 355 admissions of 243 elderly persons with dementia to a purpose built psychogeriatric unit were studied and the mortality rate found to be 8·2%, which is less than that reported elsewhere. Admission for the purpose of respite (holiday) relief is a safe procedure and should not be discouraged.

INTRODUCTION

The number of elderly people in the population will increase slightly until the end of this century but more importantly, the proportion of these who are over 85 will increase disproportionately.[1] Most elderly people live in their own homes or with relatives and quite often family members make great sacrifices to care for these elderly relatives and may themselves suffer from psychiatric illness as a result.[2, 3]

It has been suggested that attendance at a psychogeriatric day hospital does not offer relief to strained carers but that partial or total institutionalisation is more likely to be effective.[3] It thus follows that the demand for holiday relief admissions to geriatric or psychogeriatric units is likely to increase. A study by Rai and others[4] indicated that admission to a geriatric hospital for a short period was associated with an increase in mortality and they concluded that admission to hospital should be discouraged, and alternative forms of home care provided. Criticisms can be made of that study: the conclusions are very broad and make no reference to planned respite admissions to purpose built psychogeriatric units or Social Services facilities; the results show that planned holiday admissions have a much lower mortality rate (13%) than unplanned "social admissions" (35%) and although this lower rate is apparently higher than the mortality rate (8·9%) quoted for the elderly (over 85) admitted with an acute illness to their geriatric wards no tests of significance were done. These results are nevertheless worrying especially as the authors make it clear that both the social and holiday admissions were free of acute illness.

Because of the implications of Rai's work it was decided to look at the mortality rates of patients admitted to a purpose built psychogeriatric unit which caters for large numbers of planned respite admissions. Holywell Hospital is a large (614 beds) psychiatric hospital situated in a rural area with a surburban catchment in its south east corner: the over 65 population of the area is 29,400 covered by three

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consultant psychiatrists. A new 60 bedded purpose built unit to cater for all respite admissions, and for assessment of demented patients was opened in May 1984.

METHODS

The medical records of all admissions to the unit between May 1984 and March 1986 were examined. All admissions were planned and occurred during the working week (Monday to Friday, 9 am to 5 pm). All patients had a physical examination on admission and for first admissions a full psychological and social assessment was performed together with a battery of blood tests, chest X-ray and urine culture. All re-admissions and a few of the first admissions were for respite care.

Prior to a first admission all patients were assessed at home and any patient with an acute medical condition requiring hospital care was referred to a physician or geriatrician.

RESULTS

The charts of nine patients were not available for inspection as they had moved to another area. This left 243 patients who had a total of 355 admissions. Of these 168 had one admission only (nearly all for assessment) and 75 had multiple (respite) admissions. (52 were re-admitted once, 16 twice, and 7 three or more times). Of the admissions, 37% were for less than 1 month, 37% stayed between four and seven weeks and 25% stayed eight weeks or longer. Most of those who stayed over eight weeks were waiting for long-term accommodation elsewhere but a few had become ill (eg cerebrovascular accident) after admission. The average length of stay for first admissions was eight weeks and for re-admissions 5·7 weeks. The sex ratio for first admissions was 1:1·8 (M:F) and for re-admissions 1:1·3.

There was no significant difference in the average age of first admissions (78 years) compared to re-admissions. The outcome of the most recent admission is shown in the Table. There were 20 deaths during the 22-month period (death

TABLE

Outcome of the most recent admissions to the psychogeriatric unit, during a 22-month period

Last residence		*Placement on discharge*				*Death*
		Home	*Social Services*	*Hospital*	*Psycho-geriatric*	
Home	175 (72%)	98 (56%)	27 (15%)	10 (6%)	24 (14%)	16 (9%)
Social Services	47 (19%)	— —	27 (57%)	4 (9%)	12 (25%)	4 (9%)
Hospital	21 (9%)	6 (29%)	5 (24%)	7 (33%)	3 (14%)	— —
Total	243					

rate of 8·2%). 16 of the deaths occurred in people admitted from home and four in those admitted from Social Services accommodation. The average age of those who died was 80·2 years. Six of the deaths (30%) occurred in the first two weeks and 10 (50%) within eight weeks, with the rest being evenly distributed over the following sixteen weeks. 14 deaths (70%) were due to broncho-pneumonia and the others due equally to cerebrovascular accident or cardiac arrest.

DISCUSSION

The overall mortality rate for patients with dementia admitted to this psycho-geriatric assessment unit was 8·2% which compares with a rate of 25% for those admitted to a general geriatric unit in Northern Ireland[5] and 35% for social admissions and 13% for holiday admissions to Rai's unit. Other studies show rates of in-patient deaths from 19 to 33%.[6, 7, 8] The majority (70%) of deaths occurred in people admitted for the first time and one might postulate that they had problems which necessitated admission and assessment. Survival following treatment of existing medical problems would lower the death rate on re-admission. Rai concluded that "admission to hospital . . . must be discouraged." That very sweeping statement was based on a geriatric unit with acute admissions, planned (holiday) admissions and social admissions whereas all the patients in the present study were selected and admissions were planned by the medical staff. Planned respite care for the demented elderly who are not suffering from acute medical problems needing acute hospital care is a safe procedure and should not be discouraged.

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Change in Sunday licensing laws and the effect on Monday absenteeism. A short report on a poultry processing plant

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SUMMARY

Licensing laws were changed in Northern Ireland on 1st October 1987 to allow drinking of alcohol in public houses on Sundays. The effect on absenteeism was studied in the immediate period after this change using Monday absenteeism as a marker for change. The study was conducted in a small poultry processing plant employing approximately four hundred and forty people. Mean differences between Monday absenteeism for the month of October 1986 and 1985 prior to the change in laws and October 1987 were shown to be not significant.

INTRODUCTION

The laws relating to Sunday opening of licensed premises in Northern Ireland were changed on 1st October 1987. The changes were seen by some as a liberalisation of the existing laws allowing public houses to open on Sundays for the first time in fifty years. Prior to this the sale of alcohol on Sundays was restricted to hotels and licensed clubs.

The new arrangements were largely welcomed by the publicans but criticised by various groups including religious bodies and those organisations dealing with alcohol-related problems. Although some of the arguments against extending the licensing laws considered moral aspects, a certain amount of concern was expressed at the possible effects on absence from work on Mondays following the generalised availability of alcohol in public houses on Sunday nights. This latter aspect of the criticism seemed to have genuine grounds for concern given the already existing and well-known effect of alcohol in the workplace in terms of absenteeism, accidents and decreased efficiency.[1, 2]

This study investigates Monday absenteeism before and after the introduction of the new laws. It was felt that any change in absenteeism due to these laws might present itself almost immediately given that susceptible individuals would be likely to take advantage of increased availability of alcohol on Sundays as soon as it was introduced. In particular day shift workers would be expected to show more pronounced change given that over-indulgence had occurred the night before.

The study was based in a small poultry processing plant in Northern Ireland where the author is part-time medical officer. This firm employs 440 people on a full-time basis. The operatives work either a day or an evening shift with no night or weekend working.

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METHODS

With the co-operation of the personnel department, absenteeism for the entire workforce was studied for Mondays in the month of October 1987 (following the introduction of new licensing laws on 1st October 1987). The rate of absenteeism for each of these days was taken for the day and evening shifts. Figures were prepared in a similar manner for the month of October in the preceding two years, 1986 and 1985. This allowed direct comparison and excluded any seasonal variation. During the study period the size of the workforce, method of recording absence, and disciplinary procedures within the firm remained constant.

RESULTS

The Table displays the figures for absenteeism for the relevant study periods. The number of workers absent on Monday fluctuated from week to week within the individual month studied as well as showing a variation from year to year. A simple chi-squared test was used to analyse the data.

Mean day shift figures for each October month showed only a small percentage difference. The year 1987 had 0·9% higher absenteeism compared to 1986 ($p = 0·7$) and 1·1% higher than 1985 ($p = 0·095$) which is not significant. The evening shift figures showed a small negative change in the mean percentage differences with the year 1987 having 0·7% less absenteeism than 1986 ($p = 0·95$) and 0·5% less than 1985 ($p = 0·7$), again not significant. The combined shift totals showed zero mean percentage difference for 1987–86 and 0·1% for 1987–85 ($p = 0·5$) which is not significant.

TABLE

Number of employees absent on Mondays in October 1985–87

	1st Monday	*2nd Monday*	*3rd Monday*	*4th Monday*	*Mean*
1985					
Day shift	29 (11·6%)	23 (9·2%)	22 (8·9%)	30 (11·9%)	26·0 (10·4%)
Evening shift	18 (10·3%)	18 (10·3%)	16 (9·2%)	10 (5·6%)	15·5 (8·9%)
Total absent	47 (11·1%)	41 (9·0%)	38 (9·4%)	40 (9·4%)	41·5 (9·8%)
1986					
Day shift	29 (13·2%)	22 (10·1%)	25 (11·3%)	17 (7·7%)	23·3 (10·6%)
Evening shift	17 (8·8%)	24 (12·4%)	18 (9·4%)	11 (5·8%)	17·5 (9·1%)
Total absent	46 (11·1%)	46 (11·1%)	43 (10·4%)	28 (6·8%)	40·8 (9·9%)
1987					
Day shift	27 (12·2%)	31 (13·9%)	28 (12·6%)	16 (7·3%)	25·5 (11·5%)
Evening shift	19 (8·6%)	21 (9·5%)	23 (10·5%)	11 (4·8%)	18·5 (8·4%)
Total absent	46 (10·3%)	52 (11·7%)	51 (11·5%)	27 (6·1%)	44·0 (9·9%)

DISCUSSION

Alcohol misuse has enormous social, economic and medical implications. It was estimated that the cost to industry relating to lost production and accidents was of the order of £1,400 million for the year 1983 in England and Wales.[3] Employees who drink heavily lose 70–85 days' work per year, have a corresponding tendency to decreased efficiency and show accident rates twice or three times

normal.[4] No direct data can be collected on the number of days' sickness absence related to alcohol misuse because employees will not certify themselves sick due to a hangover or alcohol misuse but tend to use vague terms such as gastritis or back trouble.

The pattern of Monday morning absenteeism has been put forward as a possible indicator of an individual's level of alcohol misuse.[4] Using this as a basis for evaluating alcohol misuse, I attempted to monitor any changes in Monday absenteeism following the change in licensing laws. No significant change was found. This might be due to the public reacting responsibly to the extended licensing arrangements and not abusing the increased availability of alcohol, or secondly, all those susceptible individuals who are prone to alcohol misuse in this particular firm may have been at a constant saturation point and have been drinking alcohol on Sundays, obtaining their supplies from home, hotels or clubs. Both of these postulations would explain the non-significant differences in levels of absenteeism found in this study.

In conclusion therefore, this study does not indicate an immediate increase in absenteeism following extension of Sunday licensing laws. Although this would seem encouraging, further study over a longer period might be indicated to ensure that an insidious increase was not going to take place. It would also be beneficial to study a much larger data base than that available to the present study and examine in detail the demographic features of the workforce including a more in-depth analysis of employee alcohol use.

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An audit of hospital admissions for acute upper gastrointestinal haemorrhage

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SUMMARY

A retrospective survey was made of all 189 patients admitted with acute upper gastrointestinal haemorrhage to the Belfast City Hospital in one year. The commonest single reason for admission was peptic ulcer disease, but this was lower than in other published series from the United Kingdom. Overall mortality was 4·8%. The majority of patients did not require either blood transfusion or surgery. There may be potential benefits of endoscopic haemostatic techniques to deal with this condition.

INTRODUCTION

Acute upper gastrointestinal haemorrhage is a potentially serious condition and is a common cause of hospital admission. Surveys from Oxford,[1] Birmingham[2] and Nottingham[3] indicate an annual admission rate of around 50 per 100,000 population — a figure which has changed very little in the past 30 years. Overall mortality rates in most large series have remained fairly constant at around 10% although the proportion of elderly patients has greatly increased.[2] Deaths are virtually confined to this elderly group. Mortality figures vary: in a recent study from a district general hospital the mortality was 15%[4] whereas various studies from teaching hospitals have reported rates of less than 10%.[2] Differences in the underlying causes of bleeding or in management strategies may contribute to this variability.

Surgery has been the main intervention used to secure haemostasis. The role of early operation is debatable — in one study this reduced mortality[5] but in another seemed to increase mortality.[6] The deployment of resources may also influence outcome — an Australian hospital has claimed that management in a special multi-disciplinary unit can reduce the mortality from acute upper gastrointestinal bleeding.[7] We have undertaken an audit of adult admissions to the Belfast City Hospital with acute upper gastrointestinal haemorrhage. We were interested to assess our performance and to consider ways in which management might be improved, particularly with regard to the potential role of endoscopic haemostatic techniques.

METHODS

A retrospective survey was made of the records of all patients admitted with acute gastrointestinal haemorrhage to the Belfast City Hospital during the year 1983.

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Cases were identified from the medical endoscopy unit records, theatre records of endoscopies and operations, Hospital Activity Analysis coded discharge summaries and the hospital mortality records for the year. Details of diagnosis, management and outcome were identified.

RESULTS

During the year there were 189 admissions for upper gastrointestinal haemorrhage. Of these 114 had presented with haematemesis, 53 with melaena and 22 with both these features. There were 128 males and 61 females; the age range was 15–98 years, mean 51·5 years. One male patient was admitted twice during the year. The cause of bleeding is shown in Table I. This was determined by endoscopy shortly after admission in 161 cases. The overall mean interval between admission and endoscopy was 2·8 days. Barium meal was the method of investigation in 8 patients. No cause was found for bleeding in 17 patients and a further 20 were not investigated.

TABLE I

The causes of upper gastrointestinal bleeding in 189 admissions to the Belfast City Hospital in 1983

	Number	*Percentage*
Oesophagitis/ulcer	21	11·0%
Oesophageal varices	3	1·5%
Mallory-Weiss tear	7	3·5%
Gastritis/gastric erosions	26	14·0%
Simple gastric ulcer	13	7·0%
Gastric tumours	3	1·5%
Duodenal ulcer	48	25·5%
Duodenitis	8	4·0%
More than one possible site	23	12·0%
Undetermined site(s)	17	9·0%
Not investigated	20	10·5%

In 24 cases (12·5%) there was more than one possible site of blood loss, but no evidence of bleeding to indicate the likely source at the time of endoscopy. This group included 10 patients who had duodenal ulceration but also other possible causes of bleeding. In 32·5% of cases the bleeding was unequivocally due to peptic ulceration.

The overall mortality was 4·8%. Details of the nine patients who died are shown in Table II. Two died from uncontrolled haemorrhage, a 54-year-old male with an oesophageal carcinoma and an 83-year-old female who refused investigation or active management. The others died as a result of associated complicating factors including hepatic encephalopathy, bronchopneumonia and heart failure.

Twenty-two patients underwent surgical operation. Thirteen were necessary to achieve haemostasis (six patients with duodenal ulcer, two with gastric ulcer, three with gastric erosions and one each with oesophageal varices and a Mallory-Weiss tear). Three operations were for perforated duodenal ulcer and six were

elective procedures (three for duodenal ulcer, one for gastric ulcer with gastro-colic fistula, one for carcinoma of the stomach and one for leiomyoma of the stomach). There were three deaths in these patients.

TABLE II

Details of patients who died following admission for acute upper gastrointestinal haemorrhage

	Sex	*Age*	*Cause of bleeding*	*Cause of death*
1.	M	51	Oesophageal varices	Post-operative encephalopathy
2.	M	54	Oesophageal carcinoma	Uncontrolled bleeding
3.	M	55	Gastro-colic fistula from gastric ulcer	Post-operative bronchopneumonia
4.	F	60	Oesophageal varices	Encephalopathy
5.	M	69	Duodenal ulcer	Post-operative bronchopneumonia
6.	M	77	Oesophageal carcinoma	Bronchopneumonia
7.	M	77	Duodenal ulcer	Congestive heart failure
8.	F	83	Gastric carcinoma	Following transfusion cardiac arrest
9.	F	83	Acute haematemesis. Refused investigation and treatment	Uncontrolled bleeding

There were 61 patients in whom peptic ulcer disease alone was identified as the cause of haemorrhage. One patient with severe haemorrhage from a gastric ulcer and two patients with haemorrhage and perforation underwent surgery without initial endoscopy. Of the remaining 58 the number with endoscopically determined active bleeding and those with and without stigmata of recent haemorrhage are shown in Table III. Surgery was used to achieve haemostasis in seven of these patients. One patient with a vigorously bleeding ulcer underwent early surgery. In one with an actively oozing ulcer and history of chronic peptic ulcer disease, early surgery was performed because the patient refused to accept

TABLE III

Initial endoscopic appearance of peptic ulcers and their outcomes

		Further bleeding	*Surgery*
Not bleeding No stigmata of recent haemorrhage	38	3	1
Not bleeding With stigmata of recent haemorrhage (Ooze, visible vessel, blood clot, blood 'spot')	19*	6	5*
Bleeding	1	1	1

*Includes one patient who underwent early surgery to avoid the need for blood transfusion.

blood transfusion on religious grounds. More ulcers with stigmata of recent haemorrhage re-bled compared to ulcers with no stigmata (6 out of 18 compared to 3 out of 38: $p < 0{\cdot}02$, Chi squared analysis). The overall mortality from bleeding peptic ulcer was three out of 61 (5%). Surgery was performed in 15 (25%) and death occurred in two of these, a mortality rate of 14%.

