VOLUME 53 1984 No. 2

THE ULSTER MEDICAL JOURNAL

PUBLISHED BY
THE ULSTER MEDICAL SOCIETY

CONTENTS

Page

ALCOHOLIC KORSAKOFF'S PHYCHOSIS: A PSYCHOMETRIC, NEURORADIOLOGICAL AND NEUROPHYSIOLOGICAL INVESTIGATION OF NINE CASES: Helen J. Harbinson - - - - - - - - 103

ORTHOPAEDICS AND THE NORTHERN IRELAND COUNCIL FOR ORTHOPAEDIC DEVELOPMENT (NICOD): WV James - - - - - - - 111

THE ROLE OF GALLIUM SCANNING IN THE DETECTION OF BONE AND JOINT SEPSIS: AT Gavin, JD Laird, SD Roberts - - - - - - - 117

STRESS FRACTURES IN ATHLETES: KE Dowey, GW Moore - - - 121

THE USE OF CHINESE HERBS IN ABDOMINAL SURGERY IN OBSTETRICS AND GYNAECOLOGY: Gao Xiu Qin, Liu Li Xian, Liu Dong Hua - - 125

TOXOPLASMOSIS IN NORTHERN IRELAND 1982-83: ETM Smyth - - 128

DRUG OVERDOSES—A THREE YEAR STUDY AT ALTNAGELVIN HOSPITAL, LONDONDERRY: GJJ Murphy, JJA McAleer, FA O'Connor - - 131

THE OBSTRUCTED INTUSSUSCEPTION IN CHILDHOOD: SR Potts, N Murphy 140

A STUDY OF PAIRED CADAVER KIDNEY TRANSPLANTS: D Middleton, CC Doherty, JF Douglas, MG McGeown - - - - - - - 143

TOWARDS PAINLESS ORTHOPAEDIC SURGERY: David W Barron - - 146

HYPONATRAEMIA AND HYPOTHYROIDISM IN THE ELDERLY — A CASE REPORT AND STUDY: TRO Beringer - - - - - - - - 150

ISOLATED INJURY TO THE DISTAL RADIOULNAR JOINT—CASE REPORT AND CADAVER STUDY: GF McCoy, HK Graham, DE Beverland - - 155

CASE REPORT: MANAGEMENT OF SEVERE THEOPHYLLINE OVERDOSAGE BY CHARCOAL HAEMOPERFUSION: AC Uprichard, R Bailie, E McAteer - 159

CASE REPORT: LHERMITTE'S SIGN AS THE PRESENTING SYMPTOM OF VITAMIN B_{12} DEFICIENCY: TRO Beringer, VH Patterson - - - 162

CASE REPORT: AORTOCAVAL COMPRESSION SECONDARY TO AN OVARIAN CYST: KR Milligan, PG Loughran, JA Moore, P Weir - - - 164

BOOK REVIEWS - - - - - - - - - - - - 160-170

CONTENTS

Page

ALCOHOLIC KORSAKOFF'S PHYCHOSIS: A PSYCHOMETRIC, NEURORADIOLOGICAL AND NEUROPHYSIOLOGICAL INVESTIGATION OF NINE CASES: Helen J. Harbinson - - - - - - - - 103

ORTHOPAEDICS AND THE NORTHERN IRELAND COUNCIL FOR ORTHOPAEDIC DEVELOPMENT (NICOD): WV James - - - - - - - 111

THE ROLE OF GALLIUM SCANNING IN THE DETECTION OF BONE AND JOINT SEPSIS: AT Gavin, JD Laird, SD Roberts - - - - - - - 117

STRESS FRACTURES IN ATHLETES: KE Dowey, GW Moore - - - 121

THE USE OF CHINESE HERBS IN ABDOMINAL SURGERY IN OBSTETRICS AND GYNAECOLOGY: Gao Xiu Qin, Liu Li Xian, Liu Dong Hua - - 125

TOXOPLASMOSIS IN NORTHERN IRELAND 1982-83: ETM Smyth - - 128

DRUG OVERDOSES—A THREE YEAR STUDY AT ALTNAGELVIN HOSPITAL, LONDONDERRY: GJJ Murphy, JJA McAleer, FA O'Connor - - 131

THE OBSTRUCTED INTUSSUSCEPTION IN CHILDHOOD: SR Potts, N Murphy 140

A STUDY OF PAIRED CADAVER KIDNEY TRANSPLANTS: D Middleton, CC Doherty, JF Douglas, MG McGeown - - - - - - - 143

TOWARDS PAINLESS ORTHOPAEDIC SURGERY: David W Barron - - 146

HYPONATRAEMIA AND HYPOTHYROIDISM IN THE ELDERLY — A CASE REPORT AND STUDY: TRO Beringer - - - - - - - - 150

ISOLATED INJURY TO THE DISTAL RADIOULNAR JOINT—CASE REPORT AND CADAVER STUDY: GF McCoy, HK Graham, DE Beverland - - 155

CASE REPORT: MANAGEMENT OF SEVERE THEOPHYLLINE OVERDOSAGE BY CHARCOAL HAEMOPERFUSION: AC Uprichard, R Bailie, E McAteer - 159

CASE REPORT: LHERMITTE'S SIGN AS THE PRESENTING SYMPTOM OF VITAMIN B_{12} DEFICIENCY: TRO Beringer, VH Patterson - - - 162

CASE REPORT: AORTOCAVAL COMPRESSION SECONDARY TO AN OVARIAN CYST: KR Milligan, PG Loughran, JA Moore, P Weir - - - 164

BOOK REVIEWS - - - - - - - - - - - - 160-170

THE ULSTER MEDICAL JOURNAL

NOTICE TO CONTRIBUTORS

1. Authors are reminded that concise and clearly expressed papers are those most welcomed by readers and the Editorial Board.

2. Manuscripts should be typewritten in double spacing, with wide margins. They should be fully corrected and alterations in proof may be disallowed or charged to the author.

3. The text should indicate the purpose of the paper, and should include an introduction, sections on materials and methods, results, and a discussion relevant to the findings. A brief factual summary should be provided.

4. Scientific measurements should be in SI units — Units, symbols and abbreviations; a guide for biological and medical editors and authors, 1972, Royal Society of Medicine, London. Blood pressure may be expressed in mmHg and haemoglobin concentration as g/dl.

5. Tables must be kept simple and avoid vertical lines. They and illustrations must be kept to a minimum and data should not be given in both text and tables. Line drawings should be used where possible and symbols must be large enough to be legible when reduced to text size. Where possible size of illustrations and tables should be planned so that one or more can easily fit the page size of 19 × 13 cm. Photographs and other illustrations should be unmounted, and authors may be charged for these at cost price. Authors names and the top of the figure should be marked in soft pencil on the back.

6. References should be restricted to those really necessary and useful. This Journal uses the 'Vancouver' style (see British Medical Journal 1982; **1**: 1766-1770 and Lancet 1979; **1**: 429-430). Text references are numerical. Each reference should include:
   i) a list of all authors when six or less (when seven or more only the first three should be listed followed by *et al*).
   ii) the title of the article.
   iii) the title of the journal (abbreviated to the form published by Index Medicus).
   iv) the year;
   v) volume number:
   vi) first and last pages.

   eg
   McCoy GF, Dilworth GR and Yeates HA. The treatment of trochanteric fractures of the femur by the Ender method. *Ulster Med J* 1983; **52**: 136-141.

   Book references should give the author, year of publication, title, edition and where appropriate volume and page number, with town of publication and name of publisher.

7. Orders for reprints must be made directly to the printers when the author returns the proofs. Reprints must be paid for by the author, the cost can be obtained from the printer in advance.

8. Editorial communications should be sent direct to the Editor who will be pleased to advise on the preparation of manuscripts if requested.

   Fellows and Members of the Ulster Medical Society receive the Journal free. Individuals may subscribe directly (see back page). Journal contents listed in *Current Contents Clinical Practice.* This publication is available in microfilm from Xerox University Microfilms, 300 North Zeeb Road, Ann Arbor, Michigan 48106, USA.

The Ulster Medical Journal

VOLUME 53

PUBLISHED BY
THE ULSTER MEDICAL SOCIETY
1984

CONTENTS

Page

THE ROYAL MATERNITY HOSPITAL, BELFAST — FIFTY GLORIOUS YEARS 1933-1983: J McD G Harley - - - - - - - - - 1

A HOSPITAL FOR ALL SEASONS: JA Weaver - - - - - - - 18

A RECIPE FOR TRANSPLANTATION: Mary G McGeown - - - - - 33

PRIMARY SCLEROSING CHOLANGITIS: RAJ Spence, JR Anderson, GW Johnston, TT Fulton, ME Callender - - - - - - - 44

ROUTINE MEASUREMENT OF HAEMOGLOBIN A_1 AT THE DIABETIC OUTPATIENT CLINIC: E Byrne, G Savage, JD Merrett, L Kennedy - 51

A STUDY OF 100 CONSECUTIVE REFERRALS IN A UNIVERSITY PSYCHIATRIC CLINIC: A Kerr - - - - - - - - - - - - 58

OUTCOME OF PREGNANCY IN A RUBELLA OUTBREAK IN NORTHERN IRELAND 1978-1979: JH Connolly, NC Nevin, DM Simpson, HJ O'Neill - - - - - - - - - - - - - - 65

UNSUSPECTED Q FEVER ENDOCARDITIS — A CASE REPORT: K Moles, ME Scott, H O'Kane, JH Connolly - - - - - - - - 74

SCREENING FOR CERVICAL CANCER IN GENERAL PRACTICE: Maura Briscoe, J Oliver Woods - - - - - - - - - - 76

HIGH FREQUENCY JET VENTILATION AND ASPIRIN POISONING: WI Campbell, DL Coppel, BF McLaughlin - - - - - - - 80

RECTOVAGINAL FISTULAE FOLLOWING RADIATION TREATMENT FOR CERVICAL CARCINOMA: JR Anderson, RAJ Spence, TG Parks, EB Bond, BD Burrows - - - - - - - - - - - - 84

PRELIMINARY REPORT — SPORTS INJURY CLINIC: K Elizabeth Dowey - 88

CAREER PREFERENCE ENQUIRY AMONG QUEEN'S UNIVERSITY MEDICAL UNDERGRADUATES AND GRADUATES: STAGE III: Elizabeth A Egerton 93

ALCOHOLIC KORSAKOFF'S PHYCHOSIS: A PSYCHOMETRIC, NEURORADIOLOGICAL AND NEUROPHYSIOLOGICAL INVESTIGATION OF NINE CASES: Helen J. Harbinson - - - - - - - - - 103

ORTHOPAEDICS AND THE NORTHERN IRELAND COUNCIL FOR ORTHOPAEDIC DEVELOPMENT (NICOD): WV James - - - - - - - 111

THE ROLE OF GALLIUM SCANNING IN THE DETECTION OF BONE AND JOINT SEPSIS: AT Gavin, JD Laird, SD Roberts - - - - - - - 117

STRESS FRACTURES IN ATHLETES: KE Dowey, GW Moore - - - 121

THE USE OF CHINESE HERBS IN ABDOMINAL SURGERY IN OBSTETRICS AND GYNAECOLOGY: Gao Xiu Qin, Liu Li Xian, Liu Dong Hua - - 125

TOXOPLASMOSIS IN NORTHERN IRELAND 1982-83: ETM Smyth - - 128

DRUG OVERDOSES—A THREE YEAR STUDY AT ALTNAGELVIN HOSPITAL, LONDONDERRY: GJJ Murphy, JJA McAleer, FA O'Connor - - 131

THE OBSTRUCTED INTUSSUSCEPTION IN CHILDHOOD: SR Potts, N Murphy 140

A STUDY OF PAIRED CADAVER KIDNEY TRANSPLANTS: D Middleton, CC Doherty, JF Douglas, MG McGeown - - - - - - - 143

TOWARDS PAINLESS ORTHOPAEDIC SURGERY: David W Barron - - 146

HYPONATRAEMIA AND HYPOTHYROIDISM IN THE ELDERLY — A CASE REPORT AND STUDY: TRO Beringer - - - - - - - - 150

ISOLATED INJURY TO THE DISTAL RADIOULNAR JOINT—CASE REPORT AND CADAVER STUDY: GF McCoy, HK Graham, DE Beverland - - 155

CASE REPORT: MANAGEMENT OF SEVERE THEOPHYLLINE OVERDOSAGE BY CHARCOAL HAEMOPERFUSION: AC Uprichard, R Bailie, E McAteer - 159

CASE REPORT: LHERMITTE'S SIGN AS THE PRESENTING SYMPTOM OF VITAMIN B_{12} DEFICIENCY: TRO Beringer, VH Patterson - - - 162

CASE REPORT: AORTOCAVAL COMPRESSION SECONDARY TO AN OVARIAN CYST: KR Milligan, PG Loughran, JA Moore, P Weir - - - 164

BOOK REVIEWS - - - - - - - - - - 98-102, 160-170

To THE HONORARY SECRETARY,
ULSTER MEDICAL SOCIETY.

..... 19 .....

Dear Sir,

We nominate for $\frac{\textit{Membership}}{\textit{Fellowship}}$ *of the Ulster Medical Society:—*

Name of Candidate .....

Postal Address .....