DISCUSSION

The aims of this study were to assess our performance and consider ways in which we might improve. In terms of the overall mortality this series compares favourably with that in any other published study. In part at least this is likely to be due to the relatively low proportion of serious cases. About two-thirds of patients did not require blood transfusion and the majority overall (88%) required only conservative management. Many of the cases in this study were due to mucosal inflammation and/or erosion in the oesophagus, stomach or duodenum. The proportion of those admitted with haemorrhage from peptic ulcer disease (32·5%) was lower than in other published UK series, in which figures range from 44% to 58%.[8] Nevertheless the mortality figures specifically for peptic ulcer cases were similar to the overall figure. This has been achieved without the setting up of a single specialist unit for gastrointestinal bleeding. Patients are admitted to both medical and surgical wards which liaise and co-operate as necessary. The operation rate of 25% for peptic ulcers is lower than in some hospitals which have a more aggressive policy[6] but our more conservative approach, borne out by the results, is more in keeping with recent recommendations.[9]

In seeking ways to improve our management one aspect to consider is the rather excessive proportion of minor cases which might not be the most efficient use of resources. We could try to be more selective about admissions, but the diagnosis and prognosis of patients at initial assessment without investigation is fraught with difficulties. A policy of early endoscopy in all cases would enable accurate diagnosis and possibly the early discharge of patients with minor problems.

An area of potential improvement is the use of non-surgical (endoscopic) methods aimed at securing haemostasis. These include laser photocoagulation, various diathermic devices, heater probes[10] and most recently injection of adrenaline.[11] These techniques have mostly been used in an effort to control active bleeding from ulcers and to prevent re-bleeding from ulcers which are not actively bleeding. In the latter group various signs of recent haemorrhage have been shown to be associated with an increased risk of re-bleeding: a visible vessel, blood spots, adherent blood clot or active oozing from an ulcer crater.[12] Our experience has confirmed that ulcers with these features tend to re-bleed more frequently than ulcers which do not have such stigmata. Eight patients admitted with bleeding from peptic ulcer required surgery to achieve haemostasis, and one died. If effective haemostasis had been achieved by an endoscopic method the need for further transfusion and operation might have been avoided. One patient with an actively bleeding single gastric erosion required surgery, and might also have been managed endoscopically. If such a device was used at initial endoscopy in those ulcer patients who were considered at risk of further bleeding, 20 patients in our series would have been treated. This might have avoided the further bleeding which did occur in seven and led to surgery in five. It might also have avoided surgery in the patient with an oozing ulcer who would not accept blood transfusion. The potential use of this technique at initial endoscopy is therefore 20 out of 58 ulcers (34%), and 11% of admissions for upper gastrointestinal bleeding.

It seems unlikely that any endoscopic technique would be effective or applicable in all cases. It would only be justifiable if the overall benefits outweighed any risk. The number of potential cases in one year is small, but important. If we are to improve our management, endoscopic haemostasis does offer that possibility and it is our intention actively to explore this area. It may at least be possible to reduce blood transfusion requirements and the need for surgery.

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Sexual attitudes and practices of selected groups in Northern Ireland since the emergence of AIDS

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SUMMARY

One hundred and seventeen heterosexual males and females attending a sexually transmitted disease clinic and 57 homosexual males from a local "gay" club were asked to complete a questionnaire regarding their attitudes and sexual practices since the emergence of AIDS. The results show a trend towards increasing partner change rate among heterosexual males. There has been an increase in the practice of insertive anal intercourse by homosexual men with Northern Ireland contacts but no corresponding increase with contacts outside Northern Ireland. The practice of receptive anal intercourse has remained constant. Significant differences in attitudes between homosexual and heterosexual males were expressed with regard to testing of 'at risk groups' ($p < 0{\cdot}001$), in the uptake of testing ($p < 0{\cdot}01$), and in attitudes to sexual practices if they themselves became HIV positive. There was a low level of anxiety amongst heterosexuals regarding risk of HIV infection in the future. Less than 50% of the heterosexual patients attending this clinic use condoms, though more claim to intend to use them in future.

INTRODUCTION

Since the recognised cases of human immunodeficiency virus (HIV) infection in the United Kingdom the disease has largely remained within well defined groups. These groups include homosexual males, injecting drug users and haemophiliacs.[1] Reported transmission of the infection heterosexually has been uncommon [2] but is increasing.[3] Events which may eventually enhance a changing pattern of transmission are (a) Introduction of infection by heterosexual contact with persons from outside the UK, (Africa, USA or South America). (b) 'Bridging' of the homosexual/heterosexual groups by sexual intercourse between an infected bisexual male and a female partner. (c) Sexual intercourse between an infected injecting drug user and a heterosexual partner. There is of course an overlap between drug abuse and prostitution in both sexes and the risk to both homosexual and heterosexual communities is obvious. It is probable that women are at greater risk of infection in the heterosexual community.

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Despite public education campaigns about HIV in the USA and the UK it appears that heterosexuals may not yet perceive themselves as actually being at risk despite a definite increase in knowledge about risk factors.[4, 5] On the other hand homosexual men in cosmopolitan areas seem to have recognised the risk of infection and are adjusting their sexual practices accordingly.[6, 7, 8] In Northern Ireland there is not known to be a significant injecting drug-using population, nor is there a large, open, homosexual community. People here may thus derive a false sense of security since few people know anyone whom they perceive to be at risk or a likely source of infection.

METHODS

A questionnaire to be completed by the interviewer was devised to determine age, sexual orientation, age of first sexual intercourse, sexual practices, partner change-rates, and condom usage for the years 1981, 1984 and 1987 among heterosexual males and females and homosexual men. Participants were also questioned as to sexual contact outside Northern Ireland during the period of the study. Their perception of their past, present and future risk of HIV infection and what measures they had used in the past or were considering using to avoid infection in the future were ascertained. Participants' attitudes towards HIV testing for particular groups, whether they themselves had had an HIV test and their feelings on having such a test done were also examined, as was their attitude to having sex with someone who was HIV positive. They were also asked questions regarding concern over HIV infection. The questionnaire was presented in March 1988 to groups of people thought to be at risk of acquiring HIV infection in this community;[1] these were heterosexual male and female attenders at the Genitourinary Medicine Clinic, Royal Victoria Hospital, Belfast recruited on a sequential basis, and homosexual/bisexual men attending a local "gay" club.

The numbers making a particular response are expressed as a percentage of their subgroup. In the case of retrospective answers of sexual activity in 1987, 1984 and 1981 percentages given are for those who were sexually active at the time.

Analysis where appropriate used Chi-squared testing between the groups of the observed responses. This was not appropriate for questions relating to sexual activity over the preceding six years.

RESULTS

One hundred and seventy-four questionnaires were completed, 58 by heterosexual males, 59 by females and 57 by homosexual men. The information collected regarding mean age, mean age at first intercourse, median numbers of sexual partners for 1987, 1984 and 1981, together with the ranges are shown for each group in Table I. Median as opposed to mean numbers of partners were used because of the skewing effect on the mean of a few with high rates of partner change in each group.

Sexual practices in Northern Ireland suggest that oral sex was most common among homosexual men but is becoming more commonly practised by heterosexual males — 70·4% in 1987 compared to 57·6% in 1981. Vaginal intercourse was usually a component of heterosexual contact but 12·3% of the homosexual/bisexual group had had vaginal intercourse during 1987.

Among homosexual men insertive anal intercourse had become more commonly practised — 72·7% in 1987 compared to 44·7% in 1981 while receptive anal

TABLE I

Patients attending the genitourinary medicine clinic at the Royal Victoria Hospital and homosexual men attending a "gay" club

	Heterosexual patients		*Homosexual*
	Male	*Female*	*males*
Number	58	59	57
Mean age	28·6	24·0	28·1
Range	(20–62)	(16–45)	(19–55)
Caucasian	100%	100%	100%
Past HIV testing	12·1%	23·7%	41·1%

Median number of sexual partners in Northern Ireland per year

	Heterosexual patients		*Homosexual*
	Male	*Female*	*males*
1987	2·0 (Range 0–10)	1·4 (Range 1–9)	3·4 (Range 1–60)
1984	1·9 (Range 0–25)	1·1 (Range 0–10)	3·5 (Range 1–150)
1981	1·3 (Range 1–25)	1·1 (Range 0–10)	3·1 (Range 0–100)

Number of sexually active persons having sexual encounters outside Northern Ireland by year

	Heterosexual patients		*Homosexual*
	Male	*Female*	*males*
1987	15/58 (25·8%)	12/59 (20·3%)	42/57 (73·7%)
1984	15/51 (29·4%)	6/38 (15·8%)	36/49 (73·5%)
1981	10/39 (25·6%)	4/21 (19·0%)	32/38 (84·2%)

intercourse had been practised by a constant proportion of homosexual men, 31·6% in 1981, 37·8% in 1984 and 38·9% in 1987. Among heterosexuals anal intercourse would appear to be practised by a relatively constant percentage, 9·4% of males and 9·5% of females in 1981 and 9·3% of males and 8·8% of females in 1987. Oro-anal sexual stimulation was not admitted to by heterosexuals while the figures for homosexual men were 34·2% in 1981, 29·5% in 1984 and 40% in 1987.

Sexual encounters outside Northern Ireland had been commoner by homosexual men, 75·4% admitting a sexual encounter compared to 25·9% of heterosexual males and 20·3% of females in 1987. A similar pattern was seen in 1984 and 1981. The most common sexual practice outside Northern Ireland among homosexual men was oral sex, 41·9% in 1987, while insertive and receptive anal intercourse were much less common than with Northern Ireland contacts, 21·4%

and 11·9% respectively for 1987. This compared to 25·0% and 9·7% respectively for 1981. Condoms had been used by 49% of heterosexual males, 39% of females and 57% of gay males.

Eight heterosexual males, 14 females and 22 homosexual males had had an HIV test. This was a significant difference between the uptake of HIV testing in the heterosexual males and homosexual males ($p < 0·01$). Present or future anxiety about acquiring HIV and personal perception of past and present risk of acquisition of HIV because of lifestyle are summarised in Table II.

TABLE II

Anxiety about acquisition of HIV infection and perception of personal risk

	Heterosexual patients		*Homosexual*
	Male	*Female*	*males*
Anxiety about HIV now			
Not anxious	36 (62·1%)	35 (59·3%)	19 (33·9%)
Slightly anxious	14 (24·1%)	19 (32·2%)	30 (53·6%)
Quite anxious	2 (3·4%)	1 (1·7%)	6 (10·7%)
Very anxious	6 (10·3%)	4 (6·8%)	1 (1·8%)
Anxiety about HIV in future			
Not anxious	23 (39·7%)	27 (45·8%)	10 (17·9%)
Slightly anxious	20 (34·5%)	22 (37·3%)	19 (33·9%)
Quite anxious	5 (8·6%)	3 (5·1%)	11 (19·6%)
Very anxious	10 (17·2%)	7 (11·9%)	16 (28·6%)
Risk of past lifestyle			
No risk	27 (46·6%)	32 (55·2%)	22 (39·2%)
Little risk	16 (27·6%)	13 (20·7%)	19 (33·9%)
Great risk	2 (3·4%)	3 (5·2%)	3 (5·4%)
Risk of present lifestyle			
No risk	53 (91·5%)	58 (98·3%)	39 (69·4%)
Little risk	5 (8·6%)	1 (1·7%)	12 (21·4%)
Moderate risk	—	—	4 (7·1%)
Great risk	—	—	1 (1·8%)

The responses to questions regarding changes of lifestyle in the years 1981, 1984 and 1987 are shown in Table III along with the measures the people intended to take in the future. By 1987, 59·3% of homosexual men had made some alteration to their lifestyle, while only 31% of heterosexual males and 16·9% of females had done so. Risk reduction by change of practices was most common among homosexual men while heterosexuals intend to use condoms and decrease their number of partners. Fifty per cent of homosexual men compared to 87·9% of heterosexual men felt that 'at risk' groups should be compulsorily HIV tested. This is highly significant ($p < 0·001$).

TABLE III

Deliberate changes made in lifestyle to avoid HIV infection

	Heterosexual patients		Homosexual
	Male	Female	males
Made deliberate change in			
1987	17/55 (31%)	9/54 (16·6%)	32/54 (59·3%)
1984	1/49 (2%)	2/32 (6·2%)	6/46 (13·0%)
1981	0/39 (0%)	0/21 (0%)	2/28 (7·1%)
Reduce risk in future by adjusting sex life:	37 (63·8%)	34 (57·6%)	45 (80·4%)
Change practices	8 (21·6%)	5 (14·7%)	29 (64·4%)
Use condom	31 (83·7%)	30 (88·2%)	33 (73·3%)
Decrease partners	29 (81·0%)	32 (94·1%)	31 (68·8%)
Avoid partner from dangerous areas	25 (67·6%)	26 (76·5%)	25 (55·5%)

The responses to a hypothetical situation 'what sexual contact would you be prepared to have with a loved one who was found to be HIV +ve' were that 53·6% of homosexual men would continue masturbation and 26·8% passive oral sex, and that 12·5% and 10·7% would continue to have insertive and receptive anal intercourse respectively. Among heterosexuals, 19% of males and 10% of females would continue masturbation and 10·3% of both vaginal intercourse (Table IV).

TABLE IV

Response to hypothetical situations

	Heterosexual male (N = 58)	*Homosexual male* (N = 56)
"What sexual contact would you have if a partner you loved was found to be HIV positive?"		
Masturbation	11 (19·0%)	29 (51·7%)
Vaginal intercourse	6 (10·3%)	—
Insertive anal intercourse	—	7 (12·5%)
Receptive anal intercourse	—	6 (10·7%)
"What would your actions be if you were found to be HIV positive?"		
Inform partner	55 (94·8%)	40 (71·4%)
Casual protected intercourse	3 (5·2%)	20 (35·7%)
Find another HIV positive partner	3 (5·2%)	16 (28·6%)
Stop all sex	48 (82·8%)*	14 (25·0%)*

*$p < 0·001$

If the respondents themselves became HIV +ve then 94·8% of heterosexual males claimed they would inform their partners compared to 71·4% of homosexual men, 35·7% of homosexual men would continue casual protected sexual intercourse and 28·6% would find another HIV positive partner. Only 5·2% of heterosexual males would undertake either of these options. 82·8% of heterosexual males and 25% of homosexual males claimed they would stop all sexual intercourse ($p < 0·001$).

DISCUSSION

It is recognised that a study such as this, depending on recall of behaviour up to seven years previously, may not be reliable although memory of sexual behaviour may be more clearly recalled than other aspects of human behaviour. Allowing for the foregoing, the figures for median numbers of partners in a given year show that the homosexual males had more partners per year than the heterosexual male patients. Homosexual partner change rate has remained constant comparing 1981 to 1987, while over the same period heterosexual males have shown a trend towards an increase of partner change rate. Papers from two studies carried out in London over the same period have shown a decrease in partner change rate.[9, 10]

The sexual practice of insertive anal intercourse has become more commonly practised by homosexual men, while the number practising receptive anal intercourse has remained fairly constant. Over the years 9% of the heterosexual male and female patients had practised anal intercourse. Ano-receptive intercourse has been shown to be an important risk factor in the acquisition of HIV infection both in homosexual men and in females.[7, 10] This form of heterosexual transmission has not been highlighted in Government campaigns and hence females practising ano-receptive intercourse may be unaware of the increased risk associated with this.

The small numbers of heterosexual patients answering questions on sexual practices while outside Northern Ireland make comparisons between the groups impossible. Amongst homosexual males the percentage practising receptive and insertive anal intercourse while abroad remained constant. Although used less frequently with Northern Ireland contacts these practices pose an obvious threat of 'importing' infection. These trends in sexual practices tend to confirm the 'splendid isolation' hypothesis which may arise in a community such as Northern Ireland where reported seroprevalence of HIV is low.

There was a significant difference ($p < 0·001$) between the number of homosexual men and heterosexual male patients who felt 'at risk' groups should be HIV tested. This finding could be interpreted as being due to heterosexual prejudice against homosexuals or that heterosexuals do not yet see themselves as an 'at risk' group, also that homosexuals are more aware of the implication of HIV testing to the individual. It has been shown that attitudes to AIDS amongst a group of London medical students correlate more closely to attitudes to homosexuality than to knowledge about the disease[11] while among a group of Northern Ireland students, 51·6% believed AIDS 'sufferers' should be cared for in a special hospice,[5] whether out of compassion or from a wish to isolate the disease. These studies strongly suggest that the heterosexuals do not see themselves as at risk, and are prejudiced against homosexuals.

Amongst heterosexuals there is a low level of anxiety about HIV infection now or in the foreseeable future and there has been significantly less uptake of HIV

testing by heterosexual males than homosexual men. More importantly there was little perceived risk amongst the same group, 91·4% of heterosexual males and 98% of heterosexual females felt that their present lifestyle did not put them at risk despite the fact that all these people were attending a genitourinary medicine clinic at the time of participating in the questionnaire.

Table II shows the number expressing a particular level of anxiety, as a percentage of their gender/orientation group. Cross tabulation of HIV testing to anxiety showed tested males, regardless of orientation, to be more anxious about the future than untested males. These results suggest that a request for HIV testing may stem from personality traits rather than definite knowledge of previous "at risk" behaviour. Knowledge of test results has been shown to affect the behaviour of homosexual men, but is not recommended as an aid to risk reduction.[12]

The highest proportion of people prepared to reduce risk of HIV infection by adjusting their sex life was among homosexual males (80·4%); 72% of these men included condom use as part of that adjustment. Heterosexual females were least prepared to adjust their sex life (57·6%), the most popular alteration being to decrease the number of partners.

Condom usage has been one of the main methods of protection advocated in recent education campaigns. Only 49% of heterosexual male patients, 39% of heterosexual female patients and 57% of the homosexual males admitted to having ever used condoms. (Unfortunately no questions were asked regarding how regularly condoms were used). About half of each group intended to use condoms as part of their risk reduction adjustments. In a group of 399 sexually active Northern Irish students, 39·1% used condoms[5] and in an American study over one year, it was reported that "sexually active adolescents report placing high value and importance on using a contraceptive that protects against sexually transmitted diseases and know that condoms prevent these diseases. Despite this the females continued not to intend to have their partners use condoms and the males' intentions to use condoms decreased".[13] It would appear that further education regarding the benefits of consistent condom use is required.