.....

Year of Qualification and Degrees .....

.....

Signature of Proposer .....

Signature of Seconder .....

EXCHANGES: Exchange journals and all relevant correspondence should be addressed to:

QUEEN'S UNIVERSITY MEDICAL LIBRARY,
INSTITUTE OF CLINICAL SCIENCE,
GROSVENOR ROAD, BELFAST, BT12 6BJ,
NORTHERN IRELAND.

BOOKSELLERS: All correspondence, orders and payments for institutional and private subscribers, through booksellers, should be sent to:

THE HONORARY TREASURER,
ULSTER MEDICAL JOURNAL,
c/o. QUEEN'S UNIVERSITY MEDICAL LIBRARY,
INSTITUTE OF CLINICAL SCIENCE,
GROSVENOR ROAD, BELFAST BT12 6BJ,
NORTHERN IRELAND.

SUBSCRIPTIONS: Individuals who are not members of the Society wishing to take out a direct subscription should send a banker's order for £2.00 payable to the Ulster Medical Society (Northern Bank, Shaftesbury Square, Belfast), 'Ulster Medical Journal Account', to:

DR. S. A. HAWKINS,
HONORARY TREASURER, ULSTER MEDICAL SOCIETY,
DEPARTMENT OF MEDICINE,
INSTITUTE OF CLINICAL SCIENCE,
GROSVENOR ROAD, BELFAST BT12 6BA, NORTHERN IRELAND.

This covers one volume (two numbers) of the Journal.

THE ULSTER MEDICAL SOCIETY

Whitla Medical Building
97 Lisburn Road
Belfast 9

If you are not a member of the Ulster Medical Society, we would appeal to you to give the question of joining your consideration. The Society has been in existence since 1862 (and is the direct descendant of the Belfast Medical Society founded in 1806), and has always been active in keeping its members interested in the advances in medical science. Meetings are held at intervals of a fortnight during the winter months, and papers are contributed by members and distinguished guests. Facilities are provided for doctors to meet informally afterwards, and have a cup of tea. *The Ulster Medical Journal, the official organ of the Society, is issued to all Fellows and Members free of charge.* The Society is now rehoused in its own Rooms and in the Whitla Medical Building of Queen's University at 97 Lisburn Road, and this replaces the Whitla Medical Institute which had to be vacated in 1965.

May we, therefore, appeal to you to join the Ulster Medical Society, and so enable us to widen its influence and sphere of usefulness still further? A proposal form is appended; your proposer and seconder must be Fellows of the Society. If you do not know any Fellows please contact the Honorary Secretary. All persons registered as medical practitioners under the Medical Act shall be eligible for election as members of the Society (Constitution, Section VI). Temporary membership may be allowed at the discretion of the Council.

If you do not wish to become a member of the Society, will you consider entering your name as a subscriber to THE ULSTER MEDICAL JOURNAL? The subscription is £2.00 per annum, payable in advance to the Honorary Treasurer.

J M G HARLEY, *President.*
P M REILLY, *Hon. Secretary.*
S A HAWKINS, *Hon. Treasurer.*

MEMBERS **£5.00** (A Member is one who is less than seven years qualified. He or she will automatically become a Fellow seven years after qualification and be liable to the higher subscription rate).

FELLOWS—1. (a) Annual subscription of Fellows **£8.00**; (b) husbands and wives who are both Fellows will be entitled to pay a combined subscription of **£10.00**; 2. Annual subscription of retired Fellows. Any Fellow who, by reason of retirement either through age or illness, is no longer engaged either in practice or in salaried employment, shall be entitled, on application, to pay an annual subscription of **£5.00** only, and provided that such Fellow has previously paid to the Society a subscription at the current rate for an uninterrupted period of at least ten years, or during such time has been in practice or service abroad.

All Fellows and Members of the Society who have paid subscriptions for 40 years or alternatively having been a Fellow or Member for 20 years and reached the age of 65, or more, shall on application be exempt from any further subscriptions.

LIFE MEMBERSHIP—Fellows and Members shall be eligible to become Life Members **£120.00.**

TIES—Ties bearing the crest of the Society on a background of navy, maroon, green or brown may be obtained from the Honorary Treasurer.

THE
ULSTER MEDICAL JOURNAL

PUBLISHED ON BEHALF OF THE ULSTER MEDICAL SOCIETY

VOLUME 53 1984 No. 2

ALCOHOLIC KORSAKOFF'S PSYCHOSIS: A PSYCHOMETRIC, NEURORADIOLOGICAL AND NEUROPHYSIOLOGICAL INVESTIGATION OF NINE CASES

by

HELEN J. HARBINSON

Purdysburn Hospital, Saintfield Road, Belfast

SUMMARY

Nine patients who were admitted to Purdysburn Hospital with a clinical diagnosis of Korsakoff's psychosis were subjected to a series of psychometric tests, to electroencephalography (including P3 auditory evoked potential) and to computerised axial tomography. When compared with controls, the experimental group differed significantly in their psychometric scores in all but the comprehension, vocabulary and digit span subtests of the Wechsler Adult Intelligence Scale. A significant negative correlation was found between scores on the Digit Symbol Subtest and the degree of temporal lobe atrophy ($p < 0.01$), and between Evans' Ratio and the Paired Associate Learning Test of the Wechsler Memory Scale ($p < 0.05$). The P3 auditory evoked potential correlated significantly with a poor performance on the Digit Symbol Subtest. In all cases, cortical atrophy co-existed with ventricular dilatation and in none was intellectual impairment confined to short-term memory. The traditional criteria used in arriving at a diagnosis of Korsakoff's psychosis are called into question.

INTRODUCTION

In 1887 S. S. Korsakoff[1] described the amnesic syndrome which now bears his name. Although the term 'Korsakoff's psychosis' is used by many in a restricted sense, to describe a memory defect accompanied by confabulation, it is evident from Korsakoff's writings that his patients exhibited a much wider range of mental symptoms, including delirium, anxiety, fear and depression. Evidence of a link between Korsakoff's psychosis and Wernicke's encephalopathy was provided by

Malamud and Skillicorn,[2] when they showed that cerebral damage was indentical in both. At post-mortem, symmetrical lesions are found in the walls of the third ventricle, the periaqueductal region, the floor of the fourth ventricle, the medial dorsal and anteromedial nuclei of the thalamus, the pulvinar and the mamillary bodies. A great deal of discussion has centred on the question of the minimal lesion necessary for the production of amnesia. Victor, Adams and Collins,[3] in their clinico-pathological study entitled *The Wernicke-Korsakoff syndrome,* stressed the importance of thiamine deficiency in the aetiology of this condition and suggested that a lesion involving the dorsomedial nucleus of the thalamus was of critical importance in its development. Their results could also be interpreted as showing that atrophy of both the dorsomedial nucleus and mamillary bodies was necessary for development of the amnesic syndrome. Bilateral lesions of the hippocampus and hippocampal gyrus lead to an amnesic syndrome similar to that found in Korsakoff's psychosis. The amnesia which results from diffuse cerebral damage is accompanied by intellectual impairment which tends to impede careful analysis of the memory disorder, and the size of the area damaged is thought to be more important than the site. The principal defect with both hypothalmic and hippocampal lesions is in recent memory. Disorientation in time is almost universal. Immediate memory, as tested by measuring the digit span, is preserved. A retrograde amnesia, extending for months or years before the onset of the illness, is also found.

This study looks at a group of nine patients in Purdysburn Hospital, Belfast, whose disorder at the time of admission was diagnosed as Korsakoff's psychosis (I.C.D. — 291.1). They were subjected to a series of psychometric tests, to electro-encephalography and to CT scanning. The stimulus for the study came from the work of Ron,[4] who carried out CT scanning in a series of chronic alcoholic patients. She noted that clinically intact alcoholic subjects had learning difficulties resembling those encountered in Korsakoff's psychosis, and that these subjects had the largest ventricles. She suggested that the study be extended to include chronic alcoholics in whom brain damage was clinically apparent so that the possibility that alcohol-related organic psychosyndromes are part of a continuum might be explored.

PATIENTS AND METHODS

In October 1980, all hospital in-patients with a diagnosis of Korsakoff's psychosis were identified. Those aged over 60 years, and those with a history of head injury, epilepsy or severe functional illness, such as schizophrenia, were excluded. This left a group of nine patients — seven males and two females.

A typical history would be of a 54-year-old unemployed welder, living alone, and drinking often and heavily. He spent Christmas 1979 with his brother and 'behaved himself' until he was given a large sum of redundancy money. For the next five months he was scarcely ever sober. He was found unconscious at home by his brother, and admitted to an acute medical ward where he was described as 'hopelessly confused'. He was disorientated in time and place and was noted to be behaving strangely. He even poked the electric fire on one occasion, 'to get a bit more heat out of it'. No obvious neurological signs were elicited and physical investigations were normal, apart from liver function tests. He settled to a state of benign and placid affect, but remained disorientated. He recognised total strangers as friends and vice versa. Following his transfer to a psychiatric ward, his recent

memory was described as 'non-existent'. He said that King George V was the reigning monarch, and had to look at his library card to check his home address. He had been an avid reader, but was unable to recall the content of a book recently read, and produced an entirely fabricated account.

Routine physical examination, including neurological assessment, was carried out on each patient. The diagnosis was verified from the case notes and by interviewing the next of kin. The following psychometric tests were administered to all nine patients and controls by the same psychologist (as described by Lishman):[5]

The Wechsler Adult Intelligence Scale (W.A.I.S.)
The Graham Kendall Memory for Designs Test.
The Williams Delayed Memory Test.
The Paired Associate Learning Test of the Wechsler Memory Scale.
The Modified Wisconsin Card Sorting Test.

Each subject was examined using the EMI CT5005 head scanner in the Royal Victoria Hospital, and the following measurements made by the same Consultant Radiologist.

Evans' Ventriculo-Skull Ratio: the maximum width of the frontal horns, divided by the maximum internal diameter of the skull, expressed as a percentage.

Ventricular-Brain Ratio: the ratio of ventricular area to maximum internal brain area, expressed as a percentage.

Ventricular Size: rated by the radiologist as small, medium or large.

Cortical Atrophy Score: rated by the radiologist as none (1), mild (2), moderate (3), severe (4). Ratings were made for each of the five cortical regions and a cumulative score calculated. The best possible cumulative score would be 5, the worst 20.

Routine electroencephalograms were carried out on all nine subjects. In addition the P3 component of the auditory evoked potential was investigated. Evoked potentials may be separated into stimulus-related components, which are sensitive to the physical characteristics of the stimulus, and event-related components which depend on the information content of the stimulus and appear only when the subject attends to a meaningful stimulus. The most prominent event-related potential is the P3 component, a positive wave which occurs at a latency of 300 to 500 msec. Goodin et al[6] showed an increased P3 latency in dementing subjects when compared with normals of the same age, and suggested that the magnitude of the latency change was large enough to provide a practical and objective measure of dementia in a clinical setting.

A control group of nine subjects, matched for age and sex, who either were teetotal or were occasional drinkers, of average intelligence, suffering from no serious psychiatric illness, and who were willing to participate without financial inducement, was found with some difficulty. Several were attending local services workshops and had previous histories of neurotic illness; the remainder were friends and relatives of patients in the hospital. The controls were not subjected to CT scanning. Statistical procedures were performed using the Statistical Package for Social Scientists (S.P.S.S.), in the Department of Medical Statistics, The Queen's University of Belfast.

RESULTS

In four of the nine cases, there was evidence of neurological impairment on physical examination at admission, including ataxia, nystagmus and peripheral neuropathy. All nine patients has presented with an acute confusional state, and with unequivocal evidence of alcoholism. A marked impairment of short-term memory was noted at, or shortly after, admission in every case. The average duration of in-patient care had been three years. In two of the nine cases, physical abnormalities were noted at the time of the study. One patient was severely ataxic with horizontal nystagmus, the other had peripheral neuropathy. On psychometric testing significant differences were found between cases and controls in 10 of the 13 tests (Table I).

TABLE I

Mean scores on Wechsler Adult Intelligence Scale for experimental group and controls

	Korsakoff	*Control*	
Verbal I.Q.	97.3	113.7	**
Performance I.Q.	81.4	111.9	***
Full-scale I.Q.	89.9	113.9	***
Verbal performance discrepancy	15.9	1.9	**
Comprehension	9.2	11.6	N.S.
Arithmetic	8.4	12.8	**
Similarities	8.0	11.8	*
Digit span	8.9	11.4	N.S.
Vocabulary	10.3	12.2	N.S.
Digit symbol	3.7	8.5	***
Picture completion	6.1	10.9	**
Block design	5.4	10.7	***
Object assembly	3.9	10.1	***

* $p < 0.05$
** $p < 0.01$
*** $p < 0.001$
} Adjusted for pre-morbid I.Q.

These differences persisted after an analysis of covariance to allow for the higher pre-morbid I.Q. in the control subjects. Significant differences emerged in all the performance subtests (digit symbol, picture completion, block design and object assembly), indicating diffuse cerebral damage in the cases. The non-significant differences occurred in three of the five verbal subtests (comprehension, arithmetic, similarities, digit span and vocabulary) which are less vulnerable to brain damage and reflect the use of old knowledge. The absence of a significant difference in digit span — a measure of immediate memory — between cases and controls would be expected.

Significant differences were found in verbal and non-verbal memory tests (Table II). The cases were significantly less able to recall both verbal (Paired Associate

Learning) and visual (Williams Delayed Memory and Graham Kendall Memory for Designs) materials and performed poorly on the Modified Wisconsin Card Sorting Test, indicating frontal lobe damage.

TABLE II

Mean scores on Psychometric Tests for experimental group and controls

	Korsakoff	*Control*	
Williams Delayed Memory	25.7	3.0	**
Graham Kendall Memory for Designs	1.8	—3.6	***
Modified Wisconsin Card Sorting Test	30.4	3.1	***
Paired Associate Learning	6.0	11.9	***

* $p < 0.05$
** $p < 0.01$
*** $p < 0.001$
} Adjusted for pre-morbid I.Q.

On CT scanning, cortical atrophy was present in every case, with a mean total atrophy score of 9.8 (S D 1.9, range 7-12). The highest mean atrophy score for an individual region was for the parietal cortex (Table III).

TABLE III

Cortical atrophy ratings for different cortical regions in experimental group

Cortical atrophy	*None*	*Mild*	*Moderate*	*Severe*	*Mean*
Temporal	2	6	1	0	1.9
Parietal	2	4	3	0	2.1
Insular	2	5	2	0	2.0
Frontal	2	6	1	0	1.9
Occipital	1	8	0	0	1.9

Evans ratio was originally devised for use with pneumoencephalograms in the coronal plane,[7] but this name is also used for the equivalent ratio in the transverse plane on CT scanning. The mean ratio in the experimental group was 28.2%. Four subjects had an Evans' ratio above 29.4% which was found by Haug[8] to be the upper 95% confidence limit in a study of normal ventricles. All nine subjects in this study had an abnormal ventricular brain ration (10% or more), using the normal data of Synek et al.[9] Ventricular size in one subject was rated as small, in four as normal and in four as large. There was a significant positive correlation between the ventricular brain ratio and ventricle size ($p < 0.01$). Atrophy of the temporal cortex was significantly correlated with both the ventricular brain ratio and ventricle size ($p < 0.05$).

A significant negative correlation was found between scores on the digit symbol subtest of the WAIS and the degree of temporal lobe atrophy ($p < 0.01$).

A significant negative correlation was also found between Evans' ratio and scores on the Paired Associate Learning Test of the Wechsler Memory Scale ($p < 0.05$). The relationship between cognitive deficits and neuropathological lesions at post-mortem or in biopsy specimens is not always close, and the same applies to abnormalities detected by pneumoencephalography. It would, therefore, be surprising if a very close correlation was present in the case of abnormalities detected by CT scan.

The routine electroencephalogram was reported as abnormal in six of the nine subjects, most often showing diffuse slowing. The EEG was normal in all nine controls. The mean P3 latency for the experimental group was 400 msec (range 295-540, S D 80). Four of the cases exceeded a value of 410 msec which would be the electrophysiological definition of dementia for this age group proposed by Goodin.[6] The P3 latency was found to correlate significantly with a poor performance on the Digit Symbol Subtest of the WAIS ($p < 0.01$).

DISCUSSION

Tarter [10] summarised four contemporary hypotheses regarding the nature of the neuropsychological disturbance in chronic alcoholics:

1. *'Chronic Alcohol Consumption leads to diffuse or generalised cerebral damage'.* On the whole, CT scan studies in alcoholics have confirmed the presence of cortical atrophy and dilated ventricles in a large proportion of alcoholics.[11] There is no evidence of involvement of the posterior temporal or occipital areas in alcoholics, so the cerebral damage cannot be said to be diffuse.
2. *'Alcoholics are relatively more disrupted in the right than left hemisphere of the brain'.* There is no evidence from psychological research which would support this hypothesis. It is possible, however, that the observed deterioration in visuospatial as opposed to verbal ability is because visuospatial functions are more susceptible to cerebral pathology than the automatic and overlearned verbal processes.
3. *'The chronic consumption of alcohol causes an acceleration of the ageing process'.* There is some evidence that the performance of alcoholics on neuropsychological tests is analogous to a premature ageing process.[12] While the analogy is a useful one, no information about the underlying mechanism can be deduced from it.
4. *'Alcoholics suffer from frontal-limbic-diencephalic pathology'.* There is a large body of evidence demonstrating that these brain regions are morphologically and functionally integrated. Pneumoencephalogram and CAT scan studies show evidence of frontal atrophy, and, on psychometric testing, alcoholics manifest impairment similar to that found in acute frontal lesions.

Paraventricular atrophy was found in a large group of 'intact alcoholics' when echoencephalography was used to measure the width of the third ventricle.[13] Compared with non-alcoholic control subjects, alcoholics and Korsakoff patients perform poorly on visuoperceptual tasks, i.e. digit symbol tests and embedded figure tests. Invariably, the scores of the alcoholic group fall intermediate between those of the Korsakoffs and the controls.[14] The Digit Symbol Subtest emerged as a particularly useful and sensitive indicator of brain damage and provided significant correlations with CT scan indices, and P3 latency. Isolated abnormalities in digit

symbol testing have been said to be characteristic of Korsakoff's psychosis.[15] This could, however, be related to the test's sensitivity rather than its specificity for the amnesic syndrome. Ryan et al[16] set out to investigate short-term memory in clinically intact chronic alcoholics, which other workers had consistently found to be normal. They did indeed uncover short-term memory deficits of the kind encountered in Korsakoff patients.

The reasons for thinking that the Korsakoff syndrome is caused by thiamine deficiency are that it is frequently associated with Wernicke's encephalopathy, and that tumours or other lesions in the brain may cause the amnesic syndrome. Although some Korsakoff patients improve concomitantly with thiamine therapy, treatment failures are common, indicating the need for a closer look at other causes. Since it is conceivable that this syndrome could arise from deficiency of several nutritional factors, or from some direct toxic effect of ethanol itself, and bearing in mind that they may act simultaneously, the cause is bound to remain obscure. There is, however, circumstantial evidence. Reviewers have been unable to find reports of any documented cases of permanent Korsakoff syndrome (with disturbed memory persisting for more than two or three months) in a patient with the Wernicke syndrome which was induced by malnutrition alone.[17] There was no documented permanent mental disability in a large number of prisoners-of-war with longstanding malnutrition which had resulted in severe neurological disorders. One possible explanation is that ethanol is the causal factor, and that when patients finally present and are recognised as having Wernicke's encephalopathy they have already sustained recurrent and irreversible damage. This conclusion is supported by reports of patients dying and having the classical lesions at post-mortem but not exhibiting the signs attributed to Wernicke's encephalopathy.[18] The Korsakoff syndrome has also been described in alcoholic patients when histological lesions were confined to the cerebral cortex. It is uncertain which of the diencephalic structures is more critical for memory formation, since not all patients with extensive anatomical involvement causing the Wernicke syndrome have the Korsakoff symptoms.[19]

This study highlights the problems involved in defining and diagnosing Korsakoff's psychosis. Wernicke's encephalopathy is not a necessary prerequisite.[3] The short-term memory defect considered pathognomonic of Korsakoff's psychosis has been demonstrated in clinically intact alcoholics.[15] Diencephalic lesions at post-mortem do not correlate with symptomatology in life. A high percentage of clinically intact alcoholics show cortical atrophy and ventricular dilatation on CT scanning, which must render any diagnosis of Korsakoff's psychosis made on the basis of psychometric testing alone suspect, and the results of such research questionable. If Korsakoff's psychosis is defined as a severe short-term memory defect in the absence of any other intellectual impairment, with damage confined to the diencephalic region, it can be diagnosed with certainty only at post-mortem, and must surely be exceedingly rare. I have been able to find only one such case in the literature.[20] In all nine cases in this study, cortical atrophy co-existed with ventricular dilatation, and in none was intellectual impairment confined to short-term memory.

While these problems of definition, diagnosis, and aetiology remain, the usefulness and validity of making a diagnosis of alcoholic Korsakoff's psychosis must be questionable.

I am indebted to Mrs Heather Grant for administering the psychometric tests to both patients and controls. Dr R Hutchinson carried out the CT scanning and measurements, Dr J Lumsden interpreted the electroencephalograms, and Mr C Patterson gave statistical and computing advice. I am also grateful to Professor George Fenton for his help and encouragement.

REFERENCES

1 Korsakoff SS. Disturbance of psychic function in alcoholic paralysis and its relation to the disturbance of the psychic sphere in multiple neuritis of non-alcoholic origin. *Vestnik Klin Sudeb Psixhiat Neuropatol* 1887; **4**: fasc 2.

2 Malamud S, Skillicorn SA. Relationships between the Wernicke and the Korsakoff syndrome. *Arch Neurol Psychiat* 1956; **76**: 585-596.

3 Victor M, Adams RD, Collins GH. The Wernicke-Korsakoff syndrome. Oxford: Blackwell Scientific Publications, 1971.

4 Ron M. Morphological changes in the brains of chronic alcoholics: a clinical and computerised axial tomographic study. PhD thesis, University of London, 1980.

5 Lishman WA. Organic psychiatry. Oxford: Blackwell Scientific Publications, 1978.

6 Goodin DS, Squires KC, Starr A. Long latency event-related components of the auditory evoked potential in dementia. *Brain* 1978; **101**: 635--648.

7 Evans WA. An encephalographic ratio for estimating ventricular enlargement and cerebral atrophy. *Arch Neurol* 1942; **47**: 931-937.

8 Haug G. Age and sex dependence of the size of normal ventricles on computed tomography. *Neuroradiology* 1977; **14**: 201-204.

9 Synek V, Reuben JR, Du Boulay GH. Comparing Evans' index and computerised axial tomography in assessing the relationship of ventricular size to brain size. *Br J Neurol* 1976; **26**: 231-233.

10 Tarter R. Brain damage in chronic alcoholics: a review of the psychological evidence. In: Richter D, ed. Addiction and brain damage. London: Croom Helm, 1980; 267-297.

11 Ron M. Syndromes of alcohol-related brain damage. *Br Med Bull* 1982; **38**: 91-94.

12 Ryan C, Butters N. Learning and memory impairments in young and old alcoholics: evidence for the premature-ageing hypothesis. *Alcoholism: Clin Exp Research* 1980; **4**: 288-293.

13 Fuerlein W, Heyse H. Die Weite der 3 Hirnkammer bei Alcoholikern. *Archiv fur Psychiatrie und Nervenkrankheiten* 1970; **214**: 78-85.

14 Butters N, Cermak LS, Montgomery K, Adinolfi A. Some comparisons of the memory and visuoperceptive deficits of chronic alcoholics and patients with Korsakoff's disease. *Alcoholism: Clin Exp Research* 1977; **1**: 73-80.

15 Butters N, Cermak LS. Alcoholic Korsakoff's syndrome. London: Academic Press, 1980.

16 Ryan C, Butters N, Montgomery K, Adinolfi A, Didario B. Memory deficits in chronic alcoholics: continuities between the 'intact' alcoholic and the alcoholic Korsakoff patient. In: Begleiter H, Kissin B, eds. Biological effects of alcohol. New York: Plenum Press, 1980; 701-718.

17 Freund G. Chronic central nervous system toxicity of alcohol. *Ann Rev Pharmacol* 1973; **13**: 217-227.

18 Harper C. Wernicke's encephalopathy: a more common disease than realised. *J Neurol Neurosurg Psychiat* 1979; **42**: 226-231.

19 Thompson AD. Alcohol-related structural brain changes. *Br Med Bull* 1982; **38**: 87-94.

20 Mair WGP, Warrington EK, Weiskrantz L. Memory disorder in Korsakoff's psychosis. *Brain* 1979; **102**: 749-783.

ORTHOPAEDICS AND THE NORTHERN IRELAND COUNCIL FOR ORTHOPAEDIC DEVELOPMENT (NICOD)

by

W.V. JAMES

Consultant Orthopaedic Surgeon, Musgrave Park Hospital, Belfast
Chairman, NICOD

IT could be said that orthopaedics started as a speciality in Northern Ireland on Monday 11 March 1940. It started in the Senate Committee Room of the Queen's University at a meeting between Sir David Lindsay Keir, who was Vice-Chancellor, Mr (later Sir) Samuel Irwin from the Royal Victoria Hospital, Mr H.P. Hall from the 'Union' or Belfast City Hospital, and Mr Maurice Lavery from the Mater Hospital.

This and subsequent events are recorded in the Minute Books of NICOD,[1] which is one of the oldest and largest voluntary organisations in Northern Ireland. NICOD currently runs the Balmoral Work Centre, which is a sheltered workshop for the disabled, and three hostels for the disabled. In the past, it started Mitchell House School, the therapy services at Fleming Fulton School, Parkanaur Training Centre for the disabled, the Advice Clinics for disabled children, and numerous research projects. The name 'Northern Ireland Council for Orthopaedic Development' is too long to be handled by the average tongue, yet the acronym 'NICOD', by which it is commonly known, hides the origin of the organisation.