Finally, responses to questions regarding sexual activity with a hypothetical known HIV +ve partner show that homosexuals are more willing to consider sexual contact with such a partner. Questions regarding what action people would take if they themselves became infected with HIV showed that homosexuals would be more willing to continue protected intercourse than heterosexual men. Significantly more male heterosexuals claimed they would stop all sexual intercourse compared to homosexual males. These findings would support the hypothesis that homosexual males, who see themselves more at risk of HIV infection, have considered their position more fully with a resultant pragmatic response to the issues of sex and HIV infection, compared to their heterosexual male counterparts, who respond more idealistically probably because they themselves feel they will never have to face these issues as fact.

It appears from this study that the heterosexual patients attending a genitourinary medicine clinic may not yet have grasped the fact that they are at risk of HIV infection and further education is required. It also appears that while a group of homosexual men had considered the issues and dangers more fully and have begun to change their attitudes and practices accordingly, they are still not completely convinced of their own risk. Although the populations studied were highly selected groups by their site of recruitment, the implications are that young

people in Northern Ireland have not taken note of national education campaigns and a further locally based education initiation may be indicated.

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The Northern Ireland experience of growth hormone therapy for short stature

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SUMMARY

In 1967 the first patient in Northern Ireland commenced growth hormone treatment for short stature. By the end of December 1988 a total of 89 patients had been treated. Thirty-two had idiopathic isolated growth hormone deficiency, an incidence of 1·5 new cases per year (in a population of 1·5 million with approximately 30,000 births per year). Since 1967 the mean age at starting treatment has fallen from 18 years to 10 years and the height standard deviation score has fallen from −4·7 ± 0·6 to −3·4 ± 0·3. The group with classical growth hormone deficiency (maximum GH < 7mU/l during insulin-induced hypoglycaemia) had a greater increase in height velocity over the first year of treatment, 3·8 ± 0·4 cm, than those with a partial deficiency (maximum growth hormone 7·1—20 mU/l), 1·9 ± 0·4 cm. All pre-pubertal children responded with a rise in the height velocity standard deviation score from −1·8 ± 0·3 before treatment to +3·5 ± 0·4 over the first year of treatment.

58% of the adult males and 25% of adult females have attained an adult height within the normal range (3rd centile or above). There have been three deaths, one each from Fanconi's aplastic anaemia which predated growth hormone treatment, an accidental fire injury and a relapsing craniopharyngioma. There have been no deaths from Creutzfeldt-Jakob disease. Growth hormone therapy is safe and effective, but continues to be commenced late in terms both of age and height standard deviation score.

INTRODUCTION

The growth promoting activity of crude anterior pituitary extracts in hypophysectomized and intact laboratory animals was first demonstrated by Evans and Long in 1921.[1] Isolation and characterization of a relatively pure growth promoting factor was achieved by Li and his associates in 1945.[2] It was a further decade before a favourable response to human growth hormone (hGH) treatment was reported by Raben in a 19-year-old male with growth hormone deficiency.[3] In 1967 the first patient in Northern Ireland commenced treatment with growth hormone for short stature. Over the next 18 years, all growth hormone used was of human cadaver origin but this was withdrawn in 1985 because of isolated reports from elsewhere of possible contamination with a slow

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virus causing Creutzfeldt-Jakob disease.[4] Since then all patients in Northern Ireland have been treated with growth hormone manufactured by recombinant DNA technology. Although there are many reports on the improved growth rates in growth hormone deficient children,[5-7] the ultimate success of treatment is the attainment of a normal adult height. Final heights achieved in patients treated within the last two decades have been disappointing,[8, 9, 10] and may reflect the late onset of therapy or inadequate doses administered. We have examined the case records of the 89 patients treated in Northern Ireland from 1967 to 1988 and report on final height, response rates and practice trends over these 21 years.

METHODS

Laboratory diagnosis: The diagnosis of classical growth hormone deficiency was made if plasma GH concentration did not exceed 7 mU/l during insulin hypoglycaemia. Partial growth hormone deficiency was defined as a GH response of greater than 7 but less than 20 mU/l. 35 patients were diagnosed as growth hormone deficient after their bone age had reached 10 years. A small number of this group (13%) excluding those with hypopituitarism or precocious puberty were not reassessed by either a repeat sex hormone primed stimulation test or by retesting at cessation of therapy.[11]

Anthropometric measurements: Height was measured according to the recommendations of Tanner and Whitehouse,[12] using a Harpenden stadiometer. For analysis, the cross sectional standards of Tanner et al were used.[12] Bone age was determined from X-rays of the left hand and wrist (Tanner et al[13]). To compare growth data at different ages in both sexes, height (and height velocity in the pre-pubertal group) was expressed as the standard deviation score (SDS) calculated from the measured height (X), the mean height ($\bar{X}$) and the height standard deviation at that age (SD) according to the formula

$$SDS = \frac{X - \bar{X}}{SD}$$

Height velocity was determined from the difference between two height measurements divided by the time interval between the measurements in decimal years. Only observed periods of six months or more were used for calculation. Adult height was predicted at the onset of therapy using the tables of Tanner et al[14] and subsequently compared to the actual achieved adult height in those who had completed growth. Target heights were calculated using the mid-parental heights.[15] Comparisons of actual heights with predicted and target heights were made using paired t-tests. Means ± SEM are reported.

PATIENTS

In the past 21 years, 89 patients have been treated with growth hormone for short stature in Northern Ireland. Thirty-two had idiopathic isolated growth hormone deficiency and one was secondary to cranial irradiation for acute lymphoblastic leukaemia. Sixteen had partial growth hormone deficiency. Twenty-seven had panhypopituitarism — 15 idiopathic (of which two presented in infancy with recurrent hypoglycaemia) and 12 due to known organic pituitary disease (craniopharyngioma, chromophobe adenoma or granulomatous disorders). Ten had Turner's syndrome, two normal short stature and one spondyloepiphyseal dysplasia. Of those patients with Turner's syndrome, one had in addition classical growth hormone deficiency, five had partial growth hormone deficiency, and four had normal growth hormone secretion.

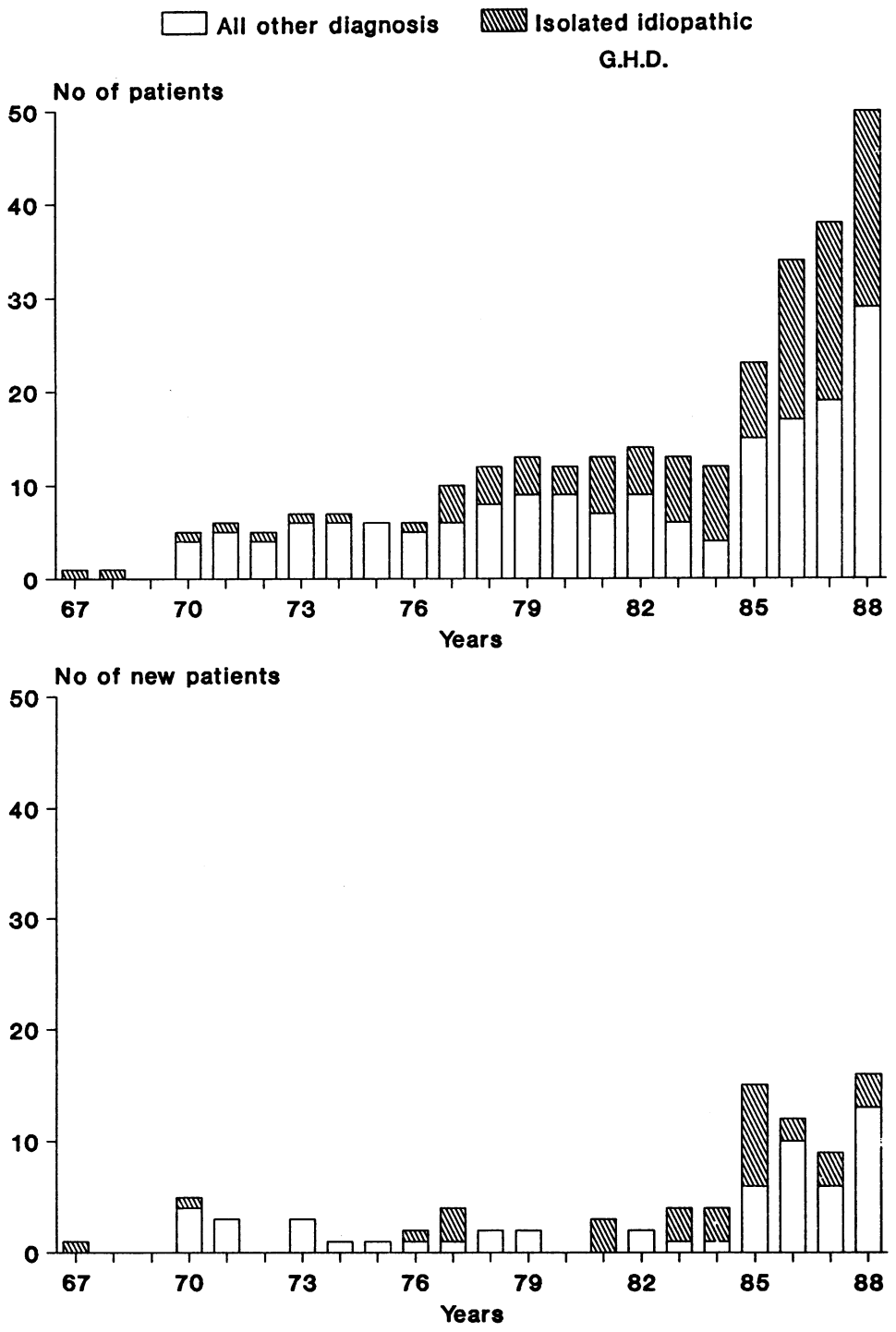

Fig 1. Number of patients on growth hormone treatment per year and the number of new cases diagnosed each year in Northern Ireland, 1967–1988.

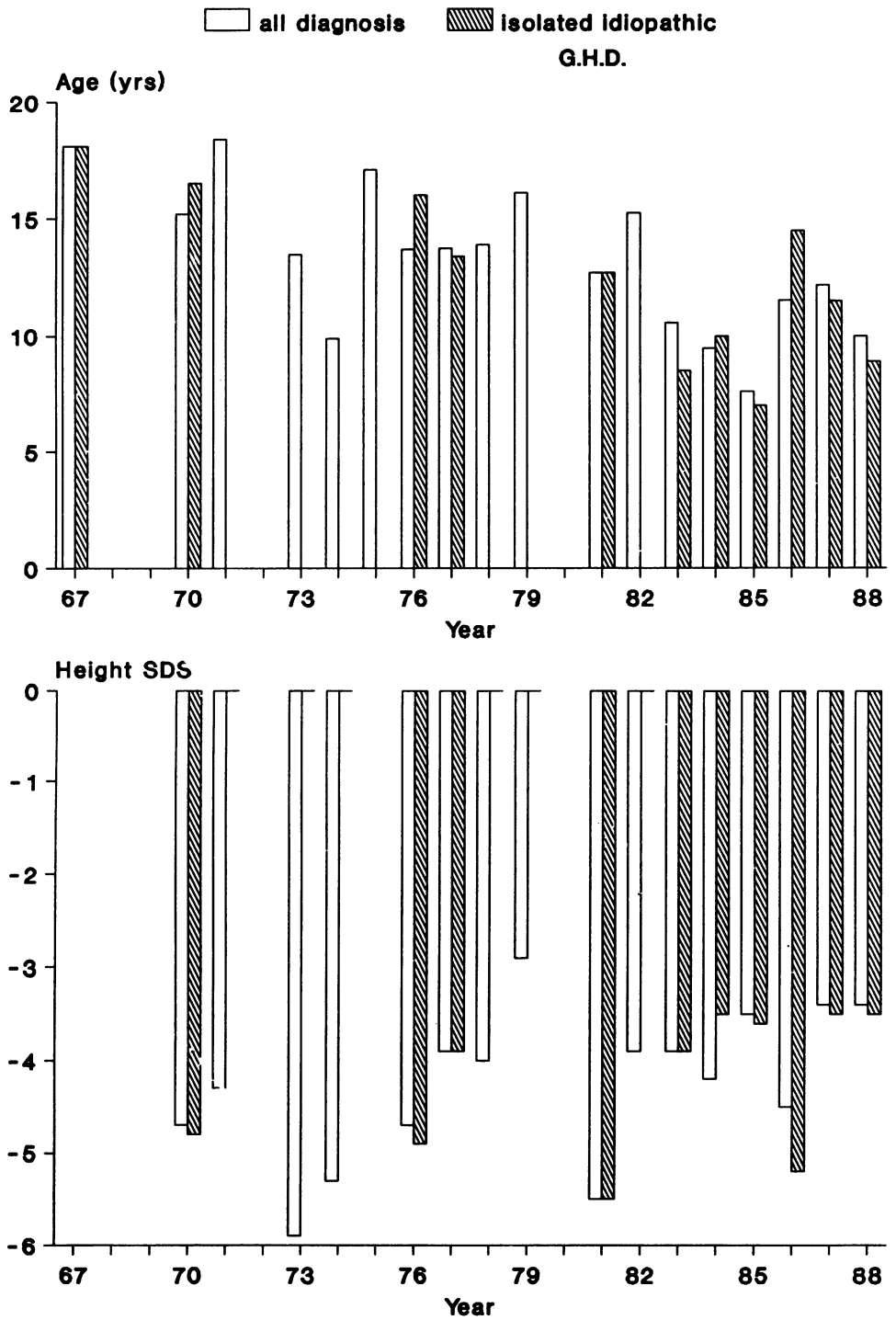

Fig 2. Mean age and height standard deviation score (SDS) when growth hormone treatment first commenced (1967–1988)

The numbers of patients on treatment and the numbers of new patients commenced on treatment each year, including those with a diagnosis of classical idiopathic growth hormone deficiency has risen with time (Fig 1). The mean age at onset of therapy has fallen from 18 years in 1967 to 10 years in 1988 and the mean height SDS at commencement of therapy has also fallen with time (Fig 2). Five cases had a bone age in advance of their chronological age at the onset of therapy, of whom four had received cranial irradiation which has been reported to be associated with the premature onset of puberty.[16] The mean delay in bone age in the rest of the group with growth hormone deficiency at commencement of therapy was $-2 \cdot 8 \pm 0 \cdot 2$ years.

There have been three deaths in the group, one each from an accidental fire injury, Fanconi's aplastic anaemia which predated growth hormone therapy and from a relapse of a craniopharyngioma. There were no deaths from Creutzfeldt-Jakob disease.

RESULTS

In 22 patients (25%) assessment of the response to growth hormone treatment was not possible, as there was either no pre-treatment assessment of growth velocity (9 patients) due to the late age of diagnosis ($15 \cdot 2 - 18 \cdot 9$ years), or because the duration of therapy was less than six months (13 patients). In the remaining 67 patients, 41 (61%) responded with an acceleration in growth velocity of greater than 2·0 cm/year in the first year of treatment (range $2 \cdot 0 - 10 \cdot 6$ cm/yr), 19 (29%) showed an acceleration of less than 2·0 cm/year, and 7 (10%) showed no response to treatment (3 panhypopituitarism, one idiopathic growth hormone deficiency, one normal short stature and two with Turner's syndrome. The group with classical growth hormone deficiency had a greater increase in height velocity than those with partial growth deficiency ($3 \cdot 8 \pm 0 \cdot 4$ vs $1 \cdot 9 \pm 0 \cdot 4$ cm/yr). All patients with growth hormone deficiency in the pre-pubertal group responded with a rise in height velocity SDS, which was $-1 \cdot 8 \pm 0 \cdot 3$ before treatment and $+3 \cdot 5 \pm 0 \cdot 4$ after treatment. There was a significant negative correlation between the change in height velocity SDS after the first year of growth hormone treatment and the growth hormone response to insulin-induced hypoglycaemia in this pre-pubertal group ($r = -0 \cdot 42$, $p < 0 \cdot 05$; $n = 25$) (Fig 3). The ratio of change in bone age to chronological age ($\triangle BA / \triangle CA$) up to a bone age of 12 years in girls and 14 years in boys was $1 \cdot 1 \pm 0 \cdot 06$.

Twenty-nine patients had completed therapy and an adult height has been recorded in 19 males and 8 females. The mean adult height for males was $162 \cdot 4 \pm 0 \cdot 9$ cm and for females $147 \cdot 4 \pm 2 \cdot 8$ cm; these were not significantly different from the mean predicted adult height (actual height $159 \pm 1 \cdot 4$ cm vs predicted height $158 \pm 1 \cdot 7$ cm). However, they were significantly lower than the target height (males $162 \cdot 4 \pm 0 \cdot 9$ cm vs $170 \cdot 8 \pm 0 \cdot 9$ cm, $p < 0 \cdot 001$; females $147 \cdot 4 \pm 2 \cdot 2$ cm vs $156 \cdot 6 \pm 2 \cdot 0$ cm, $p < 0 \cdot 05$).

DISCUSSION

It has been postulated that growth becomes growth hormone dependent after birth.[17] A highly significant correlation between height and spontaneous growth hormone secretion has been described in pre-pubertal children.[18] Our findings of 100% response rates in the pre-pubertal group, and the significant negative correlation between the change in height velocity standard deviation score over

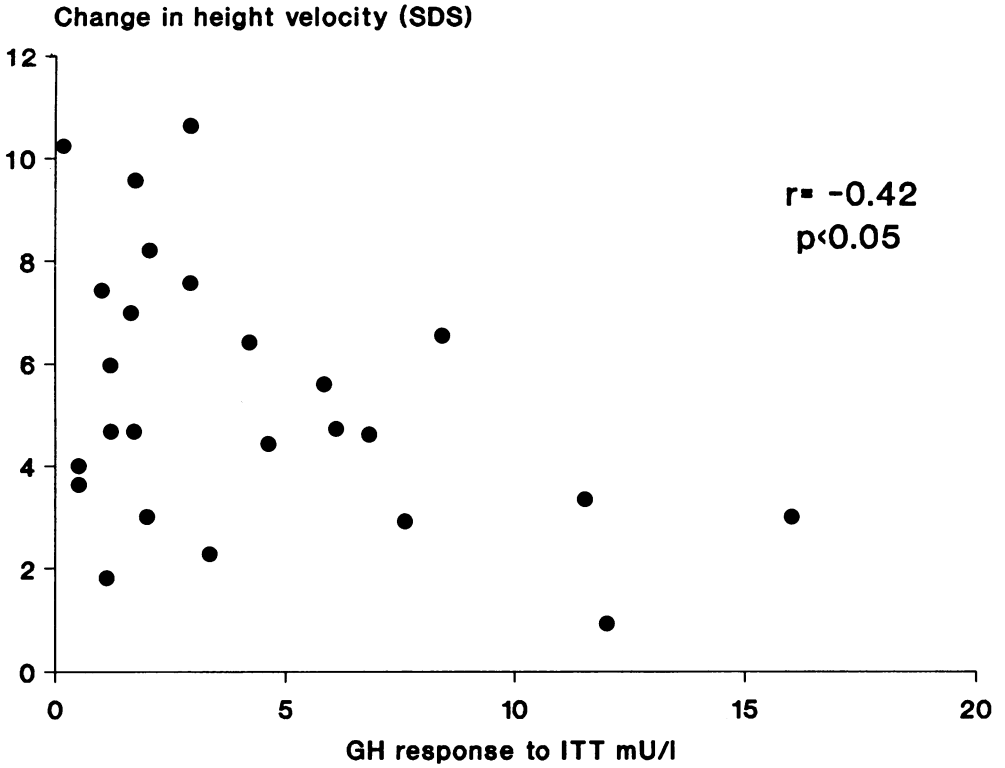

Fig 3. The change in height velocity standard deviation score (SDS) over the first treatment year related to the GH response to insulin-induced hypoglycaemic stimulation in the pre-pubertal group with growth hormone deficiency (n = 25). One boy with normal short stature has been excluded. r = −0·42, $p < 0·05$.

the first year of treatment and growth hormone secretion in this group would be in accordance. A non-linear relationship between growth hormone secretion and height has been described in the pubertal ages.[18] Sex hormones account for pubertal growth acceleration which can occur in the presence of very little growth hormone.[19] Patients with Laron-type short stature, who have an end organ resistance to the action of growth hormone, can have a normal pubertal growth spurt.[20]

A recent study comparing final heights of children treated before and after growth hormone became available found no significant difference between the final heights of those patients with multiple hormone deficiencies treated with growth hormone and androgens, and those treated with androgens alone.[19] Growth hormone succeeded in achieving an adult height approximately 3·4 years earlier, suggesting that fusion of the epiphysis occurred earlier in the GH treated group. All but one of the patients in the growth hormone treated group had been pubertal at onset of therapy.

Our findings of final heights 2·0 SD below the normal population mean for males and 3·0 SD below for females are in accordance with others.[8-10] The failure to reach target heights based on mid-parental heights suggests that the patients failed to reach their true genetic potential for growth. It has been postulated that

growth hormone therapy in growth hormone deficient children prevents further "loss" of height potential but may not succeed in regaining lost height.[21] The disappointing final heights may reflect the late age of diagnoses and greater 'lost' height at diagnoses. All of the patients who have reached adult height in Northern Ireland were treated with a standard dose regimen three times a week. Optimum doses are now being worked out based on body weight and given by daily subcutaneous injection with improved growth rates.[22, 23]

As growth has been shown to be growth hormone dependent in the pre-pubertal years, (when the ratio of bone age to chronological age does not advance at a figure greater than 1·0) treatment of the growth hormone deficient child early in this period of growth should allow greater potential for normal growth and improved final height. We would recommend that height measurements should be plotted on a height centile chart. A height falling three standard deviations below the mean for age on a single measurement, or a height velocity over a full year below the 25th centile, should be referred for further evaluation. A random sample of growth hormone is of little value; a serum sample greater than 20 mU/l following exercise or sleep excludes growth hormone deficiency. If the growth hormone level is below 20 mU/l, growth hormone deficiency is possible, and the child should be investigated further.

Endocrinological evaluation will vary depending on the child's bone age; at a bone age of greater than 10 years, a sex hormone primed insulin-induced hypoglycaemic stimulation test should be carried out. A growth hormone response of less than 7 mU/l to insulin stimulation indicates classical growth hormone deficiency. A response of between 7·1 and 20 mU/l suggests partial growth hormone deficiency. However, the stimulation test should be repeated in such cases.

The trend in Northern Ireland over the last 21 years reflects an earlier age at diagnosis and a fall in the height deficit at onset of therapy. However, the mean age at diagnosis in 1988 was still at the end of the pre-pubertal growth phase, when a large height deficit has already occurred. If the final height prognosis is to improve, children with short stature should be identified earlier, ideally before school age. With the improved availability of treatment and the establishment of optimum treatment regimens, the height prognosis for children in the next two decades should improve.

We are grateful to many colleagues who have referred patients because of short stature over the years of this study. The Growth Clinics at the Royal Victoria Hospital and the Royal Belfast Hospital for Sick Children continue to assess and supervise the management of children and adults requiring growth hormone therapy.

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Vasectomy reversal

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SUMMARY

A small personal series of vasovasostomies and a review of the literature on this subject are presented. The importance is stressed of good counselling before vasectomy is undertaken in the first place.

INTRODUCTION

The popularity of vasectomy is increasing, but so too is the rate of divorce and remarriage. There is also more awareness of the possibility that this operation can be reversed.

METHODS

Thirteen vasovasostomies were performed by one of the authors (HL) between 1978–1988. Follow-up information was gained by personal interview, seminal analysis, post-reversal haematological tests and case records. Three patients were not contactable due to change in address.

All operations involved bilateral identification and limited mobilization of the previously divided vas deferens. A 3/0 gauge nylon double-ended straight needle stent suture was advanced up the lumen of the proximal and distal vas for 1·5 cms and then brought through their walls. Four 6/0 nylon seromuscular sutures completed the anastomosis. The stent sutures were brought through the skin and ligated in loose loops. Patients had bed rest for two days and stents were removed on the tenth day. Seminal analyses were performed postoperatively at 1–2 months and again between 3–5 months.

In addition to seminal analysis at recent review, the Tray agglutination test[1] assessed sperm and seminal antibodies, and a complement preparation was used for sperm immobilising antibodies (positive control from Wellcome Laboratories Ltd).

RESULTS

Clinical, operative and laboratory data on the 13 patients are shown in the Table. The average age at vasectomy was 27·6 years (range 21·5 to 38 years) and at reversal 33·3 years (range 23–49 years). Four patients had vasectomy at 24 years of age or under. Remarriage following divorce was the basis for reversal in ten patients, two requested more children (vasectomy at 21 years and 24 years), and one widower was remarrying.

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TABLE

Clinical, operative and laboratory data on 13 patients

No.	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*
Age at vasectomy	24	26	38	23	21	28	33	32	26	30	27	22	28
Age at reversal	27	30	49	30	23	31	43	36	30	36	29	36	33
Interval (years)	3	4	11	7	1	3	10	4	4	6	2	14	5
Operative findings													
Poor lumen	–	+	–	–	–	–	–	+	–	–	–	–	–
Convoluted	–	+	–	+	–	–	–	+	–	–	–	–	–
Laboratory data													
Sperm counts ($X10^6$/ml)													
Initial	7	nil	20	4·8	0·3	84	.	nil	24	.	.	138	nil
Recent	10	nil	nil	10	8	120	nil	nil	.	.	9	.	nil
Tray agglutination test	–ve	–ve	–ve	–ve	–ve	–ve	1:128	–ve	.	.	–ve	.	–ve
Successful pregnancy post-operative	0	0	N/A	0	1	0	0	0	.	.	3	.	N/A

(N/A not applicable)

Three patients, one of whom had no post-operative data, could not be contacted for the recent analysis and pregnancy information. Twelve patients had a sperm count performed initially and/or on review. Of these, eight had a positive count giving a patency rate of 66%.

Eight patients had complete data; of these three were azospermic throughout, and of the remaining five patients four had an increase in their sperm count with time. The remaining patient developed prostatitis in the interim between the tests. Two of the four azospermic patients had a poor lumen at vasovasostomy and had had vasectomy in the convoluted portion of the vas deferens. One had post-operative granuloma formation and the other had macroscopic normal anatomy.

It is difficult to assess the ultimate pregnancy rate as three patients were not contacted and two are hoping to conceive in the future. The wives of two patients have become pregnant, one before he brought any specimens for examination. Their sperm counts were eight and nine million/ml. Only one serum Tray agglutination test was positive (1:128). This patient had no sperm production, a good lumen but developed a post-operative granuloma. No immobilizing or seminal antibodies were detected.

DISCUSSION

The pathophysiological events following vasectomy are not entirely understood but back-pressure induced congestion and dilatation within the testes and

proximal vas deferens results in decreased patency and subsequent sperm counts.[2, 3] This problem is more significant as the interval between vasectomy and its reversal increases. Obstruction of more than five years is regarded as unfavourable,[4] but the patient's age is not considered relevant for success.

Despite a successful anatomical vasovasostomy, back pressure may cause epididymal sperm granuloma following tubal rupture with resultant functional failure. However, sperm granuloma, created by a continuous leakage at the vasectomy site have a beneficial pressure-releasing effect, with improved sperm quality and less dilation.[2, 5] Sperm granuloma should be proven histologically as they may be confused with suture granuloma.

Controversy exists as to the optimum method of anastomosis. Microscopic, macroscopic, and stented anastomoses are techniques advocated for vaso-vasostomy or vaso-epididymostomy. The general principle in all techniques includes limited mobilization to minimise disturbance of the blood supply, longitudinal incisions to preserve the cremasteric peristalsis and an accurate leak-proof anastomosis to reduce subsequent scarring. Favourable results of 83% sperm present and 55% pregnancy rates are reported for externalized nylon stents.[6] Similar results are documented for +2·5 or +3·5 loupe magnification[7] of stenting, while Denton[8] reports 65% pregnancy rates using a stented macroscopic anastomosis and a 61% rate without stents. Canine experiments have shown that vas obstruction occurs at the stent exit and not at the anastomosis.[9]

Macroscopic techniques without stents have varying and less favourable results. This ranges from a 19% pregnancy rate in a questionnaire of urologists (1630 patients),[10] a 39% pregnancy rate[11] for a two layer anastomosis, to a 57% pregnancy rate[12] using a +2·5 loupe magnification of a one layer full thickness anastomosis. Amelar and Dubin[13] were disappointed with a 33% pregnancy rate and changed to a micro-surgical technique with 53% success rate.

An improved pregnancy rate was observed with the advent of the microscopic technique, advocated by Sibler[14] in 1975, with a pregnancy rate of 76%. Owens,[15] had comparable results (72%) from this two layer microscopic technique. Belker[14] reported a 62% pregnancy rate using a ×10 to ×20 operating microscope (10/0 mucosal and 9/0 muscular anastomosis). Generally one and two layer microscopic anastomoses have similar results: Sharlip[16] had 50% pregnancies with two layers and 52% with one layer anastomoses while Lee[3] had 52% and 50% for the same techniques. While microscopic anastomoses attain optimal anatomical results, considerable practice is required to master the operating microscope. Some feel this expertise does not necessarily impart improved results in view of reported pregnancy rates of greater than 50% for any technique and that results are more dependent on the surgeon than on technique.[17]

Absence of sperm heads or a creamy paste consistency to the seminal fluid at intra-operative examination is an unfavourable prognostic feature. Better grades of fluid are observed when sperm granuloma are present. Half of the patients azospermic at operation have a reasonable recovery. Generally, sperm counts and motility improve with time though re-exploration can be successful if secondary scarring becomes evident by diminishing sperm counts. Vasectomies performed in the convoluted portion of the vas deferens or when a long segment has been excised can make the anastomosis technically difficult.

Technique may explain patency, but a discrepancy exists between patency and pregnancy rates. Sperm reappearance is therefore not necessarily an index of fertility. An immunological basis may explain this. Sperm antibodies occur in two thirds of vasectomized men, especially when sperm granuloma are present. Most studies correlate high antibody titres with infertility. The Tray agglutinating test detects head to head sperm agglutination (IgM and IgG) which is common in vasectomy patients and rare in naturally infertile men (prostatic IgA).[18] Despite diminished fertility with serum agglutinating antibody titres of 1:64, titres of 1:256 correlate better with infertility,[18, 19] but 25% of patients still conceive with these high titres. Semen agglutinating activity and immobilizing antibodies are only detected when there are high titres of serum agglutinating antibody. Seminal agglutinating activity significantly increases after vasectomy reversal[18, 19, 20] whereas serum levels remain relatively unaltered. Pregnancy rates are reduced with seminal titres of $>1:8$ (65% to 7%[20] and 85% to 14%[19] pregnancy rates for negative and positive seminal agglutinating activity respectively). Hence seminal agglutinating activity is closely correlated with infertility. Immunosuppression by steroids is claimed to have beneficial effect in reducing antibody titres.[7, 21]

Most wives who become pregnant do so within two years. If not and the male partner appears fertile then the female's fertility should be questioned. In summary, mechanical failure results from a long interval, excessive vas excision, vasectomy in the convoluted portion, poor anastomosis, infection-induced fibrosis and anastomotic granuloma. Function failure with poor semen quality results from back pressure, injury to sympathetic fibres, sperm antibodies and low fertility of the wife.

This small study highlights the social background in our society and good pre-vasectomy counselling in Northern Ireland. Restricting vasectomy to those in their late twenties and over would further reduce reversal requests. Our study identifies no hindrance from a long period of obstruction. Only one patient had a positive antibody titre. Our technique appears correct as control samples were positive. Generally, post-reversal sperm counts were lower than would be regarded as normal but this appears to be no obstacle to conceiving. Operative findings of poor lumen, granuloma and anastomosis in the convoluted portion of the vas correlate best with poor results. It would seem reasonable practice to anastomose both vasa to double the chances of success. To reduce stent exit granuloma we suggest that a long length of stent is passed down the distal vas and brought out through one exit site on the proximal vas.

We are grateful to Mr George Greer for performing the serological analyses.

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Solitary cutaneous leiomyomata: a clinicopathological study of 28 cases

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SUMMARY

Twenty-eight cases of solitary cutaneous leiomyomata were encountered in a ten-year period. They occurred in nine males and nineteen females, the mean age at presentation being 53 years. The lesions occurred most commonly on the lower limbs and 36% were painful. Solitary cutaneous leiomyomata were found to differ from the better known syndrome of multiple cutaneous leiomyomata, in that they did not recur after excision and were not associated with leiomyomata at other body sites.

INTRODUCTION

Leiomyomata are encountered uncommonly in the skin[1] and subcutaneous tissue. Multiple cutaneous leiomyomata may occur in crops[2] and are often associated with leiomyomata in other body organs.[3, 4, 5, 6, 7] More commonly, leiomyomata occur as solitary lesions.[1] We report the epidemiological, clinical and pathological features encountered in 28 solitary cutaneous leiomyomata diagnosed over a 10-year period.

METHODS

28 cases of solitary cutaneous leiomyomata were diagnosed histologically at the Department of Pathology, Royal Victoria Hospital, Belfast, in the years 1976–1985. The clinical features of each case were reviewed by consulting the patient's case notes, the clinical summary included on the biopsy request form, and by sending a short questionnaire to the patient's family doctor. The histological features were reassessed using sections stained with haematoxylin and eosin, Masson Trichrome and by using the immunoperoxidase technique to detect Desmin.

RESULTS

The 28 cases occurred amongst 19 females and 9 males, average age 53 years (range 20 to 83). Lesions had been present for between three months and 20 years prior to diagnosis (mean four years). In eight cases a history of pain was detected. The lesions were distributed mainly on the extremities (13 cases) but also occurred on the head and neck, and the genital skin. They measured between 0·5 cm and 5·0 cm in diameter. The correct diagnosis was made by the clinicians in only one case, most being misdiagnosed as fibromas, sebaceous

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cysts and fibroepithelial polyps. Follow-up revealed that no lesion recurred and none was associated with a leiomyoma in other body organs.

Histological examination revealed lesions composed of interweaving bundles of smooth muscle cells which stained red with Masson Trichrome and reacted positively with antibodies to Desmin. A Grenz zone, which in some cases was chronically inflamed, was present between the lesion and the skin.

DISCUSSION

During the study period, histopathology services were provided for most of the hospitals in Northern Ireland by two histopathology units based in Belfast. This fact plus the stable population and the administrative isolation of Northern Ireland enabled the incidence of solitary cutaneous leiomyoma to be estimated. Thirteen cases of solitary cutaneous leiomyoma per million of population per year were diagnosed during this period. This underestimates the true incidence of the condition as it does not include those cases which caused no symptoms and were not seen by a physician. In this same period only one case of multiple cutaneous leiomyomata was diagnosed although subsequent investigations of that patient revealed that several members of that patient's family had the condition.[3]

Solitary cutaneous leiomyomata were diagnosed most commonly in females possibly because of the cosmetic implications of these lesions, and were most frequently removed from middle-aged and elderly subjects. In a paper reporting their experience with multiple cutaneous leiomyomata, Fisher and Helwig[2] found cases of that condition occurring most typically in young men. This report was based on material originating from the Armed Forces Institute of Pathology which may include a disproportionate representation of young male subjects.