In 1937, the newly created Lord Nuffield Fund for Cripples allocated £26,000 to Northern Ireland.[2] It engaged the Central Council for the Care of Cripples to survey the needs within Northern Ireland, and in late 1938 a Miss Hill visited the Province. She was probably shocked, for the health of the Province was not good.[3] Tuberculosis was rampant, accounting for half the deaths between the ages of 15 and 25, and there were many tuberculous bones and joints. There were poliomyelitis epidemics every four years. Rickets was common, and the infant mortality rate was higher in 1940 that it was in 1920. In Belfast, the medical services were in confusion, being divided between the Poor Law Medical Service, the Government, and the Belfast Corporation. There were rumblings about the Belfast Corporation Tuberculosis Committee, which was suspended soon afterwards because of mismanagement and corruption, and gave way to the very successful Northern Ireland Tuberculosis Authority.

Miss Hill presented her report to the Lord Nuffield Fund for Cripples, and was authorised to approach Sir David Lindsay Keir, who as Vice Chancellor was a man of influence, and he convened that meeting of surgeons who had an interest in orthopaedics on that day in March 1940.

The broad aims of Miss Hill's report were 'to further provision of facilities for the early discovery and prompt and efficient treatment of those who would otherwise become cripples', and 'to organise schemes for the treatment, education, training, employment and general welfare of cripples'. More specific proposals aimed at the establishment of orthopaedics as a speciality by the setting up of a Department of Orthopaedics at the Queen's University, the provisions of a long-stay orthopaedic hospital, and the starting of orthopaedic clinics throughout the Province.

At that first meeting, the surgeons saw problems in providing purely orthopaedic beds in general hospitals, and pointed out that there were no full-time orthopaedic surgeons in the Province. There was a possibility, however, of starting outpatient clinics throughout the Province. This would need finance, and it was decided to form the Northern Ireland Council for Orthopaedic Development (NICOD) which could negotiate with the Lord Nuffield Fund for Cripples, and raise funds. Sir David Lindsay Keir was elected as the first Chairman.

A lot of spade-work was done in 1940 and 1941. Every hospital in the Province was consulted, and most wished to receive regular visits from the Belfast surgeons to enable them to run orthopaedic clinics. The three surgeons were to form an orthopaedic panel, and were later joined by Mr R.J.G. Withers from the Royal Victoria Hospital. There was worry about the provision of calipers, and Mr Steer and Mr Fulton from the Cripples' Institute were invited to discuss the possibility of sending a man to the mainland for training. Approaches were also made to the Nuffield Fund to finance an After-Care Sister, and a Welsh girl, Miss Gladwys Morris, took up post in October 1941. She had started nursing in Oswestry in 1923, and obtained her orthopaedic nursing and physiotherapy certificates. She left the post of Assistant After-Care Sister at Oswestry to come to Northern Ireland. She stayed with the Northern Ireland Orthopaedic Service until she retired in 1975. A delightful and wonderful woman, and a bundle of energy, even today she is Chairman of the NICOD Hostels Committee.

The outpatient orthopaedic clinics started in January 1942. Mr. H.P. Hall visited Londonderry and Downpatrick monthly, and had a weekly clinic at the Belfast City Hospital. Mr Withers visited Coleraine and Ballymoney monthly, and Mr Lavery visited Ballycastle monthly. Right from the start, they were a success, and demand always outstripped the capacity to supply. Clinics subsequently opened at Ballymena, Omagh, the Children's Hospital and the Ulster Hospital in 1944. Clinic numbers soared from a monthly figure of 150 in 1942 to some 800 in 1946 (Table 1). The numbers 'on the books' rose from 150 in 1942 to 2,478 in 1946 (Table 2).

TABLE 1

Monthly attendances at NICOD Orthopaedic Clinics

	1942	*1943*	*1944*	*1945*	*1946*
Londonderry	84	143	126	113	89
Coleraine	30	55	54	33	22
Ballymoney	15	25	42	17	21
Ballycastle	7	19	22	25	20
Ballymena			41	31	37
Downpatrick	7	34	64	71	93
Omagh			94	79	77
Belfast City Hospital	74	166	359	345	291
Children's Hospital			32	70	66
Ulster Hospital			72	63	74
	150	422	906	847	790

TABLE 2

Patients on the books of NICOD Clinics

	1942	*1943*	*1944*	*1945*	*1946*
Londonderry	48	172	238	346	344
Coleraine	25	93	137	110	125
Ballymoney	11	38	70	68	60
Ballycastle	7	43	60	50	60
Ballymena			48	119	176
Downpatrick	7	47	86	138	292
Omagh			87	296	456
Belfast City Hospital	52	293	441	509	625
Children's Hospital			68	163	177
Ulster Hospital			75	112	163
	150	686	1340	1911	2478

It would seem that the practice of orthopaedics was very different in those war-time years from what it is today, as is shown in the analysis of the conditions seen (Table 3). Tuberculous bones and joints were common, as was poliomyelitis, which is not surprising in view of the lack of antibiotics and vaccines. Rickets was as common as cerebral palsy, and all related to the poor state of public health. There were relatively few cases of arthritis and backache, which makes one wonder whether that generation was more stoic, or whether the incidence has changed. The surgical methods used were very different from those of today, as were nursing methods; bed occupancy was far longer, and deformities far grosser than today. Tuberculous joints were frequently nursed at home, and tuberculous abscesses opened on the kitchen table.

TABLE 3

Diagnostic analysis NICOD Clinics — 1944

	Number	*%*
Acquired Foot Deformities	551	22.3
Fractures, Injuries, Damaged Cartilages, etc	399	16.1
Congenital Deformities and Birth Injuries	253	10.2
Surgical Tuberculosis	215	8.7
Poliomyelitis	201	8.1
Arthritis	144	5.8
Rickets	117	4.7
Spastics and Upper Motor Neurone Lesions	127	5.1
Osteomyelitis	74	3.0
Scoliosis and Postural Deformities	70	2.8
Ganglions, Bursitis, etc	37	1.5
Torticollis	33	1.3
Sciatica	22	0.8
Contracture Deformities	12	0.4
Unclassified	209	8.4

All this care needed organisation and funding, and the hub was the NICOD offices in May Street, Belfast. A multitude of local authorities were responsible for payment for most of the cases treated. Donations also flowed from individuals and organisations: £100 from the British War Relief Society, £96.16.6 from a special fund for 'bomb-shocked' children, £3.1.9 from a radio appeal by Emlyn Williams, £100 from the Honourable the Irish Society, and of course the Lord Nuffield Fund for Cripples was a major benefactor.

The pressure for orthopaedic beds was enormous, for the surgeons were collecting orthopaedic cases from all over the Province. The strain fell mainly on Mr H.P. Hall who used Dufferin and Ava wards at the Belfast City Hospital, and Mr Withers who used the Royal Victoria Hospital. The Cripples' Institute permitted the use of some of their beds at Bangor, and some beds for poliomyelitis patients were made available at Purdysburn Hospital. Approaches were made to the Ministry of Health and Local Government, and to the Belfast Emergency Hospital at Musgrave Park. Dr Brown, the Superintendent, explained that his hospital only admitted servicemen and war casualties, but stretched a point to admit waiting list patients from voluntary as opposed to municipal hospitals. Correspondence flowed, and it was in 1945 that the Ministry allowed NICOD to take over 80 beds for orthopaedic cases, and agreed to be responsible for the payment of surgeon's fees when they worked at the Hospital. The situation was further relieved financially by the Northern Ireland Tuberculosis Authority including orthopaedic cases with tuberculous cases. As Sir David Lindsay Keir put it, it relieved NICOD haggling with 'a multifarious collection of local authorities . . . . '

The dream of a long-stay hospital had started at that first meeting in 1940. In that year, with shortages of money, manpower and materials, the building of a hospital was unrealistic. 1941 and 1942 were a little better, and plans were put in cold storage by the bombing of Belfast, which scattered the disabled to the four winds. By 1943, things had settled down, and interest in an orthopaedic hospital revived. Sir Samuel Irwin remarked that, whereas in England orthopaedic schemes spread out from orthopaedic hospitals, the war had forced Northern Ireland to start from an outpatient service. He reported on a visit to the 'Incorporated Orthopaedic Hospital of Ireland' at Clontarf, Dublin, and saw no reason why Northern Ireland should not have such a low-cost hospital. A small committee was formed to produce plans for such a hospital, and to cost it. There were many meetings, and many memoranda were produced. Professor F.M.B. Allen suggested that 600 beds were necessary, but he included beds for all spastic children. Eventually, the figure of 100 beds was agreed, and it was decided that the site should be within five to ten miles of Belfast. At that time, tuberculosis received the 'open-air' treatment, and patients shivered in their beds under the sky, being wheeled into the ward only at night. Siting advice was sought, and Mr R.G. Girdlestone wrote from Oxford 'for example, soil; this should be a light soil with natural drainage. A wet stagnant soil should be avoided at all costs'. He would have shaken his head wisely had he viewed the flooded basement of the Withers Orthopaedic Centre. The NICOD sub-committee visited orthopaedic hospitals at Oxford, Oswestry and Exeter, and with an architect looked at some fifteen sites around Belfast. The final report in 1946 listed three possible sites, one at Ballydrain, one at Wilmont, and one at Killowen. The proposed staff for the 100 beds included a full-time orthopaedic surgeon, a house surgeon and other visiting

specialists. There was to be a Matron and twenty nurses, a physiotherapist and 18 other staff. The running costs were estimated at £17,000 per year, which was 10/- per patient per day. The response from the Ministry of Health and Local Government was courteous and appreciative, but evasive. There was a whiff of Health Service in the air at that time, and prevarication was the order of the day. As a stop-gap, the Ministry suggested that the number of available beds at Musgrave Park should be increased to 150, and that effectively stopped proposals for an orthopaedic hospital outside Belfast, and sealed Musgrave Park as the future centre of orthopaedic activity.

By 1946, the men were returning from the war, and NICOD could expand. Mr Withers proposed that an assistant orthopaedic surgeon should be trained and appointed by NICOD. Mr N.S. Martin was approached. He had just been demobilised and was Resident Surgical Officer at Musgrave Hospital. He had an impressive war record, and was as familiar with Imphal and Kohima as he was with Belfast. An agreement was signed with him on 31 December 1946 that he should enter NICOD's employ and be sent for training at Oxford at a princely salary of £550 per annum. The pressure of work on NICOD's beds, and the assurances of Mr G.R. Girdlestone at Oxford that Norman Martin was fully trained, led to his return from Oxford after only nine months. Almost immediately, NICOD advertised a second post, and Mr R.I. Wilson was selected from a short-list of five. He was sent to Exeter for training, and by this time his salary was a more realistic £1,000 per annum. It is appropriate to record that Bob Wilson went on to become the first Professor of Orthopaedics at the Queen's University, and that the first contribution to the research funds of his new Department came from NICOD.

In the immediate post-war years, Musgrave Park started to acquire a name in the orthopaedic world. It was recognised by the Nursing Council for the training of orthopaedic nurses, and in 1948 the British Orthopaedic Association visited Belfast. June 1948 saw the following Minute: 'The NICOD Medical Subcommittee, having made representations to the three hospitals with orthopaedic clinics staffed by the Council's sisters and surgeons, asked for their opinions as to whether it would be possible to have fully staffed and equipped orthopaedic departments with "pure" orthopaedic surgeons, sisters and nurses'. At that time, the Health Services Bill (NI) was in the air, and there were lengthy debates on whether there should be a Standing Committee for orthopaedics alone. In late 1948, the Ministry took over nominal responsibility for orthopaedics, but NICOD continued to act as the agent, from its offices in May Street. Sir David Lindsay Keir was asked to be Chairman of the Northern Ireland Hospitals Authority Orthopaedic Service Committee, and consequently resigned as Chairman of NICOD. On 1 March 1949, NICOD finally handed over to the Northern Ireland Hospitals Authority a fully functioning orthopaedic service.

From nothing in 1940, NICOD ended up in 1949 with three full-time 'pure' orthopaedic surgeons, four after-care sisters, ten outpatient clinics in Belfast and throughout the Province, and 150 orthopaedic beds at Musgrave Park Hospital, on whose Management Committee it had three representatives. The dream of an orthopaedic hospital was not fulfilled for many years, and by that time the face of orthopaedics had changed because of antibiotics and vaccines, and a general improvement in health and health care. It is fitting that the Withers Orthopaedic

Centre at Musgrave Park Hospital should bear the name of Jimmy Withers, who was one of the founders of the Northern Ireland Council for Orthopaedic Development (NICOD) and the first 'pure' orthopaedic surgeon in the Province.

REFERENCES

1 Minute Books of the Northern Ireland Council for Orthopaedic Development, 1940 to 1948.

2 Wilson RI. Sticks and stones. *Ulster Med J* 1977; **46**: 14-21.

3 Bardon J. Belfast—an illustrated history. Belfast: Blackstaff, 1982.

ERRATA Volume 53, No. 1, 1984

Career preference enquiry among Queen's University medical undergraduates and graduates: Stage III

by Elizabeth A. Egerton.

Page 93: line 30: for "DLD" read "DLO"

Page 94: line 8: read "One hundred and seven of the 1979 graduates . . . . "

line 21: read "64.7 percent of the 1977 group were . . . . "

Page 95: line 24: read "30 percent of the 1979 final year . . . . "

Centre at Musgrave Park Hospital should bear the name of Jimmy Withers, who was one of the founders of the Northern Ireland Council for Orthopaedic Development (NICOD) and the first 'pure' orthopaedic surgeon in the Province.