Solitary lesions tend to have been present for a shorter time than multiple leiomyomata which often develop early in childhood. Solitary lesions are usually painless and none of our cases recurred after adequate excision. On the other hand, multiple lesions are usually symptomatic and may require drug therapy to relieve pain and other symptoms.

None of our 28 cases was associated with leiomyomata elsewhere in the body or with a family history of the condition. Uterine fibroids have been described as occurring with increased frequency in patients with multiple lesions[3,4,5,6,7] which are often familial and are said to be inherited in an autosomal dominant fashion.[8]

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Nickel allergy in relationship to previous oral and cutaneous nickel contact

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SUMMARY

Potential relationships between the development of nickel allergy and previous ear piercing or orthodontic treatment with nickel-containing appliances were studied in 294 patients. We found 77 (31·2%) of 247 patients with pierced ears were allergic to nickel compared to only three (6·4%) patients without pierced ears ($p = 0·001$), which confirms earlier suggestions that nickel allergy (as assessed by patch testing) is promoted by ear piercing. If orthodontic treatment preceded the event of ear piercing, the frequency of nickel allergy was reduced from 36% to 25%. This supports the view that oral allergenic contacts may induce immunological tolerance.

INTRODUCTION

In industrialised nations the most common allergy among women is nickel allergy.[1] Various population studies indicate that at least 10% of the female and about 1% of the male population are allergic to nickel.[2–4] Allergic subjects may suffer from slight dermatitis at metal contact sites, but others may develop severe hand eczema. Various factors promoting the development of nickel dermatitis include ear piercing, wet work and frequent exposure to irritant and nickel-containing agents.[5] Therefore, a high frequency of nickel dermatitis is observed in such occupations as nursing, hairdressing and cleaning.[6, 7] Epidemiological studies indicate that both occupational and non-occupational nickel dermatitis is increasing.[8, 9]

In non-sensitised individuals antigenic contacts by the oral route are known to induce tolerance rather than sensitisation, that is to suppress the capacity to develop an allergic response.[10] The development of tolerance by oral administration of nickel has been demonstrated in a guinea pig model. Attempts to immunise the orally pretreated guinea pigs failed, whereas non-pretreated guinea pigs became clearly hypersensitive.[11] Orthodontic appliances contain nickel alloys and are a source of oral nickel in patients fitted with such devices.

This study was conducted to verify if the sensitising effect of ear piercing, and the effect of orthodontic treatment with metal appliances in inducing tolerance can be shown for a large non-selected group of patients attending dermatological clinics for patch testing.

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PATIENTS AND METHODS

Patients presenting with eczematous rashes are often patch tested to various allergens to confirm or exclude a diagnosis of allergic contact eczema. Nickel sulphate 5% in petrolatum is included in the routine battery of patch test allergens, which are applied to the patient's back in small aluminium chambers (Finn chambers^{R}) held in place by adhesive tape (Scanpore tape^{R}). The chambers are removed after 48 hours and the skin reaction is read after 72 hours at the weekly patch test clinic. The presence of erythema and/or vesiculation indicates a positive reaction.

All female patients attending the patch test clinic were questioned regarding problems with costume jewellery, watches and buttons on clothes, the wearing of a dental brace for orthodontic treatment (at what age and for how long?) and piercing of the ears (at what age?). Patch test results for nickel were recorded. As the study progressed it was decided also to include all male patients attending the patch test clinic. Our results were included in a West European multicentre study.[15]

The questionnaire data were processed and statistical analysis was performed using the chi-squared test (with Yates' correction) and Fisher's exact probability test.

RESULTS

Data were collected from 294 patients, 268 female and 26 male. The effects of ear piercing on nickel allergy in this group of patients are shown in Table I. Seventy-seven (31·2%) of 247 patients with pierced ears were allergic to nickel compared to only three (6·4%) of 47 patients without pierced ears, which was a significant difference ($p = 0·001$). When the effect of ear piercing was studied in the females and males separately the difference persisted only in the female group. Of the 263 females, 75 of the 241 with pierced ears (31·1%) were allergic to nickel, compared to only one of the 27 (3·7%) without pierced ears ($p = 0·006$). Of the 26 males, two (33·3%) of the six with pierced ears were allergic to nickel, compared to two (10%) of the 20 without pierced ears ($p = 0·25$).

TABLE I

Effects of ear piercing

	Ear piercing	*Number of patients*	*Nickel positive patch test*	*p*
Males	no	20	2 (10%)	0·25
	yes	6	2 (33%)	
Females	no	27	1 (4%)	0·006
	yes	241	75 (31%)	
Total	no	47	3 (6%)	0·001
	yes	247	77 (31%)	

The relationship between orthodontic treatment and nickel allergy is shown in Table II. Patients who had received orthodontic treatment but did not have their ears pierced had a 16·7% incidence of nickel allergy, whereas those who had

never received orthodontic treatment or had their ears pierced had only 7·3% nickel allergy, but this difference was not significant ($p = 0·45$). When orthodontic treatment followed ear piercing the frequency of nickel allergy was 36%, compared to 25% when orthodontic treatment preceded ear piercing ($p = 0·07$).

TABLE II

Previous orthodontic treatment and the prevalence of nickel allergy

Orthodontic treatment	*Ear piercing*	*Number of patients*	*Nickel positive patch test*	*p*
Brace	no	6	1 (17%)	0·45
No brace	no	41	3 (7%)	
No brace	yes	185	55 (30%)	0·73
Brace before ear piercing	yes	36	9 (25%)	0·07
Brace after ear piercing	yes	26	13 (36%)	

DISCUSSION

It has been suggested that the high prevalence of nickel allergy among women is due to prolonged and heavy exposure to the allergen, for example, by costume jewellery. In particular, ear piercing appears to be an important sensitising event.[12-14] Our results confirm the correlation between ear piercing and the frequency of nickel allergy, although this was statistically significant only in the female patients. The number of males in our study was small. Our figures were later included in a West European multicentre trial, and in the larger series the effect of ear piercing on nickel allergy was also significant in the male group.[15]

The prevalence of nickel allergy was not different whether orthodontic treatment had or had not preceded ear piercing in the Belfast study, but in the larger multicentre study there was a statistically significant reduction from 39·0% to 29·9%. This supports the view that wearing a dental metal prosthesis can induce tolerance to nickel allergy.

In patients who never had their ears pierced the wearing of a dental brace did not lead to a significant change in nickel allergy. In the multicentre trial the incidence of nickel allergy in both groups was 3·5%, indicating that orthodontic treatment alone without ear piercing does not induce nickel allergy. We found a high incidence of nickel allergy (36%) in patients who had orthodontic treatment after ear piercing. The mechanism for this is uncertain, but suggests that tolerance to nickel allergy could be induced before the ears are pierced if it is to be effective.

If nickel allergy led only to a mild eczema of skin in contact with certain metallic objects such as costume jewellery, it would be relatively harmless. However women allergic to nickel run a considerably increased risk of developing nickel hand eczema, which is often a troublesome and persistent condition threatening a person's working ability.[9] Measures to decrease the incidence of nickel allergy are therefore important since at the very least 10% of the female population are affected by this condition. It would be very difficult to curtail the practice of ear piercing. An alternative is the use of 'safe' alloys with low nickel release.[16] However, only a few alloys have a low nickel release rate, and these do not have a

bright silvery appearance or are relatively expensive. The results of this study support the view that oral administration of nickel at an early age may induce a state of cutaneous tolerance. This should be further explored as a possible route of preventing nickel allergy and related skin disease.

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Electroconvulsive therapy and serum potassium

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SUMMARY

In 54 patients presenting for electroconvulsive therapy, the concentration of serum potassium was measured before and after the induced convulsion modified with a standard anaesthetic technique of methohexitone and suxamethonium. It was found that there was a statistically significant rise in serum potassium, but that the duration of convulsion had no significant effect on that rise in serum potassium. In a further 11 patients, methohexitone alone was administered without ECT, and it was found that serum potassium fell. Methohexitone, suxamethonium and ECT in combination cause a rise in serum potassium which is not clinically important unless pre-induction level is abnormally high, and prolonged convulsion does not exaggerate this rise.

INTRODUCTION

Electroconvulsive therapy (ECT) has been used in the management of various psychiatric disorders for over 50 years. More recently, the tonic/clonic convulsion induced by this therapy has been modified by the use of suxamethonium. It is well documented that suxamethonium causes increases in serum potassium,[1] and at first sight it might be expected that the combination of suxamethonium fasciculation and the modified tonic/clonic convulsion induced by ECT would cause a more exaggerated rise in the level of serum potassium than that produced by suxamethonium alone. However, several studies have shown that the rise produced by the combination is rarely of clinical significance.[2, 3, 4, 5] These authors did not examine the possible link between duration of fit and the subsequent elevation in serum potassium.

The aim of this study was to examine the relationship between serum potassium changes and the duration of the tonic/clonic convulsion using a standard anaesthetic technique.

METHODS

Fifty-four unpremedicated, ASA grade I and II patients, presenting for elective ECT were studied. Research Ethical Committee approval was obtained, and patients gave informed verbal consent. An indwelling 21 gauge needle was inserted on the dorsum of both hands (one for the administration of anaesthetic drugs, one for blood sampling). A sample of blood was obtained for basal

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serum potassium measurement, and then induction was achieved with 1mg/kg methohexitone, followed by 0·5mg/kg suxamethonium. The lungs were manually inflated with oxygen, and ECT given 15 to 20 seconds after suxamethonium fasciculation. A further sample of blood for potassium was withdrawn 120 seconds after drug administration without venous occlusion. The duration of the tonic/clonic convulsion was timed. In a further 11 patients, methohexitone 1mg/kg alone was administered (ie no suxamethonium and no ECT) as part of their normal therapy in this hospital. Blood samples were obtained before and 120 seconds after methohexitone administration.

Those samples not immediately analysed were stored at 4°C for a maximum of four hours. Potassium concentrations were determined using a Corning 480 flame photometer after visually ensuring the absence of haemolysis by an independent laboratory technician (those showing haemolysis were excluded from the study). Based on precision of routine quality control, changes in excess of 0·1 mmol/l were considered significant. Results were analysed statistically using the Wilcoxon signed rank test and correlation coefficient (Table).

TABLE

Serum potassium (mmol/l) before and after suxamethonium/ECT, and before and after methohexitone (medians and ranges)

	Serum potassium (mmol/l)			*Duration of fit (secs)*
	Before	*After*	*Change*	
Suxamethonium and ECT				
Median	4·1	4·4	+0·2	20
Range	3·8—4·9	4·0—5·2	−0·5—+0·4	0—55
Methohexitone				
Median	4·4	3·8	−0·2	
Range	3·7—5·6	3·5—4·4	−1·8—+0·4	

RESULTS

The changes in serum potassium associated with suxamethonium and ECT therapy are shown in the Table. There was a statistically significant rise in serum potassium following suxamethonium/ECT ($p < 0·001$) which affected 41 out of the 54 patients, nine showing no alteration. There was a weakly negative correlation between serum potassium change and duration of convulsion ($r = -0·36$, $p < 0·01$). The alterations in serum potassium in the methohexitone only group are given. Serum potassium rose in two patients, fell in seven and was unchanged in two ($p < 0·05$, Wilcoxon signed rank test).

DISCUSSION

The results of this study confirm that small but statistically significant increases in serum potassium occur after ECT modified by suxamethonium in the majority of patients. The maximum rise was 0·4 mmol/l, and is unlikely to be of clinical significance unless the pre-anaesthetic level is above the upper normal value. Wide variation in the duration of modified convulsion was observed, ranging from 0 to 55 seconds, with only a weakly negative correlation to subsequent

alteration in serum potassium. This tends to support the view of Bali[2] that the convulsion pumps the muscle venous blood which is rich in potassium following suxamethonium fasciculation into the general circulation, without causing hyperkalaemia by itself. Pilditch and Baker[3] have also shown that the grade of convulsion, using an arbitrary grading system, produced no significant differences in serum potassium.

Methohexitone was used as the induction agent in this study as the majority of patients attended as day patients. Eleven patients received methohexitone alone, with no ECT. Potassium levels in these patients fell, demonstrating the protective effect against large rises in serum potassium noted by other authors, which applies also to thiopentone.[6]

This study confirms that small rises in serum potassium follow the use of methohexitone and suxamethonium for ECT. There does not appear to be any consistent relationship between the duration of the convulsion and the subsequent change in serum potassium in normal patients. In addition, methohexitone appears to attenuate the rise in serum K^+ associated with the modified convulsion of ECT.

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Torsion of the testis revisited

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INTRODUCTION

Torsion of the testis is a well known entity having been first described in detail in 1840. To establish if the management of torsion of the testis has changed in recent years we have carried out a retrospective review of cases presenting to three teaching hospitals and two district general hospitals in Northern Ireland over the three years to 1985.

METHODS

Cases of testicular torsion, presenting to the Belfast City Hospital, Royal Victoria Hospital, The Royal Belfast Hospital for Sick Children, Daisy Hill Hospital and the South Tyrone Hospital over three years to 1985 were reviewed. A total of 66 cases was identified from theatre log and hospital activity analysis. Information was obtained from the operative notes, in-patient charts and routine follow-up appointments.

RESULTS

Torsion of the testis occurred in 66 cases. Ages ranged from 4 to 30 with a mean age of 16 years. The time from onset of pain to surgery ranged from 3 hours to 2 weeks with 30 (45%) operated on within 8 hours (Table). Factors responsible for an operation after this time were late presentation in 19 cases, mis-diagnosis in 15 and delay in subsequent management in two. Quality of result was based on operative findings and testicular size at follow-up appointment: 39 patients were felt to have had a good result and 27 (41%) either required orchidectomy at the

TABLE

Data on management and result in 66 cases of torsion of the testis, 1982–85

Category	*Time to operation*	*Number*	*Result*	
			Good	*Bad*
Good management	0–8 hr	29	27	2
	> 8 hr	19	8	11
Mis-diagnosis	0–8 hr	1	1	0
	> 8 hr	15	1	14
Mis-management	0–8 hr	0	0	0
	> 8 hr	2	2	0
Total		66	39	27

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time of exploration or subsequently developed testicular atrophy. Mis-diagnosis resulted in delay in appropriate management in 14 (52%) of the 27 with a bad result, and two of the patients who had a favourable outcome were also mis-diagnosed initially. Only two (7%) of those with a bad result were operated on within eight hours or less, compared with 28 (72%) of those with a good result; a good outcome was also obtained in 11 patients operated on after eight hours.

Of the 16 cases who were mis-diagnosed, epididymo-orchitis was originally diagnosed in seven, non-specific scrotal pain in three, non-specific abdominal pain in two, and appendicitis, constipation, testicular swelling and torsion/epididymo-orchitis in one each. Abdominal or loin pain was the presenting complaint in 16 (24%) patients. Torsion occurred in three cases of undescended testis which were all diagnosed as strangulated herniae but not classified as mis-diagnosis.

DISCUSSION

The anatomical abnormalities underlying torsion of the testis are well described, as is the fact that epididymo-orchitis is rare in adolescent males. We found torsion was initially diagnosed as epididymo-orchitis in 16 of 66 cases, leading to delay in appropriate management and contributing to the loss of 14 testicles. These data show a lower rate of mis-diagnosis than that reported by Chapman and Walton [1] but a similar rate of testicular loss.

Survival of the germinal elements is unlikely beyond six hours of complete ischaemia, and survival after this time is probably related to incomplete or intermittent vascular occlusion.[2] The case for urgent exploration of young males with acute scrotal pain, with or without abnormality on examination, is well established.[3] This review shows that lack of awareness of the cause of scrotal pain in young males is still a problem, and underlines the importance of examining the genitals in any young male with abdominal pain. Prompt exploration should still be undertaken even after eight hours. Recently attempts have been made to improve pre-operative diagnosis by means of computer-aided diagnosis and radio-isotope scans.[4] However, urgent hospital referral and subsequent exploration in young males with scrotal pain should remain a priority, especially if the risk of sympathetic orchidopathia in the contralateral testis were substantiated,[4] although recent data suggests that an abnormality of spermatogenesis precedes the episode of torsion.[5]

In summary, this review indicates that the incidence of mis-diagnosis in cases of torsion remains unacceptably high occurring in 24% of cases reviewed, contributing to a 41% rate of testicular loss.

We are grateful to the consultant surgeons at the Royal Belfast Hospital for Sick Children, Daisy Hill Hospital, South Tyrone Hospital, the Royal Victoria Hospital and the Belfast City Hospital for permission to undertake this review.

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Outcome and benefits of upper gastrointestinal endoscopy in the elderly

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SUMMARY

Presenting symptoms, physical findings and treatment were reviewed in 70 patients over 65 years old who underwent oesophago-gastro-duodenoscopy in the Royal Victoria Hospital, Belfast, during an 18-month period. Most frequent indications for the procedure were epigastric pain, retrosternal pain or haematemesis. Physical signs were present in only 54%. Abnormal endoscopic findings were detected in 97%. The majority of patients responded to subsequent treatment. It was not possible to identify clinical features associated with major gastrointestinal pathology, which aided selection of those subgroups of elderly patients who would most benefit from endoscopy.

INTRODUCTION

With an increasing proportion of elderly patients being referred for routine upper gastrointestinal endoscopy, it is desirable to attempt the identification of subgroups who would most benefit from this investigation in terms of diagnosing major pathology. Previous studies have emphasised that increasing age is associated with a 'high-risk' of upper gastrointestinal pathology.[1, 2] In this retrospective study our aims were two-fold. Firstly, to assess the age/sex distribution, presenting symptoms and clinical signs in elderly patients undergoing this procedure, and secondly, to audit the benefits of the investigation in terms of diagnostic yield and therefore outcome.