REFERENCES

1 Minute Books of the Northern Ireland Council for Orthopaedic Development, 1940 to 1948.

2 Wilson RI. Sticks and stones. *Ulster Med J* 1977; **46**: 14-21.

3 Bardon J. Belfast—an illustrated history. Belfast: Blackstaff, 1982.

ERRATA Volume 53, No. 1, 1984

Career preference enquiry among Queen's University medical undergraduates and graduates: Stage III

by Elizabeth A. Egerton.

Page 93: line 30: for "DLD" read "DLO"

Page 94: line 8: read "One hundred and seven of the 1979 graduates . . . . "

line 21: read "64.7 percent of the 1977 group were . . . . "

Page 95: line 24: read "30 percent of the 1979 final year . . . . "

THE ROLE OF GALLIUM SCANNING IN THE DETECTION OF BONE AND JOINT SEPSIS

by

A. T. GAVIN,[1] J. D. LAIRD[2] and S. D. ROBERTS[3]

Royal Victoria Hospital, Belfast

SUMMARY

The value of gallium (^{67}Ga) scanning in the diagnosis of septic disease of bone or joint was assessed in 34 patients. The results show a sensitivity of 60 per cent and specificity of 64 per cent. The low accuracy of this method for the detection of bone and joint sepsis (62 per cent) means that gallium scanning can be used only as an adjunct to other investigative techniques.

INTRODUCTION

Gallium citrate scintigraphy is a relatively easy test to perform. It has been found of value in the detection of sarcoid tissue, some neoplasms and infection.[1] Gallium (^{67}Ga) is also localised in the colon, healing wounds, fractures and inflamed synovial tissues.[2] Concentration of ^{67}Ga at sites of inflammation is believed to be due to the exudation of in vivo labelled serum proteins and leuocytes, particularly neutrophils.[3] Gallium accumulation at the site of bone infection was first reported in 1975,[4] and gallium scintigraphy was reported to be of value in the elucidation of the problems of painful hip replacements in 1981.[5]

Practising clinicians require accurate information on the reliability of diagnostic techniques currently employed in their own centres and, although gallium scans have been in use for five years at the Royal Victoria Hospital, critical analysis of the results of this technique had not been performed. Its usefulness has been assessed elsewhere, one such review showing sensitivity and specificity to be 90 per cent and 64 per cent respectively.[6]

Over a five-year period, 34 patients had gallium scanning performed as part of their investigation for suspected infection of bone or joint. The aim of this review is to assess the accuracy of ^{67}Ga scans carried out in this centre for this purpose.

MATERIALS AND METHODS

Information was obtained from hospital records. The symptoms of all 34 patients at presentation led to a differential diagnosis which included infection. In all cases, a final diagnosis based on the data available was obtained, and these diagnoses were compared with the conclusions obtained from the gallium scans, from which the sensitivity, specificity and accuracy of the methods could be calculated. The ages of the group ranged from 15 to 87 years; the mean age was 62 years; 23 patients were female. Most patients suffered from conditions which could be grouped in three broad clinial categories: diabetes (five patients), pain following total hip replacement (19 patients), and rheumatoid or osteoarthritis (seven patients). Three patients could not be assigned to any of these groups. The differential diagnosis considered in each of the clinical groups is listed in Table I.

[1] S.H.O. Chest Medicine, Foster Green Hospital. [2] Consultant Radiologist, Royal Victoria Hospital.
[3] Consultant Rheumatologist, Royal Victoria Hospital.

TABLE I

Differential diagnosis in subgroups a-d

Clinical categories	*Differential diagnosis*
(a) Diabetes (5 patients)	Infection Ischaemia Diabetic osteodystrophy
(b) Painful total hip replacement (19 patients)	Infection Loosening Periarticular ossification
(c) Osteoarthritis and rheumatoid arthritis (7 patients)	Infection Flare-up Discitis
(d) Other (3 patients)	Infection Discitis Osteoporosis

A final diagnosis of infection was accepted if positive cultures were obtained from joint fluid aspirate, swab samples, blood culture or tissues obtained at operation. It was accepted that infection was present if pus was discovered at arthrotomy or if histopathology of a tissue specimen showed an infective process. Results of technetium phosphate scans, plain radiographs and erythrocyte sedimentation rate were recorded where available.

The following formulae were used: expressed as percentages, sensitivity equals the number of true positive results divided by the total of true positive and false negative results; specificity equals the number of true negative results divided by the total of true negative and false positive results; accuracy is the total of true positive and true negative scans divided by the total scans performed.

RESULTS

Ten of the 34 patients had an infective process as the cause of their symptoms. Gallium scanning correctly indicated this in six patients (six true positive). However, there were nine false positive scans, and four patients with infection had negative gallium scans (four false negative). There were 15 true negative scans (see Table II). The sensitivity of the scans is 60 per cent for the total group, 71 per cent for the bacteriologically proven group and 33 per cent for the 16 patients in whom the final diagnosis was made by clinical methods. The specificity of the method for each of the above categories is 64 per cent, 55 per cent and 69 per cent respectively.

In only one patient did gallium scanning favour the correct interpretation of symptoms where other tests were inconclusive. However, there are several cases where gallium scanning has given the only incorrect result among several other investigations performed. In the ten patients with infection the ESR ranged from 30-130 mm/1 hr (mean = 64), seven has radiographs suggestive of infection and six ^{99}Tc-PP scans performed were suspicious of infection.

TABLE II

GALLIUM SCAN ANALYSIS

Positive and negative results shown for 34 patients who had gallium scans

	18 patients with bacteriological proof of final diagnosis	*16 patients without bacteriological proof of final diagnosis*	*34 patients who had gallium scans*
true positive	5 (28%)	1 (6%)	6 (18%)
true negative	6 (33%)	9 (56%)	15 (44%)
false negative	5 (28%)	4 (25%)	9 (26%)
false negative	2 (11%)	2 (13%)	4 (12%)
Sensitivity	71%	33%	60%
Specificity	55%	69%	64%
Accuracy	61%	63%	62%

Nineteen of the 24 patients without infection had an ESR recorded; these ranged from 1-22 mm/1 hr (mean = 31). Plain radiographs were available for 21 patients, three of which suggested infection as a cause of their symptoms. ^{99}Tc-PP scans were performed in 18 patients, six of which were false positive for infection. Among 28 patients who had their white cell count recorded, only one showed an elevated count ($19.5 \times 10^9/1$); this patient had a salmonella infection of a hip joint. Records of antibiotic therapy either before or during investigation were complete in five patients, two of whom had proven infection. In these five patients the results of gallium scanning were three true negative, one true positive and one false negative (from which staphylococcus aureus was cultured).

DISCUSSION

Patients were selected because of a clinical suspicion of infection and the possibility that this might be clarified by examination of the uptake and distribution of gallium. In this series, patients with bacteriological proof of infection show sensitivity of 71 per cent and specificity of 55 per cent for gallium scanning. These figures are lower than other published results, where sensitivity is given at 90 per cent and specificity 64 per cent;[6] however, each centre must evaluate the test and determine reliability in the context of its own results. Relatively poor specificity and sensitivity have been found elsewhere. One centre now favours indium-labelled oxyquinoline WBC scanning in its investigations because of difficulty in interpreting the gallium scans combined with a low specificity and a high amount of radioactivity in the colon.[7] A major anxiety in the application of gallium scans in the clinical dilemma is the occurrence of false negative results which even on review are still read as negative for infection.

It has been suggested that gallium-67 accumulation in sites of infection is not hindered by antibiotic therapy; our numbers, though small, tend to support this argument. Exclusion of small groups, such as diabetics, makes no difference to the specificity and sensitivity of the method. In our series of 34 consecutive patients, gallium scanning as an aid to diagnosis of infection was shown to have relatively low accuracy. In our experience, the ESR, plain radiographs and technetium scanning should be performed to screen patients with suspected bone and joint sepsis, and in difficult cases additional information from gallium scanning may occasionally be helpful.

We wish to thank Miss E. O'Prey and Miss P. Magee for typing the manuscript.

REFERENCES

1 Hauser MF, Alderson PO. Gallium-67 imaging in abdominal disease. *Semin Nucl Med* 1978; **8**: 251-70.

2 Rosenthall L, Lisbona R, Hernandez M, et al. ^{99}Tc-PP and ^{67}Ga imaging following insertion of orthopedic devices. *Radiology* 1979; **133**: 717-21.

3 Tsan MF, Chen WY, Scheffel U, et al. Studies on gallium accumulation in inflammatory lesions: I. Gallium uptake by human polymorphonuclear leucocytes. *J Nucl Med* 1978; **19**: 36-43.

4 Deysine M, Rafkin H, Teicher I, et al. Diagnosis of chronic and postoperative osteomyelitis with gallium-67 citrate scans. *Am J Surg* 1975; **129**: 632-5.

5 Williams F, McCall I, Park W, et al. Gallium-67 scanning in the painful total hip replacement. *Clin Radiol* 1981; **32**: 431-9.

6 Ebright JR, Soin JS, Manoli R. The gallium scan: problems and misuse in examination of patients with suspected infection. *Arch Intern Med* 1982; **142**: 246-54.

7 McDougall R, Goodwin DA. Gallium scans vs indium III-labelled oxyquinoline WBC scan [Editor's correspondence]. *Arch Intern Med* 1982; **142**: 1407-8.

STRESS FRACTURES IN ATHLETES

by

K. E. DOWEY[1] and G. W. MOORE[2]

DURING the last decade there has been a growing interest in competitive sports with particular emphasis on keeping fit by jogging and marathon running. This has been made manifest by the increasing numbers of athletes who seek medical attention for lower extremity pain.

The differential diagnosis includes musculo-tendinous injury, tibial compartment syndrome, tenosynovitis, intermittent claudication of the athlete and stress fracture. A presumptive diagnosis of stress fracture is based on the history and physical findings. In the past, confirmation of stress fractures has been delayed until x-rays showed an abnormality, often from three weeks to three months after the onset of symptoms. We have found the radionuclide bone scan to be more sensitive, allowing earlier confirmation of stress fractures in athletes and thus avoiding prolonged disability.

PATIENTS AND METHODS

During the period March 1981 - December 1983, 1277 athletes attended the Sports Injury Clinic at the Belfast City Hospital and within this group 35 stress fractures (2.7%) were recorded. There were 23 males (72%) and 9 females (28%). The age range was 16-50 years, the average age being 22 years. The series consisted of 28 middle- and long-distance runners, one high jumper, one netball player, one gymnast and one ballet dancer. The lower two-thirds of the tibia was the most frequently involved bone, with 18 (51%) stress fractures occurring at this site.

TABLE

Relation between sporting activity and stress fracture site

	Tibia	*Fibula*	*Metatarsals*	*Pubic Arch*	*Total*
Long-distance running	10	3	5	1	19
Middle-distance running	8	3	1		12
Jumping			1		1
Netball		1			1
Gymnastics		1			1
Ballet	1				1
Total	19	8	7	1	35

[1] Consultant Physician, Accident and Emergency Department, Belfast City Hospital.

[2] Consultant Radiologist, Belfast City Hospital.

CLINICAL ASPECTS

The athlete is most often a middle- or long-distance runner. He complains initially of insidious onset of an ache or soreness of the lower leg or foot. Most commonly the pain is localised to the medial aspect of the shin, the lateral aspect of the lower fibula or the mid forefoot. At first it is felt only at the end of a run but gradually it comes on earlier and earlier.

On physical examination tenderness can be elicited over the bone at the involved site. Although the tenderness may appear to extend along the periosteum or tendinous structures for some distance either proximally or distally, there is usually a point of maximum intensity at the site of fracture. When the tibia is involved, a little oedema may be present early, and at a later stage a definite thickening of the subcutaneous surface can be appreciated.

DIAGNOSIS

Radionuclide scans were performed on 45 patients with lower limb pain, but with normal radiographs. All patients were injected with 555 MBq of Technetium MDP bone scanning agent two hours prior to the examination. The lower limbs were then imaged with a gamma camera. Views were taken as required to demonstrate the regions of interest and to localise any site of increased isotope uptake. Particular attention was taken to include the contra-lateral region and to exclude additional lesions at other levels. 26 of these scans were positive, confirming the clinical diagnosis of stress fractures (19 tibia, 5 fibula, 1 metatarsal and 1 inferior pubic ramus).

Retrospective correlation with subsequent radiographs indicated that those lesions which showed a localised area of increased uptake were more likely to produce radiographic changes later. Those lesions with a more diffuse pattern of lower intensity uptake, particularly the 'shin splint' variety in the tibiae were less likely to show later radiographic changes.

A total of only 9 stress fractures (6 metatarsals and 3 fibulae) out of 45 were diagnosed from the history, clinical findings and radiograph alone, and bone scans were not required in these cases. Thus radionuclide scan increased the number of stress fractures diagnosed from 9 to 35.

SPECIAL FEATURES

Stress fractures were noted to be multiple and/or bilateral in several cases. These were not always symptomatic at the time of examination, and possibly represent less severe lesions and other pre-existing lesions which had almost healed.

One 20-year-old middle-distance runner who represented his University sustained three consecutive stress fractures over a period of 11 months. In January 1983 the bone scan indicated a stress fracture of the lower third of the left tibia. He rested for six weeks and symptoms cleared. He presented again in July 1983 complaining of increasing pain in the right shin, and bone scan at this time confirmed the presence of a stress fracture in the lower third of the right tibia. Again he rested for six weeks but returned again at the beginning of December 1983 with recurrence of pain in

both legs but especially the right, and once again the bone scan was positive. On each occasion initial radiographs had been normal but later follow-up films indicated healing. Recurrence of symptoms in this patient may possibly be related to the fact that he displays a certain degree of lower limb malalignment, with increased external tibial torsion and foot hyperpronation.

Another 35-year-old jogger training for the Belfast Marathon presented in early April of that year complaining of bilateral shin pain. Bone scan indicated that there were stress fractures of the lower thirds of both tibiae. On further questioning it was apparent that, although he was a highly motivated individual, he followed a relatively undisciplined training regimen, having increased his weekly mileage over the previous 4-6 weeks much too rapidly.

DISCUSSION

Stress fracture was first described in soldiers by a German army physician Breithaupt in 1855 and could be defined as a partial or complete fracture of bone due to inability to withstand stress that is applied in a rhythmic, repeated manner. Devas[1] divides stress fracture into three groups. The first is the compression type, in which stress is directly transmitted to the bone with resultant collapse of the normal architecture. The second group he calls the distraction type, due to repeated bending of the bone away from the cortical margin at which the injury appears. The third group is related to muscle exertion. He describes this as the 'shin splint' variety due to violent and repeated muscular contraction, which not only produces a periosteal tear but also causes microstress fractures along the periosteal margin of the tibia.

We found only one of the compression type. It occurred in the ballet dancer and was located in the upper third of the tibia. The other 18 involved the middle and lower thirds of the tibia and were of the 'shin splint' variety, all occurring in runners. Those involving the fibula and located just above the tibio-fibular syndemosis were of the distraction type, strong muscular activity drawing the fibula towards the tibia.

More than half of all fractures were located in the tibia, and this is similar to the observation may by Orava et al.[3] In common with other writers on the subject, we found that most of our patients were middle- or long-distance runners.[2, 4, 5, 6] In Garrick's series[7] of 23 athletes with bone pain and positive radionuclide images, only six had positive radiographs. Similarly we have noted that out of the total of 35 stress fractures only 9 could be detected on straight radiographs.

It has been suggested that early treatment may prevent the development of radiographic changes in patients with stress fractures.[2, 8] The importance of early detection and treatment is related to the fact that undiagnosed stress fractures can progress to complete fractures with displacement.[8, 9] The best treatment for all stress fractures is rest from any activity which causes pain. Rest allows the reparative phase of remodelling to catch up with the resorptive phase. Plaster of Paris is not indicated except for those unusual cases where multiple fractures are present or where there is significant pain with ordinary daily activities. When there is no longer any pain or tenderness at the fracture site, the patient is allowed to start gentle training, which is gradually increased to full training over 4 to 6 weeks, provided there are no further symptoms. The prognosis is generally good and complications are rare.

SUMMARY

Between March 1981 and December 1983, 35 stress fractures were diagnosed in 1277 athletes attending the Sports Injury Clinic. A total of 31 (88%) fractures occurred in middle- and long-distance runners. The most frequently involved sites were the middle and lower thirds of the tibia, as displayed in 18 cases (51%). 26 patients who presented with lower leg pain and normal radiographs were found to have positive radionuclide scans confirming the diagnosis of stress fracture, while only 9 patients were diagnosed as having stress fracture by radiograph alone. Stress fracture in the athlete is a unique injury demanding a high degree of suspicion on the part of the sports medicine physician, coach or trainer. Early and accurate diagnosis and treatment is essential to avoid prolonged disability and to enable early return of the athlete to his or her activity.

REFERENCES

1 Devas MB. Stress fractures. London and New York: Churchill Livingstone, 1975: 19-27, 113-116.

2 Devas MB. Stress fractures of the tibia in athletes or 'shin soreness'. *J Bone Joint Surg (Br)* 1958; **40**: 227-239.

3 Orava S, Puranen J, Ala-Ketola L. Stress fractures caused by physical exercise. *Acta Orthop Scand* 1978; **49**: 19-27.

4 Ryan AJ. Leg pain in runners. *Physician Sports Med* 1977; **5**: 42-53.

5 Clancy WG. Lower extremity injuries in the jogger and distance runner. *Physician Sports Med* 1974; **2**: 47-50.

6 Brubacker CE, James SL. Injuries to runners. *Amer J Sports Med* 1974; **2**: 189-198.

7 Garrick JG. Radionuclide imaging for painful stress fractures. Presented at the 43rd Annual Meeting of the American Academy of Orthopaedic Surgeons, New Orleans, 1976.

8 Willcox JR, Moniot AL, Green JP. Bone scanning in the evaluation of exercise-related stress injuries. *Radiology* 1977; **123**: 699-703.

9 Geslien GE, Thrall JH, Espinosa JL. Early detection of stress fractures using ^{99m}Tc-polyphosphate. *Radiology* 1976; **121**: 683-687.

THE USE OF CHINESE HERBS IN ABDOMINAL SURGERY IN OBSTETRICS AND GYNAECOLOGY

by

GAO XIU QIN,* Associate Professor
LIU LI XIAN and LIU DONG HUA, Doctors in Charge

Department of Gynaecology, 1st Affiliated Hospital,
China Medical College, Shenyang, Liaoning, People's Republic of China

INTRODUCTION

In the China Medical College in Laioning Province in north-east China 760 kilometres from Peking, obstetric and gynaecological patients were treated using a combination of traditional Chinese and Western medicine.

Over many years of practice and experience, Chinese medical workers concluded that certain herbs have significant antibiotic properties whilst others cause contraction of the smooth muscle of the uterus and intestine. A selection of these Chinese herbs has been made into decoctions and injections for use after surgery.

The aim of this paper is to describe the effects of post-operative therapy with Chinese herbs in obstetric and gynaecological surgery especially in the prevention of infection and flatulent distension.

MATERIALS AND METHODS

During the 3 years from 1975 to 1978, 168 patients had laparotomy performed in the obstetric and gynaecological service of the Countryside Hospital of China Medical College. All were given a decoction of herbs by mouth or by injection. No other treatment with special diets or antibiotics was given. One or more of 3 prescriptions was used.

Prescription I

Indication: After Caesarean section.
Preparation and use: Dissolved in 100 ml water to form an aqueous decoction of which the patient drank 100 ml 6-hourly post-operatively for 24 hours, then 100 ml twice a day for 24 hours.

Huang Zin (Radix scutella rial)	25 g
Yimucau (Herba Leonuri)	50 g
Pugong ying (Herba Taraxaci)	25 g
Zihuadiding (Herba Violae)	25 g
Chenpi (Pericarpium citri recticulatae)	15 g
Muxiang (Radix Aucklandiae)	15 g

*Dr. Gao was Eliza Michaels Visiting Fellow in the Department of Midwifery and Gynaecology, Queen's University, for 1983-84.

Prescription II

Indication: After various abdominal operations.
Preparation and use: As in prescription I but omitting Yimucau.

Prescription III

Indication: Post-operative infection.
Preparation and use: Equal weights of the herbs were mixed. The mixture was infused in half its weight of water. The sterilised solution was injected in doses of 2-4 ml intramuscularly every 6-12 hours; the oral decoction was also given.

Jinyinhua (Flower of Japanese Honey-suckle)
Liao Qiao (Fluctus Forsythiae)
Huangbo (Cortex philodendri)
Chai hu (Radix Buplevri)
Banlangen (Radix Isatidis)
Huang Qin (Radix Scutellariae)

The 168 patients treated by the above 'herbal' regimens were compared with 100 patients operated on during the same period treated with the methods previously used. In the 'control' regimen, nothing was permitted orally for 24 hours after surgery. Three litres of fluid were given intravenously, and antibiotics were used as necessary, on average for 6.2 days, until the temperature had been normal for 3 days. Details of the patients studied are presented in the Table.

TABLE

Indications and operations performed

	Herbal Series 'A' No. of patients	*Control Series 'B' No. of patients*
Benign adnexal tumour	28	30
Abdominal hysterectomy (benign lesions)	55	22
Ectopic pregnancy	14	12
Ovarian cancer	6	1
Uterine suspension	8	6
Abdominal hysterectomy (malignant lesions)	4	2
Caesarean section	48	22
Extraperitoneal Caesarean section	5	5
TOTAL	168	100

RESULTS

The incidence of post-operative pyrexia was higher in the control series than in that treated with herbs, a temperature of 38.6°C or more occurring in 8.5% of series A and in 27% of series B.

The average time of the first passage of flatus after operation in series A was at 30 hours: the earliest at 12 hours, the latest at 72 hours. The average time of the first passage of flatus in series B was 54 hours: the earliest was at 24 hours and the latest at 96 hours.

In series A, 3 patients had post-operative complications: these were respectively, partial atelectasis, incomplete intestinal obstruction, and intestinal adhesions.

In series A, intravenous fluid was given as necessary during operation; no more fluid was given thereafter apart from the herb decoction and liquid diet. The fluid balance was similar in both series with no dehydration or electrolyte disturbance in either. The quantity of urine was within normal limits in both series.

Acupuncture anaesthesia was used in 30 Caesarean sections, general anaesthesia in 26 ectopic pregnancies and epidural anaesthesia in the remainder, No difference was noted between these groups. The wounds all healed by first intention in both series. The average stay in hospital after surgery in series A was 8 days and in series B 10 days.

DISCUSSION

Surgery, although sometimes unavoidable for the cure of disease, is often followed by complications, especially those arising from wound infections and gastro-intestinal dysfunction. Certain Chinese herbs have been shown to be effective in combating infections both bacterial and viral. Others have a tonic effect on the gastro-intestine and other smooth muscles. Preparations of these herbs are useful in a combined regimen with good effect as indicated by the above study. Although clinically the herbs acting on the gut seemed to be effective, on further analysis no effect could be demonstrated. However, as far as control of infection, indicated by the body temperature, was concerned, the herb-treated series did better than the control series.

CONCLUSIONS

1. An effect has been obtained by using a herb decoction orally and/or by injection in post-operative obstetric and gynaecological patients. Compared with a control series, digestive functions recovered rapidly. Flatus was passed rapidly. Flatus was passed earlier and there was less abdominal distension and discomfort.

2. When herb decoctions and/or injections were given after operation, intravenous fluids or antibiotics were not administered.

3. Post-operative fever was less when herbs were given than in the control group series.

4. Patients were ambulatory sooner and recovered more quickly on the herb regimen.

5. The herb regimen is simple, convenient and inexpensive and thus very suitable for general use.

TOXOPLASMOSIS IN NORTHERN IRELAND 1982-83

by

E. T. M. SMYTH

Consultant Bacteriologist,
Department of Bacteriology, Royal Victoria Hospital, Belfast

SUMMARY

During 1982-83, 1161 sera were examined for the presence of haemagglutinating antibodies against *Toxoplasma gondii.* The Indirect Haemagglutination Test (IHAT) was positive in 416 (35.8%). Fourteen patients were judged to be suffering from acute acquired toxoplasmosis (active disease). In addition, 11 patients were also found to have glandular fever.

INTRODUCTION

Toxoplasmosis is one of the most prevalent diseases of man. Infection presents clinically in many guises and is rarely diagnosed in the acute form. Isolation of the causative agent, *Toxoplasma gondii,* is a cumbersome procedure, and serology provides the easiest means of diagnosis. The reference serological test is the Sabin-Feldman Dye Test, but this requires the use of live Toxoplasma parasites and is only carried out in certain reference centres. However, the Indirect Haemagglutination Test (IHAT) is a simple serological test with high sensitivity and specificity, requiring the minimum of equipment, and does not depend on the use of live parasites. Haemagglutinating antibodies persist for many years and are particularly useful for epidemiological surveys of the disease. This paper is a report of the incidence of Toxoplasma antibodies contained in sera submitted to this laboratory during 1982-83.

PATIENTS

1161 sera were sent to this laboratory from various centres throughout the Province during 1982-83. The patients supplying samples included cases of non-specific lymphadenopathy (285), of ocular disease (180), of suspected congenital infection (51), of neoplasia (18), and a group of other varied diagnoses (477); specimens were also received from pregnant women (40). Unfortunately, with a significant number of specimens (110), no clinical history was provided.

METHODS

Sera were stored at -20°C until tested. IHAT examinations were carried out on a weekly basis. Suspicious sera were sent to the Scottish Toxoplasma Reference Laboratory at Raigmore Hospital, Inverness, for confirmatory tests. The antigen used in the test was a water-soluble lysate of the RH strain of *T. gondii.* Sheep red blood cells were sensitised with this antigen.[1] The sensitised cells were kindly supplied by the Scottish Toxoplasma Reference Laboratory. The test was carried out in microtitre plates according to the method adopted by the Reference Laboratory. Titres $\geqslant 32$ were considered positive for *T. gondii* antibodies. Positive and negative control sera were included in every batch of tests. Patients whose clinical history

coupled with the result of the IHAT suggested the possibility of an acute infection were subjected to further tests. These included the Sabin-Feldman Dye Test and the specific anti-toxoplasma IgM Test. A patient showing a four-fold rise in titre and/or the presence of specific anti-toxoplasma IgM was diagnosed as having acute toxoplasmosis.