METHODS

Clinical records of all patients over 65 years old referred for upper gastrointestinal endoscopy over an 18-month period were reviewed. The main presenting symptoms and signs referable to the gastrointestinal tract were identified. The outcome of endoscopy was classified into 'major' pathology if peptic ulcer, oesophageal stricture or malignant disease was present and 'minor' pathology for other diagnoses. Patients were followed-up 12 months after the initial endoscopy.

Within subgroups based on age/sex breakdown and main presenting symptoms, frequency of major and minor disease was compared using the chi-squared test in order to define those features which might identify high and low risk patients.

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RESULTS

Over 18 months, 28 males (mean age 75 years) and 42 females (mean age 77 years) were identified. Main presenting symptoms and physical signs are summarised in Table I. Ten males and 34 females had more than one presenting symptom. Of these, retrosternal and epigastric pain were the most common in both groups. Lethargy was a presenting feature in 25% of females but was not documented in males. Relevant clinical signs were present in less than 50% of the study group. Despite the frequency of epigastric pain, abdominal tenderness was present in only 14% on examination.

TABLE I

Presenting symptoms and signs prior to endoscopy in elderly patients (n = 70)

	Males	*Females*	*Total (%)*
Symptoms:			
Retrosternal pain	10	21	31 (44%)
Epigastric pain	10	18	28 (40%)
Haematemesis	7	10	17 (24%)
Weight loss	5	8	13 (18%)
Lethargy	0	10	10 (14%)
Nausea	3	0	3 (4%)
Melaena	3	0	3 (4%)
Anorexia	0	3	3 (4%)
Dysphagia	0	3	3 (4%)
Collapse	0	3	3 (4%)
Signs:			
Anaemia	10	18	28 (40%)
Epigastric tenderness	3	7	10 (14%)

Endoscopic findings are summarised in Table II. Despite the elderly age group under study, multiple pathology was uncommon. Major upper gastrointestinal pathology, as defined above, was identified in 34%, with gastric ulcer in 19%, duodenal ulcer in 7% and oesophageal stricture in 6%. The incidence of malignant disease was low with gastric carcinoma diagnosed in only one patient.

TABLE II

Endoscopic diagnosis in elderly patients (n = 70)

Endoscopic diagnosis	*Males*	*Females*	*Total (%)*
Oesophagitis	15	19	34 (49%)
Gastric ulcer	4	9	13 (19%)
Normal endoscopy	2	5	7 (10%)
Duodenal ulcer	4	1	5 (7%)
Duodenitis	2	2	4 (6%)
Oesophageal stricture	1	3	4 (6%)
Barrett's oesophagus	0	1	1 (1%)
Gastric carcinoma	0	1	1 (1%)
Gastric leiomyoma	0	1	1 (1%)

There was satisfactory tolerance of endoscopy with no complications. A barium meal examination was performed on only 14 patients before or after endoscopy and the small number presented a valid comparison of diagnostic efficacy between the two investigations. However, in two cases these investigations were complementary in the diagnosis of a gastric leiomyoma in one patient and pyloric outlet obstruction in another case.

Institution or change of therapy following endoscopy is summarised in Table III. Thirty patients had more than two therapeutic changes, eg, oesophageal dilatation and H_2 blocker commenced, and 32 patients had three therapeutic changes based on endoscopic findings. Changes in therapy most frequently involved the commencement of H_2 blockers.

TABLE III

Therapeutic management after endoscopy in elderly patients

Therapy	*No of patients*
H_2-blocker commenced	57
Antacid continued	31
Antacid commenced	17
H_2-blocker continued	16
No therapy change	10
NSAID discontinued	7
Iron commenced	6
Oesophageal dilatation	6
Salicylate discontinued	4
Antiemetic commenced	4
Analgesic commenced	1

The results of comparison of the frequency of major and minor gastrointestinal disease in certain subgroups of the study population based on age/sex and main presenting symptoms are shown in Table IV. There were no identifiable features in any particular group or symptom in significant association with major or minor disease.

At follow-up, one year after endoscopy, it was possible to trace and determine the outcome in 56 patients. Of these, seven had died of causes unassociated with the original diagnosis and one patient had died from gastric carcinoma diagnosed at the original endoscopy. Of the remaining 48 patients, 38 had shown improvement or resolution of their symptoms, five had shown no change in symptoms and five had deteriorated and required further investigation or therapy.

DISCUSSION

In the general population, certain characteristics and clinical signs have been suggested as useful indicators to the severity of upper gastrointestinal disease. Mann et al devised a simple scoring system to predict whether endoscopy would be likely to reveal major disease.[1] The present study suggests that such a method of selection for endoscopy does not appear to be possible in the elderly population. Symptoms are often ill-defined or atypical and physical signs may be

TABLE IV

Statistical comparison between frequency of 'major' and 'minor' disease in subgroups of elderly patients based on age, sex and presenting symptoms

Characteristic		No with major disease	No with minor disease	Significant[1]
Sex:	Male	9	19	NS
	Female	14	28	
Age:	65–75	12	22	NS
	>75	13	23	
Symptom:				
	Retrosternal pain	14	17	NS
	None	11	28	
	Epigastric pain	11	17	NS
	None	18	34	
	Haematemesis	7	10	NS
	None	18	35	

(Chi-square analysis[1])

irrelevant. In this study, statistical analysis failed to show a significant association between the finding of major disease at endoscopy and any specific symptoms collected during history taking at the time of presentation. These results suggest that further investigation is usually warranted and should be instigated in view of the high incidence of pathology in patients over 65 years. Therapeutic changes resulted in the majority of patients — a finding which is in agreement with a previous study of the outcome of endoscopy in the elderly which demonstrated that management is changed following upper gastrointestinal endoscopy in over half of those patients in whom an abnormality is diagnosed.[2]

In the present study, endoscopy was undertaken in all patients referred with a provisional diagnosis related to the upper gastrointestinal tract, in many cases without specific symptoms or relevant signs. The procedure resulted in a significant yield of pathological findings and was extremely well tolerated with no complications. The low incidence of malignancy (1 %) in the group contrasts with the 15% reported by Lockhart et al.[2]

Endoscopic investigation appears to be extremely useful, both diagnostically and in therapeutic management in the elderly. Whether it is more useful than radiological investigation in elderly patients is debatable.[3,4] In our study, as in others, it was tolerated at least as well.[5] Cost effectiveness of increased use of endoscopy in terms of reduction of peptic ulcer disease complication rates is doubtful,[6] and its effects on long-term morbidity and treatment costs would require prospective patient comparison and longer periods of follow-up. Our results emphasise the safety of the procedure in the elderly population, and particularly highlight the need for further investigation of these patients when they present with upper gastrointestinal symptoms and a concomitant lack of physical signs.

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Case report

Pregnancy following *in vitro* fertilisation of an anonymously donated oocyte in a patient with premature ovarian failure

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Since the first successful birth in 1978 following *in vitro* fertilisation (IVF), this has become established treatment for infertility and is available at more than thirty centres in the United Kingdom. Oocyte donation has extended the use of IVF technology for conditions where a genetic abnormality exists or where repeated attempts at IVF have failed to achieve fertilisation. In cases where the ovaries are absent or have failed prematurely, the procedure can be combined with steroid replacement therapy to maintain a successful pregnancy. Donated oocytes have been obtained from relatives and friends, but more recently it has been recommended that the donor should remain anonymous. The following case report is of the first such pregnancy achieved in Northern Ireland.

CASE REPORT

A 25-year-old married woman presented to the infertility clinic, Royal Maternity Hospital, Belfast, in 1986, complaining of secondary amenorrhoea. Investigations had been undertaken at the age of 21 and had revealed elevated serum gonadotrophins in keeping with a diagnosis of premature ovarian failure. The chromosome complement was that of a normal female. Hormone replacement therapy with conjugated oestrogens 0·625 mg and norgestrel 0·15 mg (Prempak-C, Ayerst) was commenced. The possibility of pregnancy achieved by IVF using a donated ovum was discussed, and it was advised that an anonymous arrangement would be preferable.

The patient remained on hormone replacement therapy until October 1987 when an IVF programme commenced in Northern Ireland. Hormone therapy was then altered to a maintenance dose of oral oestradiol valerate (Progynova, Schering) 2 mg daily until a potential donor became available. A random serum oestradiol was 2509 pmol/l on this regimen. The dose was increased to 4 mg daily shortly after a potential donor, who was undergoing gamete intrafallopian transfer (GIFT) had commenced superovulation therapy. Eight oocytes were

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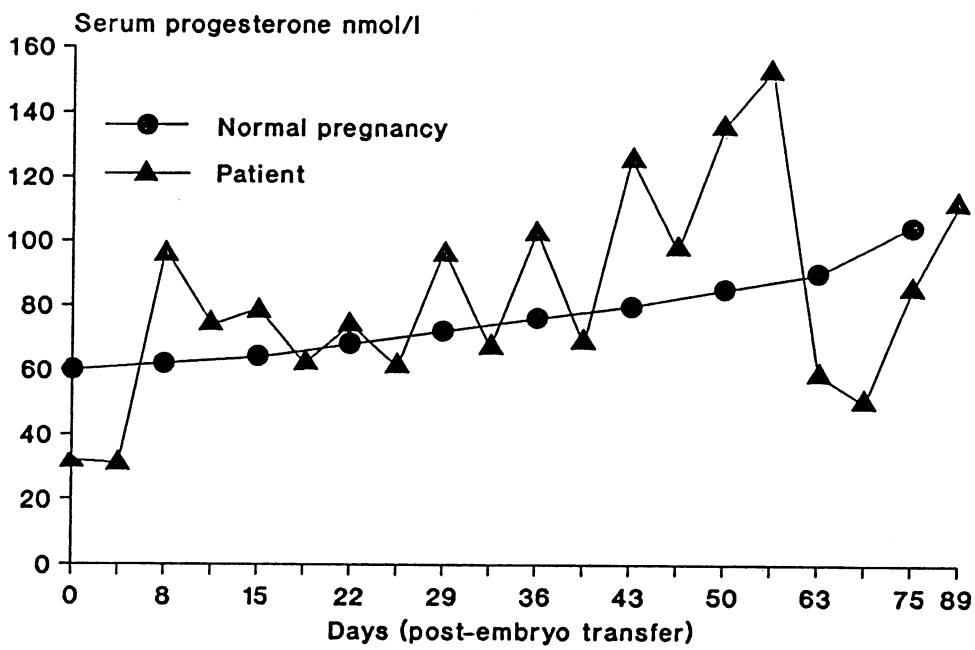
obtained from the donor by laparoscopy, four of which were replaced in her fallopian tubes with capacitated spermatozoa from her husband.

The remaining four oocytes were transferred to prepared culture dishes containing Earle's balanced salt solution with 10% human serum. A sample of the recipient's husband's semen was prepared by a centrifugation and swim-up technique, which enables the motile sperm to be extracted. Four hours later 100,000 sperm were added to each of the dishes containing an individual oocyte, and after 18 hours three oocytes had developed two pronuclei, which confirmed that fertilisation had occurred. At this time the patient was asked to increase her oestradiol valerate to 6 mg daily and was also given progesterone 50 mg (Gestone, Paines & Byrne) by intramuscular injection. This was repeated the following day to coincide with embryo transfer, at which time serum oestradiol was 2591 pmol/l and progesterone was 32·2 nmol/l, both of these levels being within the normal range.

Forty-eight hours after insemination two of the three embryos had divided normally. Embryo transfer was carried out under aseptic conditions, with the patient in the lithotomy position, using a fine plastic catheter which was inserted through the cervical os. The two embryos were placed in the recipient's uterus in 3 µl of medium with the added human serum concentration increased to 75%.

Hormone maintenance therapy was provided by oestradiol valerate 4 mg and progesterone 50 mg daily, and the serum levels of these two hormones checked twice weekly; all values initially followed the normal curve.[1]

Fifteen days after embryo transfer a pregnancy test was positive, and at 40 days a fetal circulation was identified with ultrasound. During the fourth week of pregnancy the progesterone levels fell below the optimal range (Figure), so the dose of progesterone was increased to 100 mg daily. At six and eight weeks the



serum progesterone again fell below normal and further supplements were given in the form of vaginal pessaries (Cyclogest, Hoechst) with the dose increasing from 400mg daily at six weeks to 1200mg by nine weeks. Oestradiol levels remained well above the suggested range.[2]

At 10 weeks' gestation, both oral oestradiol and the systemic progesterone therapy were withdrawn, and one week later the progesterone pessaries were stopped. At this stage serum oestradiol and progesterone were 11,720 pmol/l and 153·5 nmol/l respectively. The levels dropped sharply after withdrawal of the replacement therapy, then over the next two weeks gradually returned towards the normal range for pregnancy. Serial ultrasonic scans showed a healthy single fetus.

The remainder of the pregnancy progressed satisfactorily until 32 weeks' gestation, when the patient was admitted with a painful antepartum haemorrhage. A diagnosis of placental abruption was made and delivery was carried out by Caesarian section, resulting in a live female infant weighing 1710g. Streak ovaries with no evidence of corpus luteum formation were noted.

The baby required minimal special care and was discharged aged 27 days, weighing 2230g. The mother had no postnatal complications. Measurement of serum oestradiol and progesterone levels was continued, and showed a gradual fall in oestradiol levels and a rise in gonadotrophins. The increase in FSH preceded that of LH, but by four weeks postpartum both had returned to postmenopausal levels.

DISCUSSION

Oocyte donation has been used with a high success rate in animal husbandry for many years.[3] In humans, it was not until the technique of IVF had been perfected that the first pregnancy in a patient with ovarian failure was established.[4] There have, however, been few published accounts of the outcome of pregnancy after donation of oocytes fertilised *in vitro,* and the success rate can vary from zero to 38%.[5]

Where the recipient has normal menstrual function, synchronisation of donor and recipient is necessary to aim for transfer of a four to six cell embryo on day 17–19 of the recipient's cycle. To achieve this it is usual to recruit a designated donor, such as a woman undergoing laparoscopic sterilisation, who has agreed to superovulation with gonadotrophins prior to the procedure. This also allows approximate matching of physical characteristics while preserving anonymity. Synchronisation can be achieved by adjusting the donor's menstrual cycle using oral contraceptive pills or norethisterone.[6]

In patients without ovarian function, a variety of steroid replacement protocols have been used to mimic the normal menstrual cycle.[2, 7, 8] Although it has been established that luteal progesterone is necessary to allow implantation and to maintain pregnancy, the relative importance of oestradiol is unclear.[9] Until further information is obtained from prospective studies, it seems reasonable to simulate the menstrual cycle, thus providing suitable endometrium for implantation, and subsequently to increase steroid therapy to maintain the pregnancy. A positive β-HCG titre may be obtained as early as 10 days after embryo transfer. If still negative three weeks after embryo transfer, it is assumed that the patient is not pregnant, and the oestrogen and progesterone doses are tapered off to allow menstruation to occur.

A useful and simple method of preparation of a recipient depends on priming the endometrium with an adequate oestrogen dosage, then inducing secretory change in the proliferative endometrium by introduction of progesterone just prior to recovery of the donated oocytes.[10] Thus, the patient can be maintained on oestradiol therapy for several weeks and careful synchronisation with a potential donor is not required, allowing greater flexibility. This regimen is applicable to both normally cycling recipients and to those with ovarian failure. A similar protocol was used in this case, with subsequent requirements in pregnancy determined by twice weekly hormone levels.

Due to the small number of pregnancies achieved in patients with ovarian failure, no definite guidelines exist for when steroid therapy can be safely withdrawn. Csapo et al showed that the shift from ovarian to placental maintenance of pregnancy occurred at around 50–60 days' gestation.[11] Lutjen et al, in their first reported case,[4] withdrew oestradiol therapy at 72 days' gestation. Progesterone withdrawal was attempted from days 63–73, but was reintroduced when serum levels fell, and maintained until day 133. In this case report, serum levels also fell following sequential withdrawal of the progesterone supplements, but there was evidence of an active fetus on ultrasound scanning. Therefore, it was decided to await events and, indeed, progesterone levels returned to normal over the next two weeks. Very early withdrawal of oestradiol at 35 days and of progesterone at 48 days has been reported, with a successful pregnancy.[12]

With the simplified form of steroidal therapy described above, donors assigned in advance are not essential, and use can be made of excess oocytes from consenting patients in a GIFT or IVF programme. This avoids any added risk to a donor from either the gonadotrophin therapy or the oocyte recovery techniques, but the oocytes do however tend to be sub-optimal because those with the best morphology are reserved for the donor. Consenting women undergoing laparoscopic sterilisation should prove to be another acceptable source of donor oocytes, as the potential extra risks are minimal and their fertility has been proven.

Donation of oocytes from friends or relatives of the recipient couple has been used, and has been accepted by the Waller Committee in Australia.[13] However, as the child will be known to the donor, there is the possibility of social and psychological problems arising between donor and recipient, to the detriment of the child. Anonymous donors are therefore preferable, and this is recommended by the Voluntary Licensing Authority in the United Kingdom[14] and the American Fertility Society.[15]

CONCLUSION

Oocyte donation has extended the uses of IVF to enable women previously considered irreversibly infertile, or carrying abnormal genes, to achieve a pregnancy. It can also provide a human model for the assessment of the relative roles of oestrogen and progesterone in the luteal phase and in early pregnancy.

This case report outlines the first successful pregnancy in Northern Ireland following anonymous ovum donation and *in vitro* fertilisation. This was also the first pregnancy achieved in the IVF programme, with the first embryo transfer performed: this must be a unique event.

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Case report

Survival after an overdose of Distalgesic (dextropropoxyphene and paracetamol)

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The combination of dextropropoxyphene and paracetamol, marketed as Distalgesic, once a popular analgesic, is now less commonly prescribed. Each tablet contains 32·5 mg of dextropropoxyphene and 325 mg of paracetamol. Overdoses with this preparation were common in the late seventies, though nowadays are rarely seen.[1] Overdoses of as little as twenty tablets very often led to death within thirty minutes.[2] We report the case of a young man who survived an overdose of one hundred and twenty tablets.

CASE HISTORY

A nineteen-year-old man was admitted via the accident and emergency department to the coronary care unit having been found unconscious and fitting at home. On admission he was deeply cyanosed, unconscious, apnoeic and convulsing. There was no evidence of trauma. His pupils were dilated, blood pressure was unrecordable and cardiac rhythm was sinus bradycardia. He was grade 3 on the Glasgow coma scale and his blood sugar was 4·2 mmol/l. He did not smell of alcohol. Initial management was ventilation and intravenous diazepam to control the convulsions and 15 ml paraldehyde intramuscularly. Though his vital signs improved, there were no spontaneous respirations.

It was ascertained at this stage that the patient had taken one hundred and twenty Distalgesic tablets. An empty container had been found with the patient which had contained this number of Distalgesic tablets which had been prescribed for his mother the previous day. Over the following six minutes he was given a total of 4 mg naloxone and 100 mg doxapram intravenously, before spontaneous respirations occurred. The serum paracetamol level on admission was 310 mg/l. Liver function tests, coagulation studies, serum urea and electrolyte levels were normal. He was commenced on an intravenous infusion of n-acetylcysteine. On regaining consciousness he admitted that he had taken one hundred and twenty Distalgesic tablets with some alcohol ninety minutes prior to admission. Twenty-four hours later serum alanine transferase was 77 IU/l (normal 0–40), serum

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aspartic transaminase 217 IU/l (normal 0–37) and serum total bilirubin 17·5 umol/l. These returned to normal after four days. He was then discharged to psychiatric care.

COMMENT

Overdose of Distalgesic tablets leads to dextropropoxyphene and paracetamol poisoning, and treatment is aimed at treating both these effects. Overdoses were first described in 1960,[2] and generally had a very poor prognosis, leading to death in thirty to forty-five minutes after taking twenty to fifty tablets. The danger of overdose is increased when taken with alcohol.[3, 4]

An overdose leads very rapidly to convulsions, respiratory depression and cardiac arrest. Pulmonary oedema may also occur. Effects due to paracetamol poisoning include nausea and vomiting in the first 24 hours. Absorption of as little as 6·2g paracetamol has been known to cause liver damage. Liver tenderness and abdominal pain are found on the second day and these symptoms last for two or three days, with hyperbilirubinaemia, prolonged prothrombin time and increased serum alanine transferase as well as serum aspartic transaminase levels. Our patient showed these biochemical changes but not the clinical effects.

It is known that the breakdown products of paracetamol produced by liver microsomes bind to macromolecules. In therapeutic doses the breakdown products are conjugated with glutathione. In paracetamol (acetaminophen in the USA) overdose glutathione stores are depleted and toxicity occurs as the breakdown products are now free to bind to the macromolecules.[5, 6, 7, 8] A reduction in toxicity can be obtained by using a glutathione precursor such as n-acetylcysteine. If acute interlobular necrosis occurs, it can lead to permanent hepatic failure within three to seven days.[5, 6, 7, 8] Acute renal tubular necrosis may occur without any liver failure, and there is little correlation between liver and renal failure. Liver damage is rare if the paracetamol level is less than 150 mg/l at four hours, but renal damage has been known to occur with levels between 100 and 150 mg/l.[6] There was no renal damage in the present case.

Our patient was given cardio-pulmonary support. Convulsions were controlled with diazepam and paraldehyde and gastric lavage was carried out as soon as his condition had stabilised. Despite the high serum level of paracetamol there was minimal biochemical evidence of renal or hepatic damage, although the prognosis based on these high levels would have been poor. We have not been able to find a report of survival following such a large overdose. In 1977 Carson and Carson reviewed 30 cases of fatal dextropropoxyphene poisoning in Northern Ireland.[2] The number of tablets taken was estimated to range from between twenty and fifty, but in our case the patient survived an overdose of more than twice that number.

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Case report

Concomitant endometrioid carcinoma of the ovary and endometrial carcinoma of the uterus associated with adenocarcinoma *in situ* of the cervix

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Endometrioid carcinoma of the ovary is the third most common epithelial tumour of the ovary, accounting for between 16% and 25% of these tumours.[1] A co-existing adenocarcinoma of the endometrium has been found in 14–25% of patients.[2, 3]

CASE REPORT

A 45-year-old female, para 2, presented to the gynaecological outpatient clinic with a two-year history of menorrhagia. There was no intermenstrual or post-coital bleeding. General examination was satisfactory apart from obesity (94kg). Vaginal examination revealed a slightly enlarged anteverted uterus with no obvious adnexal masses. The cervix appeared healthy. Haematological investigations were normal with no evidence of anaemia. A diagnostic curettage was performed and the histological examination showed adenomatous hyperplasia with no evidence of cellular atypia or malignancy. Following dietary advice the patient lost 18kg weight. She was then admitted for an abdominal total hysterectomy because of continuing menorrhagia, further curettage six months after the initial curettage having shown adenomatous hyperplasia. At operation, the right ovary was unexpectedly enlarged (10cm diameter), multilocular with solid and cystic areas. The uterus was bulky but otherwise appeared normal. Abdominal total hysterectomy and bilateral salpingo-oophorectomy was performed. There was no evidence of metastatic disease in the omentum, liver or bowel.

Histological examination of the right ovary showed a primary endometrioid adenocarcinoma. It was partially necrotic and moderately well differentiated. It had focally infiltrated the inner aspect of the capsule and residual ovarian cortex. The serosa was not involved. In the endometrial cavity there was a secretory phase endometrium and at one point a small focus of well differentiated adenocarcinoma. It had not infiltrated the myometrium. (The previous curettage

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biopsy specimen was reviewed and confirmed as showing only adenomatous hyperplasia with some squamous metaplasia). In the uterine cervix the surface and crypt endocervical epithelium showed a combination of tubal metaplasia and adenocarcinoma *in situ*. This neoplastic epithelium had differentiated along endometrial lines. There was no invasive malignancy. The fallopian tubes did not show any significant abnormality and the left ovary contained a haemorrhagic corpus luteum.

There were no postoperative complications and she was discharged home to start a first course of chemotherapy with cisplatin (cis-diamminedichloro-platinum).

COMMENT

Ovarian epithelial neoplasms exhibit a spectrum of Mullerian differentiation which includes an endometrioid pattern. The two commonest ovarian carcinomas are serous and mucinous cystadenocarcinomas. Women with endometrioid tumours of the ovary have a relatively favourable prognosis, a five-year survival rate varying between 40% and 70%,[1, 2] compared with 26% for serous cystadenocarcinoma.[4] The presence of a co-existing adenocarcinoma of the endometrium with endometrioid carcinoma is a relatively common finding, occurring in 14–25% of patients[2, 3] and the concomitant endometrial carcinoma is not detrimental to the prognosis.[5] Women with concomitant tumours were thought to present at an earlier age than expected for either ovarian or endometrial carcinoma[2, 5] although this is now disputed. It has been shown in a recent study that there was no significant difference in age or menopausal status between the women who presented with an ovarian lesion only and those who presented with concomitant tumours.[5] In the present case the patient was younger than expected for either ovarian or endometrial carcinoma.

Alkylating agents have been the cornerstone of chemotherapeutic treatment of advanced epithelial ovarian cancer since 1952, when Rundles and Burton reported that triethylene melamine produced a favourable response in about 30% of patients with advanced ovarian cancer.[7] Since the demonstration of significant activity of cis-diamminedichloroplatinum (cis-platin) against epithelial ovarian cancer in 1976,[8] this drug has now become the most important agent in the treatment of ovarian cancer.

To our knowledge, this report is the first to describe adenocarcinoma *in situ* of the cervix in association with both endometrioid carcinoma of the ovary and adenocarcinoma of the endometrium. It is a very unusual case of multifocal malignant field change in the Mullerian epithelium along endometrial lines. It highlights the possibility of concurrent disease in developmentally linked but anatomically distinct sites and serves to emphasise the need for an integrated approach to gynaecological assessment in these patients.

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The Ulster Medical Journal, Volume 58, No. 2, pp. 193–195, October 1989.

Case report

Intussusception of the appendix

D Gilpin

Accepted 2 August 1989.

Intussusception of the appendix is an uncommon clinical finding, and there are less than 190 cases reported in the world literature. It was first described by McKidd in 1858 as a post mortem finding in a young child.[1] The incidence is quoted as 1:10,000 specimens obtained at operation and at post mortem by Collins.[2] It is more common in males, and in children.[3] I report the case of a woman who underwent laparotomy and was found to have extensive endometriosis and an intussuscepted appendix.

CASE REPORT

A 34-year-old woman, previously well, was admitted to the surgical unit with a 48 hrs history of crampy lower abdominal pain. The pain did not radiate and there had been no vomiting or alteration in bowel habit. There were no urinary tract symptoms, no previous episodes of severe abdominal pain and no previous surgery. Dysmenorrhoea had been a previous complaint and she was menstruating at presentation. She was apyrexic, but not distressed. Her abdomen was soft, there was tenderness with guarding and rebound in the right iliac fossa. Rectal examination was normal. The white cell count was 28,000 per μl and haemoglobin 15·6 g/dl. At laparotomy 200 ml dark blood was removed from the pelvis. The appendix was not immediately visible, but was palpable within the caecum. The ovaries were impalpable. Gynaecological assistance confirmed a ruptured endometrial cyst secondary to extensive pelvic endometriosis which made recognition of normal pelvic anatomy very difficult. Reduction of the intussuscepted appendix was achieved and routine appendicectomy performed. An endometrial deposit was seen on the serosal surface of the reduced appendix. Postoperative recovery was unremarkable and the patient was well at last review.

DISCUSSION

Intussusception of the appendix has been the subject of a number of reviews. McSwain[3] in 1941 and Frazer[4] in 1943 reviewed 77 and 82 cases respectively. Since then there have been sporadic case reports with a variety of associated pathological findings.[5] Less than 12 cases of appendiceal intussusception associated with endometriosis have been described.[4, 9] Although endometriosis externa is not uncommon — and may theoretically affect virtually any part of the peritoneal cavity, caecal involvement is uncommon compared with other parts of the colon.

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The aetiology remains unknown, but the most commonly accepted view suggested by Rolleston[8] proposes that either an intramural or an intraluminal lesion produces irritation of the normal appendiceal peristaltic activity, which leads to an attempt by the appendix to extrude the offending lesion. The appendix itself undergoes strong peristaltic contractions which may become more vigorous if the appendiceal wall is irritated. This may lead to part of its wall being pushed in, or out, acting as the leading point for an intussusception. Spasm of the muscular sphincter at the base of the appendix might also form the apex of an intussusception. It seems likely that anatomical, physiological and minor pathological changes interact to produce this rare condition.

McSwain's classification recognises four basic types of appendiceal intussusception; in type I the tip of the appendix invaginates into the proximal lumen; in type II invagination of the distal appendix occurs into the lumen of the proximal appendix; in type III the proximal appendix invaginates into the distal appendix; and in type IV — which may arise from progression of types II and I, but not III, there is complete intussusception of the appendix within the caecum. Ileocaecal or caecocolic intussusception may also be referred to as secondary or compound intussusception. McSwain called these combined intussusceptions (type I combined appendiceal intussusception).

Appendiceal intussusception may present in a variety of ways; as acute appendicitis, colicky abdominal pain associated with the passage of red currant jelly stools — typical childhood intussusception, or as an incidental barium enema finding — which may be subsequently reduced hydrostatically.[8] Some radiologists maintain that a "specific coiled spring" appearance in the caecum is indicative of appendiceal intussusception. It may also be mis-diagnosed as a caecal polyp at colonoscopy,[9] or discovered at laparotomy. Not surprisingly preoperative diagnosis with an acute presentation is very rare.

Treatment for this condition once identified is appendicectomy with or without burial of the stump. Simple reduction at operation may not be possible, necessitating caecotomy and removal from the inside. If the caecal mass cannot be distinguished from a tumour, right hemicolectomy may be necessary. Endoscopic appendicectomy is not recommended because of the risk of caecal perforation.[9] The present case illustrates a McSwain Type IV appendiceal intussusception occurring in a patient with extensive pelvic endometriosis. The exact mechanism of the intussusception remains unknown. There have been less than 12 reported cases in the world literature of appendiceal intussusception associated with endometrial deposits.

"When one opens the abdomen and cannot find the appendix, he should remember that such a thing as complete inversion of the appendix occurs and that it may be possible to feel the appendix in the caecum as a pencil-like mass". (Barton McSwain 1941)[3]

I would like to thank Mr B G Best, FRCS, for allowing me to report this case and Mr R J Brown, FRCS, for his help and guidance.

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BOOK REVIEW

The medical management of AIDS. Edited by Merle A Sande and PA Volberding. (pp 383. £18.75). Philadelphia: Saunders, 1988.

This book deals with all aspects of human immuno-deficiency virus infection and the Acquired Immune Deficiency Syndrome. It includes chapters describing the human immuno-deficiency in detail, clinical features of HIV infection of various systems and opportunistic infections which occur in patients rendered immuno-deficient. It also includes useful chapters concerned with special problems related to the AIDS epidemic, ethical issues regarding screening of patients and occupational health issues for those who provide care and a chapter related to medical responsibility and reluctance to care for HIV infected individuals.

Overall, this is an extremely comprehensive review of the topic. There are numerous tables and photographic plates which are extremely helpful, and at the end of each chapter there are many references for those who wish to research the topic more deeply. The book therefore provides a useful up-to-date review of clinical issues relevant to caring for individuals with HIV-related disease.

DR McCLUSKEY

ANN HP McKEOWN, BA, FLA.

Ann McKeown died suddenly while in England attending a meeting of University Medical School Librarians. She had been the first Sub-Editor of the *Ulster Medical Journal* and was very much responsible for the professional style and improved layout of the Journal from 1985 onwards.

She had trained at Trinity College Dublin, the British Museum Department of Printed Books and at the University of Hull under Philip Larkin. This background, and her naturally careful and meticulous approach to the use of words and their correct presentation on the printed page combined to set a necessarily high standard for the Journal. Her skills and dedication will be much missed.

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DR HADDEN

The Ulster Medical Journal, Volume 58, No. 2, pp. 196–197, October 1989.

Case report

Incidental enterolithiasis

K R Gardiner, R J Maxwell

Accepted 9 August 1989.

Enterolithiasis is a rare disorder most often affecting middle-aged females. Enteroliths may be asymptomatic or may present with small bowel obstruction, perforation or intermittent intestinal symptoms, such as colicky abdominal pain, nausea and vomiting.[1] We present a case of enterolithiasis discovered incidentally with a very unusual nidus for stone formation.

CASE REPORT

A 68-year-old female presented with a four week history of anorexia, tenesmus and pain on defaecation. There was no significant past medical history. On examination she was clinically anaemic and a 5 cm diameter mobile mass was palpable in the right iliac fossa. Rectal examination and sigmoidoscopy were normal.

Haemoglobin concentration was 10·8 g/dl. Serum iron and ferritin concentrations were low. A barium enema revealed no colonic abnormality but demonstrated a laminated opacity 4·5 cm diameter overlying the ala of the right ilium (Fig 1). After a short delay, barium flooded into the terminal ileum and the laminated opacity was shown to be mobile within the dilated terminal ileum (Fig 2). One of the inner rings of the opacity was of metallic density. An ultrasound scan showed the gallbladder to be free from calculi.

At laparotomy a large calculus was removed from the terminal ileum. The gallbladder was normal, as was the remainder of the small bowel; in particular there were no diverticula or strictures. The calculus was found to be disc-like with a central defect. On sectioning, the calculus was found to consist of dry, faecal smelling vegetable material surrounding a gold ring. The patient was unable to remember swallowing a ring.

DISCUSSION

Enterolithiasis occurs as a result of intestinal stasis and has been found in association with congenital or acquired diverticula of the small bowel, tuberculous, neoplastic or Crohn's strictures and in blind loops.[2]

Enteroliths may be subdivided into false (which are inspissated intestinal contents) and true.[2] The true enteroliths have been further classified, according to their origin and biochemical components, into two groups by Atwell and Pollock.[3] The first, and commonest type, are formed high in the small bowel where a less alkaline medium allows deposition of choleic and cholic acids. The second type is rarer and arises in the more alkaline distal small bowel as a result

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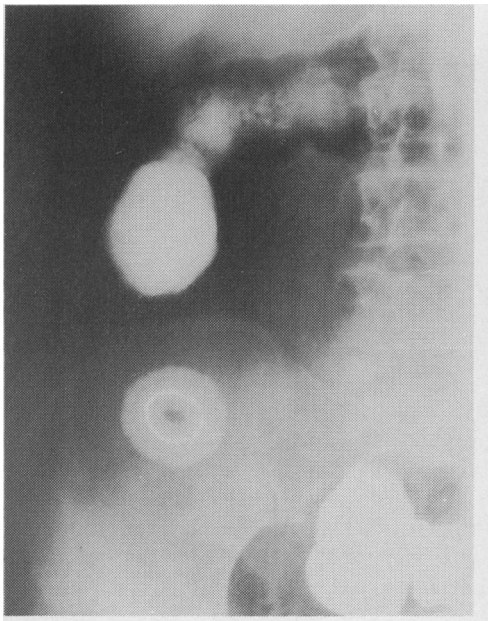

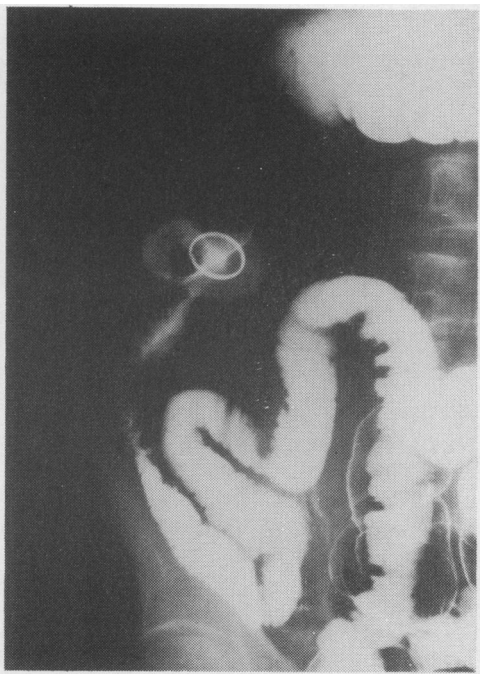

Figs 1 and 2. Enterolith formed around a gold ring demonstrated on barium enema.

of precipitation of mineral salts, predominantly calcium and to a lesser extent magnesium and barium. Many enteroliths are thought to form around a nidus, usually plant material especially fruit skins and stones.