RESULTS

The Table shows the results of IHAT tests in various categories of individuals. IHAT antibodies were present in 416 (35.8%) of the 1161 sera examined. The serological pattern obtained in 14 cases suggested active disease. Of 285 specimens received from patients with non-specific lymphadenopathy, there were 8 patients judged to have active disease (7 males, 1 female). In patients presenting with ocular disease, 96 out of 180 specimens submitted were positive, but only one patient showed serological evidence of active disease.

TABLE

Results of IHAT in suspected cases of toxoplasmosis*

Category	*No. Received*	*No. Positive***	*% Positive*
Lymphadenopathy	285	86	30.2
Ocular disease	180	96	53.3
Suspected congenital infection	51	14	27.5
Pregnant women	40	15	37.5
Neoplasia	18	13	72.2
Other diagnoses	477	163	34.2
Diagnoses not given	110	29	26.4
Total	1161	416	35.8

*IHAT = Indirect Haemagglutination Test

**These include 14 patients diagnosed as having acute toxoplasmosis who presented with lymphadenopathy (8), ocular disease (1), non-specific signs and symptoms (4), and pregnancy (1).

Fifty-one specimens were submitted with a history of suspected congenital infection of which 14 contained antibodies to *T. gondii.* Fifteen specimens out of 40 submitted from pregnant women also showed positive serology. Eighteen specimens were examined from patients suffering from neoplastic disorders and 13 proved to be positive. The largest number of specimens (477) were received from patients with clinical diagnoses not falling into any of the above groups. Of these, 163 were positive. A significant number of specimens (110) were submitted without any clinical history. Twenty-nine of these were positive.

DISCUSSION

A total of 1161 specimens were received during 1982-83, of which 416 (35.8%) contained antibodies to *T. gondii.* Only 14 active cases of toxoplasmosis were diagnosed, but strict criteria were applied to these cases. Eight of the active cases had presented clinically with non-specific lymphadenopathy. Six were aged 15-34

years. In a number of these cases the diagnosis was only suspected after examination of a lymph node biopsy. Histological examination of biopsy material is extremely helpful in many cases of patients presenting in this manner. During the period of the survey, only one patient was diagnosed serologically as having active ocular disease due to *T. gondii.* This may be somewhat misleading, since active disease occurring within the eye is not usually accompanied by significant changes in serum titres to *T. gondii.* It has even been suggested by Desmonts[2] that comparison of titres obtained from the aqueous humour and serum need to be carried out before serology is of help in diagnosing ocular disease. Nevertheless, serology can be helpful if it can exclude the possibility of toxoplasmosis.

One woman was diagnosed as having acquired active toxoplasmosis while she was pregnant. The baby was born uneventfully, and follow-up examination has so far revealed no abnormality. Four other cases of active disease were diagnosed in patients presenting with various non-specific signs and symptoms.

Because the IHAT method involves the use of non-sensitised sheep cells as a control, it makes it possible to detect those patients who have heterophile antibodies present in their blood. This enabled us to diagnose 11 acute cases of glandular fever, which were not suspected clinically, while examining the sera for toxoplasmosis. It is worthwhile remembering that in a patient who presents with lymphadenopathy and who is Paul Bunnell negative, the possibility of toxoplasmosis should not be overlooked. The results so far suggest that toxoplasmosis is not uncommon in the Province but that many active cases remain undiagnosed. A higher level of suspicion is required by clinicians when considering the diagnosis, and the serum specimens should be taken as early as possible in the illness. The value of a repeat specimen cannot be underestimated when trying to diagnose active disease.

I would like to express my gratitude to Dr. B. Bennett, Mr. W. R. Henry and Mrs. E. McKimm, who have been actively involved in providing this service for the diagnosis of toxoplasmosis. In addition, I must mention the marvellous support, both active and passive, received from Drs. H. and K. A. B. Williams and their staff at Raigmore Hospital, Inverness.

REFERENCES

1 Thornburn H, Williams H. A stable haemagglutinating antigen for detecting Toxoplasma antibodies. *J Clin Pathol* 1972; **25**: 762-767.

2 Desmonts G. Definitive serological diagnosis of ocular toxoplasmosis. *Arch Ophthal* 1966; **76**: 839-851.

DRUG OVERDOSES — A THREE YEAR STUDY AT ALTNAGELVIN HOSPITAL, LONDONDERRY

by

G. J. J. MURPHY,[1] J. J. A. McALEER[2] and F. A. O'CONNOR[3]

Altnagelvin Hospital, Londonderry

INTRODUCTION

In recent years the incidence of drug overdosage has shown a dramatic increase. At Altnagelvin Hospital adult overdoses account for approximately 1% of the attendances at the Accident and Emergency (A&E) department and almost 14% of the acute medical admissions. This hospital is particularly suitable for studying overdosage as it is the only centre treating this problem in the Londonderry, Limavady and Strabane district, and follows a policy of admitting all overdoses presenting, regardless of their physical or mental condition. The population of the district is approximately 160,000 of which almost 95,000 live in the city area.

METHODS

A retrospective review of the case records of all adults presenting to Altnagelvin Hospital with drug overdosage between January 1980 and December 1982 was carried out, with the exception of twenty-three patients whose charts were unobtainable. Cases involving alcohol alone were excluded from the study, as these could be admitted to several different wards or observed overnight in A&E (depending on associated problems), and it was the feeling of the authors that they were grossly under-represented on the Hospital Activity Analysis coding which showed only 53 cases over the three years. Data was collected on personal information, past medical and psychiatric history, history of previous overdose, time and date of casualty admission, drugs taken, reason for overdose, treatment and outcome, psychiatric diagnosis and eventual discharge or transfer.

RESULTS

We studied 1055 admissions of 784 patients to Altnagelvin Hospital for drug overdosage in the three-year period (1.34 overdoses per patient). This represented 2.19 overdoses per thousand population per year in the district. All such patients were first seen in the A&E department, and appropriate immediate treatment having been instituted, were referred to the appropriate department i.e. medical ward or Intensive Care Unit (ICU). The flow diagram (Figure) summarises the disposal of patients from the A&E department. The majority of patients were seen by a psychiatrist except those who discharged themselves contrary to advice (CTA). Admissions to ICU amounted to 42 patients (4%), of whom 5 died.

---

[1] Senior House Officer, general medicine (vocational General Practice trainee).

[2] Senior House Officer, general medicine. [3] Consultant Physician.

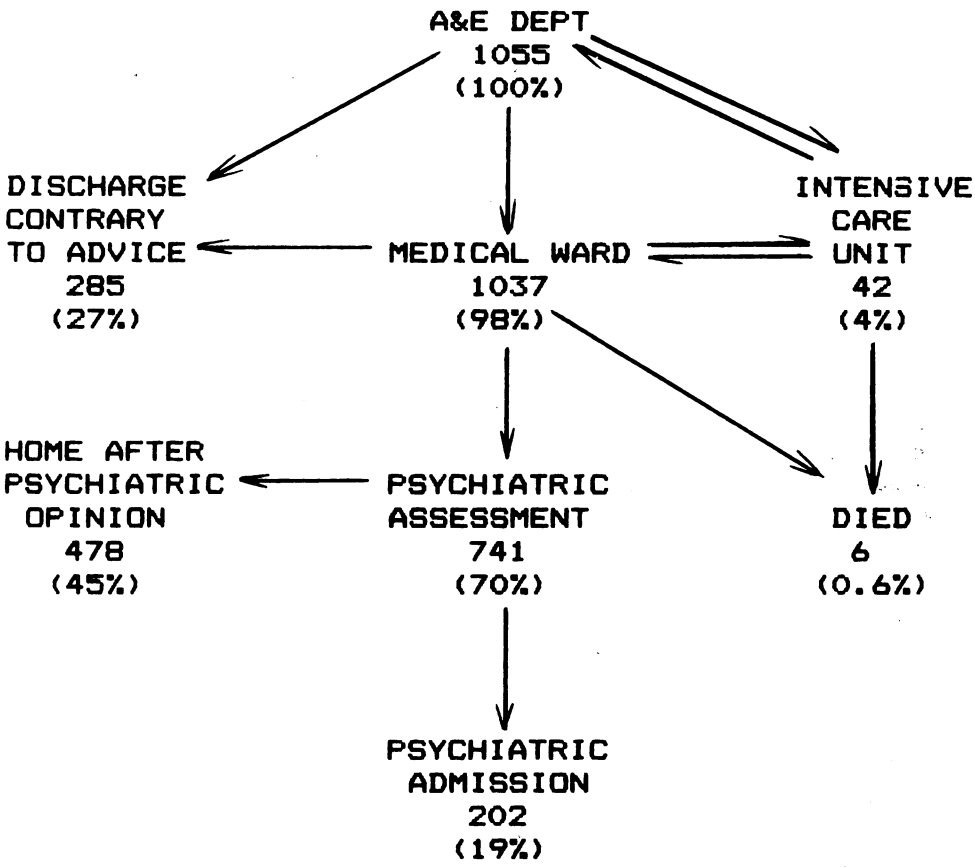


FIGURE. *Flow diagram showing management of drug overdose patients at Altnagelvin Hospital.*

The majority of cases were young people, with 427 males (84%) and 442 females (80%) under 40 years of age. The peak incidence occurred in the 20- to 24-year-old age group in males and in the 15 to 19 age group in females. The number of overdoses per year varied from 290 to 444. The overall female/male ratio was 1.07 (Table I).

303 males (60%) and 254 females (46%) were single; 143 males (28%) and 190 females (35%) were married; 51 males (10%) and 68 females (12%) were divorced or separated; and 3 males and 21 females were widowed. 312 males (61%) and 135 females (25%) who took overdoses were unemployed at that time. Employed persons constituted 118 males (23%) and 85 females (16%), while students or schoolgoers comprised 40 males (8%) and 66 females (12%). There were 225 females (41%) classified as housewives, and 7 males and 9 females had retired.

TABLE I

Annual overdose incidence

Year	*Male*	*Female*	*Total*	*F:M ratio*
1980	149	172	321	1.15
1981	142	148	290	1.04
1982	217	227	444	1.04
Total	508	547	1055	1.07

Drugs used

In general, the patients took more than one drug. The 1055 patients ingested a total of 1458 drugs, and 532 also took alcohol at the time of overdose. Excluding alcohol, this averages 1.4 drugs per overdose for both males and females. The details of the drugs ingested are shown in Table II. Alcohol was the most common agent, being taken (in addition to other drugs) in 64% of male overdoses and 38% of female overdoses. Benzodiazepines were taken equally in males (49%) and females (50%), making them the most commonly abused drugs in females. A proprietary combination of paracetamol and dextropropoxyphene (Distalgesic) was taken by 24 patients (16 female) although no severe adverse effects were encountered and there was no consistent trend in the annual ingestion rate of this preparation. Phenobarbitone was the only barbiturate taken by any patient. Other drugs — a heterogeneous group of proprietary analgesics, compound preparations, antibiotics, vitamins, disinfectants etc — were taken by 42% of the patients.

TABLE II

Drugs taken in overdoses

Drug	*Males (%)*		*Females (%)*	
Alcohol	324	(64%)	208	(38%)
Benzodiazepines	249	(49%)	275	(50%)
Paracetamol	39	(8%)	68	(12%)
Aspirin	34	(7%)	56	(11%)
Anti-depressants	43	(8%)	48	(9%)
Major tranquillisers	40	(8%)	37	(7%)
Iron	21	(4%)	27	(5%)
Anti-convulsants	23	(5%)	20	(4%)
Mushrooms	18	(4%)	5	(1%)
Paraquat	3	—	2	—
Other drugs	230	(45%)	220	(40%)

Paraquat ingestion was alleged by 3 male and 2 female patients. Three died (2 male and 1 female), all within 48 hours of hospital admission. The other male had a strongly positive urine test, received standard treatment, and over the next week showed a marked disturbance of renal function which settled slowly to within normal limits without dialysis. He encountered no respiratory problems, was discharged home after 16 days and remained well. The other female showed no objective evidence of paraquat intake and suffered no ill-effects. 'Magic mushrooms (Liberty Caps or Psilocybe Semilanceata) were taken by 22 patients. There were no admissions with overdose of narcotic analgesics or cannabis, and only 3 patients were seen who admitted solvent abuse.

Overdoses tended to be clustered in late evening or early morning, this trend being more marked in males than in females. Thus 758 patients (73%) were admitted between 6 pm and 6 am. The busiest time was midnight to 6 am, with 382 overdoses (36%), and 6 am to midday was least busy with only 79 overdoses (7%). There was considerable variation in the number of overdoses on different days of the week with dissimilar patterns for males and females. Males tended to take an overdose more frequently on Friday and Saturday and females on Saturday followed in prevalence by Sunday and Monday. There was little seasonal variation. 212 males (42%) and 177 females (32%) had previously taken an overdose. Of these multiple overdoses, men were more likely to have taken their previous overdose in the recent past (187 men (88%) and 117 women (66%) in under 2 years), but women were more likely to have overdosed again after a prolonged period (60 women (34%) and 25 men (12%) after more than two years).