Abdominal radiographs reveal opaque stones freely mobile on serial films. Barium studies can confirm the presence of an enterolith if a filling defect is seen corresponding to the size of the opacity on the plain film.[4]

Recommended treatment is removal of the stone by enterotomy, and resection of the almost invariably associated intestinal abnormality.[5] During laparotomy the small bowel should be carefully examined for other enteroliths, diverticula or strictures. Cholecystenteric fistula should also be sought. Chemical analysis of the enterolith may be needed to differentiate it from a gallstone.

This case of enterolithiasis is unusual in that the enterolith was discovered during the investigation of predominantly rectal symptoms. These symptoms cannot readily be attributed to the enterolith and we consider it to be an incidental finding. A gold ring acting as a nidus for stone formation is also very unusual if not unique. Most foreign bodies pass with ease through the normal alimentary tract, and the presence of the ring within the terminal ileum possibly for several years is difficult to explain.

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The Ulster Medical Journal, Volume 58, No. 2, pp. 198–199, October 1989.

Case report

Late, solitary metastatic renal carcinoma in the pancreas

N S Simpson, C K Mulholland, T F Lioe, R A J Spence

Accepted 26 June 1989.

CASE REPORT

A 53-year-old woman presented in 1987 with a short history of lethargy and weight loss of one stone. She had no symptoms referable to her gastrointestinal or genito-urinary tracts. In her past medical history she had undergone a radical left nephrectomy in 1969 for a renal carcinoma and in 1982 a partial right nephrectomy was carried out for a metachronous renal carcinoma. On both occasions histological examination confirmed a clear cell renal carcinoma with renal vein invasion, although the capsules were intact. On neither occasion had there been nodal involvement or detectable metastases.

On admission she was anaemic but there were no other abnormal findings. Investigations revealed haemoglobin of 8·6 g/dl with microcytic hypochromic indices. ESR was 120 mm/hour. Biochemical screening of liver, kidney and bone was normal. Cytological and bacteriological examination of urine was negative. Chest, cardiograph and skeletal survey revealed no evidence of metastases. CT scan revealed a tumour in the body and tail of the pancreas. There was no evidence of hepatic or nodal metastases.

At laparotomy a 5 cm tumour was found in the body of the pancreas extending into the tail. There was no sign of extra-pancreatic tumour. A subtotal pancreatectomy, preserving the duodenum was performed. Post-operatively she made an uneventful recovery. Enzyme and insulin replacement was not required.

The pathology of the resected specimen, which weighed 160 g, revealed a 5 cm diameter lobulated tumour mass with a cystic haemorrhagic yellow surface. Microscopically the tumour showed features of a typical secondary deposit from a renal adenocarcinoma. It was composed of nests of cells with small uniform nuclei and clear cytoplasm.

One year later she presented with a mass in the right lobe of her thyroid gland. Repeat CT scan revealed no evidence of any recurrent tumour elsewhere. Right thyroid lobectomy was performed. Pathology of the resected thyroid specimen revealed the same features of a secondary renal cell carcinoma. Two years from her pancreatectomy she remains well and apparently disease free.

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Correspondence to Mr Spence.

DISCUSSION

We report a patient with metachronous renal carcinomas treated surgically, who later developed a solitary pancreatic metastasis and who subsequently developed a secondary deposit in her thyroid gland.

Renal carcinoma is an aggressive tumour; thirty percent have metastases at presentation and their prognosis is grave, 75% dying within one year. Stage III disease (renal vein invasion) carries a five year survival of 30% after nephrectomy.[1] A small number (1%) are found to have a solitary metastatic deposit at diagnosis, often in bone, brain or adrenal gland.[2] Radical nephrectomy and excision of the metastases may produce up to 22% two year survival.[2]

Despite successful nephrectomy, patients may develop metastases after variable disease free periods. In one large series, 11% developed metastases more than 10 years after surgery.[1] In a few cases (1–2%) recurrence is solitary and limited to one site. Aggressive surgery has yielded excellent results in these patients, with ten-year survival of up to 70%.[2, 3] Metastases are commonest in brain (30%), lung (30%) and bone (20%).

In view of the potential for prolonged survival obtained by surgery, we recommend a similar approach to pancreatic metastases if it can be ascertained that the metastasis is truly solitary. There have been three previous reports of pancreatic resection under these circumstances and two of these patients were disease free after one year.[4, 5]

We thank Dr J D Biggart for help in reviewing the histology of this case.

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The Ulster Medical Journal, Volume 58, No. 2, pp. 200–202, October 1989.

Book reviews

Blood, sweat and cheers. By Ian Fraser. (pp 150. £14.95. Inland £17.50; Abroad $29.00 USA). London: British Medical Journal, The Memoir Club, 1989.

The Memoir Club has already published in this series recollections of various distinguished medical personalities — Sir Christopher Booth, Sir Douglas Black, Dr Moran Campbell, Sir James Howie and Lord Taylor. It is happy and appropriate as far as Ulster is concerned, that Ian Fraser should have been asked to contribute to this series. The book throughout is intensely modest and without any form of pretence (not a mention of Knighthood or DSO).

Starting with his childhood background in the home of his father, a single-handed general practitioner, his lifelong love of medicine is described from its beginnings and this background, in what was once the core of the profession, explains his commitment to medical care and the philosophy of endurance with the work-load that medicine sometimes entails.

The journey through a long happy life continues through medical student days at Queen's, early postgraduate experience, World War II and as an Army Surgeon in Africa, Sicily, Italy, Arromanche and the Far East. Personalities described such as Lord Porritt, Lady Mountbatten, General Auchinleck — contacts such as this explain why so many of us see him as the best ambassador that Ulster medicine has ever had.

After the war, the return to the Royal Belfast Hospital for Sick Children and the Royal Victoria Hospital, and an interesting account of the changes in the practise of surgery. Some of this later period is within the memory of Ulster Medical Society members and need not be recounted.

The "heart" of Sir Ian's story lies in the anecdotes: "the airman who saw his own funeral", "the elderly lady with the owl", "travelling to Cork as a medical examiner". Sir Ian also reflects on retirement hobbies of some of his colleagues, and we all await with interest what he will do when he retires.

Sir Ian Fraser is the only Ulster Medical knight, and a knight in shining armour he has been, on behalf of Ulster medicine. Reading this book will give much pleasure to many. Quite rightly (and this is not an ambiguous statement), the book is dedicated to Eleanor and his children.

JA WEAVER

Drugs and the athlete: (Vol 2 of Contemporary Exercise and Sports Medicine Series. Allan J Ryan MD, Editor in Chief). By Gary I Wadler and Brian Hainline. (pp 353. £33.00). Philadelphia: F A Davis Company, 1989.

Any physician who faces up to the problem of drugs in sport will want to learn the answers to four different but important questions. Why do sportsmen use drugs? How do they use them? Can this illegal use be prevented? Finally, how do these preventive measures affect the ordinary doctor's work? This scholarly, well referenced textbook answers all of these questions in a thorough, workmanlike and readable way.

Why? Winning, coming first, succeeding. These goals, both in philosophical and economic terms, are freely accepted by the modern sportsman, but they are increasingly more stressful to obtain. It follows that cheating to achieve these goals is expedient. A stark list of 217 sportsmen found guilty, includes 16 who have died because of their dabbling — 12 of these 16 in the eighties! Impressive evidence.

How? The athlete, with his coach, is always searching, with the help of modern medicine, to find ways to run faster, be stronger, last longer. He believes in anabolic steroids and testosterone. He will use stimulants like amphetamine, cocaine, ephedrine or caffeine. He will try 'blood doping' — usually his own two units taken off two months previously. Beta-blockers and diuretics have particular attractions for specific sports. In the next decade one can expect him to use genetically engineered growth hormone to increase body mass; and erythropoetin to improve oxygen carrying. Narcotic painkillers including codeine as well as morphine can camouflage injury and allow competition. Anxiety may be eased by tranquillisers, barbiturates or marijuana. Perhaps unwisely, the authors extend this area. Their health education zeal points out the undoubted dangers to health of alcohol and tobacco. But is it not controversial to include these socially accepted drugs? Misuse of nearly all the other drugs mentioned are 'illegal' — either in a court of law, or by the sports governing body. Anecdotal evidence of a baseball player is presented: it seems he could titrate his blood nicotine levels by varying his rate of chewing tobacco: Does this mean that tobacco should be added to the banned list?

Prevention? The rocky road of drug testing has a huge number of pot-holes! Vast expense; complicated modern forensic science; selection of body fluid or tissue; legal considerations; preservation of confidentiality — and perhaps most important of all — protection of the innocent. Yet, there is not any hope of returning to the level paths of former guilelessness. Sadly, a complicated,

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Any physician who faces up to the problem of drugs in sport will want to learn the answers to four different but important questions. Why do sportsmen use drugs? How do they use them? Can this illegal use be prevented? Finally, how do these preventive measures affect the ordinary doctor's work? This scholarly, well referenced textbook answers all of these questions in a thorough, workmanlike and readable way.

Why? Winning, coming first, succeeding. These goals, both in philosophical and economic terms, are freely accepted by the modern sportsman, but they are increasingly more stressful to obtain. It follows that cheating to achieve these goals is expedient. A stark list of 217 sportsmen found guilty, includes 16 who have died because of their dabbling — 12 of these 16 in the eighties! Impressive evidence.

How? The athlete, with his coach, is always searching, with the help of modern medicine, to find ways to run faster, be stronger, last longer. He believes in anabolic steroids and testosterone. He will use stimulants like amphetamine, cocaine, ephedrine or caffeine. He will try 'blood doping' — usually his own two units taken off two months previously. Beta-blockers and diuretics have particular attractions for specific sports. In the next decade one can expect him to use genetically engineered growth hormone to increase body mass; and erythropoetin to improve oxygen carrying. Narcotic painkillers including codeine as well as morphine can camouflage injury and allow competition. Anxiety may be eased by tranquillisers, barbiturates or marijuana. Perhaps unwisely, the authors extend this area. Their health education zeal points out the undoubted dangers to health of alcohol and tobacco. But is it not controversial to include these socially accepted drugs? Misuse of nearly all the other drugs mentioned are 'illegal' — either in a court of law, or by the sports governing body. Anecdotal evidence of a baseball player is presented: it seems he could titrate his blood nicotine levels by varying his rate of chewing tobacco: Does this mean that tobacco should be added to the banned list?

Prevention? The rocky road of drug testing has a huge number of pot-holes! Vast expense; complicated modern forensic science; selection of body fluid or tissue; legal considerations; preservation of confidentiality — and perhaps most important of all — protection of the innocent. Yet, there is not any hope of returning to the level paths of former guilelessness. Sadly, a complicated,

ever-enlarging list of banned substances is here to stay. Just what does 'and related substances' mean?

Yourself? If you are caring for an elite sportsman or woman, in whatever age group, you will not want to be the cause of him or her loosing their gold medal because of your prescribing error: Refer to this text, and avoid this calamity. Long lists of safe alternatives are available. RW HARLAND

Aids to the examination of the peripheral nervous system. (pp 61, figs. £3.50 paperback). London: Baillière Tindall, on behalf of the Guarantors of *Brain,* 1986.

This paperback comprises a series of photographs and simple line drawings which illustrate the testing of individual muscles and the distribution of sensory loss in peripheral nerve lesions. The book is beautifully illustrated with excellent photographs demonstrating techniques for testing muscle power and indicating the peripheral nerve and cord segments responsible for innervation. The diagrams indicating the distribution of sensory loss and the dermatomes are identical to those which can be found in any text book of anatomy. At £3.50 this is very good value. It is a useful guide for undergraduate students who are learning examination of the peripheral nervous system and is convenient quick revision for those who have forgotten the distribution of the cutaneous sensory nerves.

DR McCLUSKEY

Famine — The Irish experience 900–1900. By E Margaret Crawford. (pp 242. £20.00). Edinburgh: John Donald Publishers Ltd, 1989.

This helpful book will, as the title implies, correct the belief that the only Irish famine was the Great Famine of the 1840s. Margaret Crawford reprints and edits William Wilde's table of the many Irish famines from 900 A.D. to 1850. Mary Lyons surveys, so far as the annals and records allow, the adverse effects of weather, and disease of animals and man. Gillespie discusses the bad grain harvest of 1621–4, the harvest so important before the age of the potato. O'Neill describes the food shortages of the 1890s. It is hard however for students of famine to avoid adding to the large literature on the *Great Famine.* Solar reviews the severity and long-term consequences of the famine. The potato blight is still with us, and without a chemical industry to supply protective sprays, it would be as destructive as ever. An able chapter by Sir Peter Froggatt summarises the response of the medical profession, and Kinealy analyses the administration of the newly instituted Poor Law. But the reader should concentrate on the causes of the food shortage, and derive some general principles for famine prevention. It could happen again. Northern Ireland is an importer of wheat to bake the bread of the people. In 1988 the flour millers imported 48,613 tonnes to supplement home production. What if a sudden destructive blight were to spread in and across the North American wheat fields? We should aim at self-sufficiency in human food grains. Grain-growing land should be treasured. We cannot afford to build towns on our best grain-growing fields as it is being done in the Roe valley.

Catastrophes are multifactorial in their causation, and so was the *Great Famine.* The extraordinary predominance of the potato in tillage, and in the food of the people; the universal susceptibility to the new fungus infection of the varieties grown; the growing of potatoes repeatedly on the same land; the relatively small quantities of food grains grown, especially in the west and south; a population growing at a "self destructive rate"; general poverty at the best of times; a specially vulnerable group of landless labourers with negligible property, little in the way of wages, and no savings; small farmers on 15 acres or less who were only minimally better off; illiteracy; chronic ill-health and disability among the poor of a degree and prevalence hard to realise to-day. Any one who has seen the Indian labourer, starved, parasitised and infected, trying to turn out to work, hardly able to put one foot past the other, will understand the lack of mental and physical ability to cope with "ordinary" troubles, let alone disaster. One remembers old people in Monaghan describing debilitated people "walking as if the dead lice were dropping off them". Surely a memory of the famine — and the fever. It was hard too to dig and win turf for the fire for cooking and warmth. Again one remembers a woman lamenting in a cabin when the weather was cold "we shall be starved (die) within the walls". To die of exposure on the road or in a ditch was understandable; to die of cold within the walls the height of horror.

It is human nature to blame someone, anyone, for disaster. Famine literature is loaded with adverse criticism of the relief attempted by government, with some reason. Curiously the grain merchants are less abused. People forget that there is not necessarily a good way out of a bad situation. The governments of the 1840s did make an immense effort. It was not enough, not prompt enough, and not continued long enough, but the administrative and agricultural ideas, knowledge, skills and finance of the time could do no more. It is to be hoped they would do better to-day. Again to operate the grain trade merchants must have money to buy at home, import from abroad, and distribute grain. They can only get money from customers who can pay. The Irish peasants had no money and in consequence, in the midst of famine, much grain was exported — to those who could pay for it. A government,

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prepared to buy all available grain compulsorily, must find it (it may be hidden — awaiting a higher price), must pay famine prices, must be able to store it properly, and to distribute it countrywide in a rationed system; free to the destitute consumer while the famine lasts. The governments of the 1840s could not do this. The success of the rationing system in the United Kingdom during the 1939–45 war leads one to hope it could be done now.

For merchants to offer a high price to the cultivator to attract foodstuffs to the market is legitimate. To corner foodstuffs in a famine and hold them off the market to force a higher price to the consumer is a crime. Where government is weak, great fortunes are made, as happened in Bengal in 1943. Even in Ireland, without impropriety, with no intention of cornering, large profits could be made. Thomas McClure, the Ulster merchant, related to WD Killen that at the famine time a Spanish merchant offered him 200,000 quarters of wheat at 42 shillings a quarter. McClure would not go beyond 40 shillings and the deal was off. Within a year wheat was selling at 70 shillings a quarter, and McClure had missed a profit of £250,000. No doubt someone else had not.

This book, so useful for its perspective over a millenium of peasant want, should be supplemented by the student of famine. The Last Subsistence Crisis[1] deals with the weather and famine of 1817, important to Belfast and Ulster. Mary E Daly's general account of the Great Famine[2] is valuable. WP O'Brien's book[3] is the view of an accomplished Irish civil servant, who lived and worked through the famine. Essential reading is the report on the Bengal Famine[4] of 1943. Bengal was only short of three weeks' supply of rice in the year (though a minority opinion said nine). Yet such was the famine that 1·5 million people died, and the social disruption was incalculable.

War and weather may not be controllable, but it is plain that money lavished on the study and prevention of plant and animal disease will not be wasted. Nor will administrative schemes made in advance, for the prevention and relief of food shortages. This book should keep the subject before us.

JS LOGAN

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