The area covered by our study was divided into Londonderry city and the 'country area' (which also included several towns). The city area had 379 male and 358 female overdoses while the country area had 129 male and 189 female overdoses. This gave a female to male ratio of 0.94 for the city area and 1.46 for the country area with the ratio of 1.07 overall. 185 males (49%) and 140 females (40%) from the city area had taken a previous overdose, whereas only 27 males (21%) and 37 females (20%) from the country area had done so. Within the city area there were remarkable clusters of cases: for example one patient overdosed 27 times during the study period, one family provided a total of 12 overdoses among 6 members of the family, and one street produced 32 overdoses.

Medical Management

Most overdoses were treated by simple measures, 952 (90%) receiving gastric lavage and 74 (7%) receiving syrup of Ipecac. Six patients had received saline or mustard draughts as emetics prior to admission without ill effect. Specific antidotes were administered to 63 patients (6%) and 10 received forced alkaline diuresis. Telemetric cardiac monitoring was carried out on 66 patients (6%). Duration of hospital stay varied from 1 to 27 days, average 1.15 days.

Forty-two patients (4%) required admission to ICU, comprising 19 males and 23 females. Fourteen of the males and 15 of the females had never taken an overdose before, and only one had taken an overdose in the previous six months. Alcohol had been taken by 8 males (42%) and 7 females (30%) and benzodiazepines by 9 males (47%) and 7 females (30%). Antidepressants or major tranquillisers were taken by

7 males (27%) and by 10 females (44%). Three males and 2 females took anti-convulsant drugs. Two of the fatal paraquat overdoses were admitted to ICU. Eighteen patients had endotracheal intubation performed and, of these, 8 required mechanical ventilation.

Six patients died in hospital during the study period (Table III) giving a mortality rate of 0.55% for the three years. Paraquat was taken in 3 of these 6 fatalities. Data obtained from the Office of the Registrar General for Northern Ireland showed that a further 12 patients died from drug overdose outside hospital, in this district, during the study period.

TABLE III

Details of fatalities

Age	*Sex*	*Drugs*
25	F	Chlordiazepoxide Iron Prednisolone Metoclopramide
53	F	Paraquat
61	F	Amtriptyline Haloperidol
61	M	Paraquat Methylated spirits
67	M	Alcohol Lorazepam
72	M	Paraquat

Psychiatric Assessment

The reason given for taking the overdose, as recorded in the patient's record, was often very vague and changed at different times during the admission. For 216 patients (20%), mostly those who discharged themselves CTA, no reason was recorded. Accepting these limitations to accuracy, 511 patients (48%) admitted that they were not intending to end their life and 152 (14%) claimed that they had actually been suicidal. Argument or disharmony with family or partner was given as a reason by 233 female patients (43%) and by 112 males (22%). Other reasons offered were depression, cited by 162 patients (15%), alcohol, cited by 125 (12%) and pregnancy, by 6 (1%). From the information available, it was not possible to assess the role of social deprivation.

All patients were seen by a psychiatrist except those who discharged themselves CTA (285 patients, 27%) and those who ingested 'magic mushrooms' (23 patients, 2%). Table IV shows the psychiatric diagnosis where recorded. 96 males (19%) and 106 females (20%) were admitted to psychiatric hospital (22 and 16 respectively being formal admissions). A further 77 females (14%) but only 20 males (4%) were

given an outpatient psychiatric appointment. The psychiatric diagnosis for informal admission was markedly different between the sexes. Among the male patients alcohol problems were diagnosed in 26 (35%), depression in 25 (34%) and schizophrenia in 10 (14%), while in the female group alcohol problems were found in 7 patients (8%), depression in 64 (71%) and none were schizophrenic.

TABLE IV

Psychiatric diagnosis

Psychiatric diagnosis	*Males (%)*	*Females (%)*
No diagnosis/None recorded	169 (54%)	222 (52%)
Alcohol problem	147 (47%)	28 (6%)
Depression	33 (10%)	105 (24%)
Social/Personality problem	75 (24%)	93 (22%)
Schizophrenia	13 (4%)	1 —
Other	3 (1%)	8 (2%)
Total assessed	310	432

Pregnancy

Fourteen patients who were pregnant and 14 who were within six months post-partum took overdoses during the study period. Of these, 5 pregnant patients and 3 post-partum were unmarried and a further 4 pregnant and 1 post-partum were divorced or separated. Drugs taken by similar percentages to those established in the general female population were benzodiazepines taken by 15 patients (46%), associated alcohol ingestion by 8 patients (29%), paracetamol by 4 patients (14%) and iron by 3 patients (11%). Aspirin taken by 8 patients (29%) and antidepressants or major tranquillisers taken by 6 patients (21%) were more commonly ingested by this group. Depression was diagnosed in 2 pregnant patients (14%) and 8 post-partum patients (57%) resulting in 1 and 6 informal admissions respectively.

Epilepsy

A total of 28 epileptics took 47 overdoses. Male epileptics (16 patients) took, on average, 2.0 overdoses each and females (12 patients) took 1.25 overdoses compared with an overall figure of 1.46 overdoses for males and 1.24 for females in the complete study. 30 epileptics (64%) had taken an anti-convulsive drug, compared to 43 (4%) in the total group. The use of alcohol was similar and of other drugs less common. Intensive care monitoring was carried out on 4 males (12%) and on 2 females (13%). There were no fatalities, and 6 males (19%) and 5 females (33%) required psychiatric inpatient treatment. Psychiatric diagnoses in males were alcohol dependency in 12 (38%) and schizophrenia in 4 (12%). Psychiatric diagnoses in females were depression in 4 patients (27%), and one each with hypomania, anxiety neurosis and dementia.

Mushrooms

In the autumn of 1982, a small epidemic of 'magic mushroom' overdoses occurred with a total of 23 overdoses (18 males and 5 females). All patients were less than 30 years of age. The main reason given for mushroom ingestion was experimentation, without suicidal intent. Alcohol was taken with the mushrooms in 7 cases (30%). There were no serious sequelae although one patient, who was thought to be depressed, was referred to the psychiatrist and subsequently admitted informally to psychiatric hospital.

Old Age

There were 22 overdoses (9 male) in patients over the age of 65 years, but no multiple overdoses. There were 2 widowers and 9 widows. Two males died, 2 required intensive care monitoring and 3 were admitted to psychiatric hospital. There were no female deaths but 2 required intensive care and 7 were admitted to psychiatric hospital. The diagnosis of alcohol dependency was made in 2 males and depression was diagnosed in 2 males and 6 females.

New Medical Illness

Nine of the patients in the study (0.9%) were found to have a new medical illness requiring further investigation and/or treatment. These consisted of carcinoma of colon (1 patient), new murmurs (2 young patients — one with Down's syndrome and evidence of pulmonary hypertension), gynaecological problems (4 patients), gonorrhoea (1 patient) and bilateral carpal tunnel syndrome (1 patient).

DISCUSSION

This study gives an overall picture of the pattern of overdose ingestion in the district over the three-year period. It is apparent that certain groups are associated with higher incidence of overdose. These included city dwellers (who were also more likely to have taken previous overdoses), the unemployed, single pregnant women and those with marital or alcohol problems. This was in keeping with the previously noted association of overdose with social deprivation.[1, 2, 3]

There was a 40% increase in overdoses over the three years and indeed a 300% increase since 1973 in this hospital. The reasons for these increases are unclear but possible factors include the increasing incidenee of alcohol dependency and of patients taking tranquillisers. This geographic area has experienced long-term relative social deprivation and unemployment. It may be that through the mass media people now expect more from life than in the past, and perhaps overdosing has become more socially acceptable. Previous publications have shown a marked female preponderance which has declined towards equality in recent years.[4, 5, 6, 7] Our results are in accordance with this trend, showing only a slight female excess which diminished over the years.

Most patients took more than one agent, with alcohol and benzodiazepines being very common, again reflecting their ready availability and social acceptability. Accordingly, alcohol was most frequently taken by males and benzodiazepines by females. Except for phenobarbitone (taken either by epileptics or their relatives) there were no barbiturate overdoses, no doubt reflecting the recent drive to reduce

the prescription of hypnotic barbiturates to a minimum.[8] Perhaps a similar drive to reduce prescription of benzodiazepines is now warranted. The proprietary combination of paracetamol and dextropropoxyphene (Distalgesic) has been a notorious overdose problem, due to its respiratory depressant effect.[9] However, no serious incidents were encountered with our patients and the drug was not taken by any overdose patients dying before hospital admission (data from the Office of the Registrar General). In this series 3 of the 6 deaths in hospital were due to paraquat ingestion. However, paraquat ingestion is not invariably fatal[10] and one patient survived, with treatment, despite having a strongly positive urine test for paraquat.

In September 1982 teenagers in the area began to experiment with 'magic mushrooms', and some were admitted with predictable minor somatic (anti-cholinergic) and mental disturbances (delusions, hallucinations) which settled with observation. It was found that only those experiencing a bad 'trip' presented to the A&E department. Obvious risks associated with this cult are ingestion of a truly poisonous mushroom or of injury being sustained while mentally disturbed.[11]

Most overdoses were admitted during the night, which caused considerable disturbance to the other patients in the ward and placed an extra burden on the night staff. Overdoses (especially by males) were more frequent on Friday and Saturday nights, but were infrequent in male patients on Sundays when the public houses were closed. The admission policy of Altnagelvin Hospital for drug overdoses meant that they represented a high percentage of admissions to the medical wards. Undoubtedly, an admission/observation ward would have been better. Most overdose patients were seen by the psychiatrist the following day and their discharge or transfer expedited, resulting in a mean stay of just over 24 hours. After psychiatric assessment one patient in five was transferred to the psychiatric hospital. The common psychiatric diagnoses in males were alcohol dependency and depression whereas the majority of females were admitted with depression.

Epileptic patients accounted for 3.5% of the overdoses, which is similar to other published data[12] and much higher than the estimated prevalence of the condition in the community, which is approximately 0.5%.[13] This probably relates to the social and psychiatric problems of the epileptic patient and not to the ready availability of their drugs, since a considerable number of these patients took drugs other than their anti-convulsant medication. Also a higher proportion required psychiatric inpatient treatment than the general population.

We feel that our policy of admitting all overdoses for observation and psychiatric assessment is appropriate because, although there was a low hospital mortality, there was significant medical and psychiatric morbidity. Furthermore it is often impossible to judge the seriousness of a particular overdose in A&E: the history is often inadequate or unreliable, and the subsequent behaviour of such unstable patients is highly unpredictable, there being a real risk of further self-poisoning or attempted suicide. This study examines in detail the recent experience of drug overdoses in our district hospital and shows a continuation of the steady increase in incidence seen in the last decade. This increase seems likely to continue as preliminary figures for 1983 show a rise of 25% on 1982. It is therefore felt that a prospective study is needed to assess in more detail the social factors contributing to overdoses, and thus to identify any strategy which could be used to reverse the trend.

SUMMARY

In a review of 1055 cases of self-poisoning at Altnagelvin Hospital from 1980 to 1982, the number of cases rose from 321 in 1980 to 444 in 1982, an overall increase of 38%. The peak incidence was in the 20-24 year-old age group in males and in the 15-19 age group in females. The ratio of females to males was 1.07 to 1. There was a high incidence of unemployment (61% of males) and of marital disharmony, and most patients came from the city area.

Drugs ingested most frequently were alcohol, benzodiazepines, paracetamol, antidepressants, aspirin, and the major tranquillisers.

All patients were admitted to the medical ward (4% going initially to ICU) for an average of 1.2 days. 202 patients (20%) were transferred to psychiatric hospital, 6 patients (0.6%) died and the remainder were discharged after observation and treatment. Overdoses represented 14% of all medical admissions.

We wish to thank the staff of the Medical Records Department, the Medical Library, the Medical Photography Department and the Drug Information Centre in Altnagelvin Hospital and Mrs. J. Davy, Office of the Registrar General for Northern Ireland, Belfast.

REFERENCES

1 Rygnstad TK. Prospective study of social and psychiatric aspects in self-poisoned patients. *Acta Psychiat Scand* 1982; **66**: 139-153.

2 Gardner R. Psychiatric aspects of self-poisoning. *Hosp Update* 1983; **9**: 485-491.

3 Lyons HA, Bindal KK. Attempted suicide in Belfast. *Ir Med J* 1977; **70**: 328-332.

4 Graham JDP, Hitchens RAN, Marshall RW, Mitchell GM. Self-poisoning — a decennial survey from Cardiff. *Publ Hlth, Lond* 1979; **93**: 223-229.

5 Busto U, Kaplan HL, Sellers EM. Age- and sex-related difference in patterns of drug overdose and abuse. *Soc Sci Med* 1981; **15E**: 275-282.

6 Myers JB, Smith AJ, Elliot RL, MacAskill P. Self-poisoning with drugs. *Med J Aust* 1981; **2**: 402-405.

7 Hadden DSM. Drug overdosage: a study at the Accident and Emergency Department of the Royal Victoria Hospital, Belfast. *Ulster Med J* 1978; **47**: 165-170.

8 Action from the CRM [Committee on the Review of Medicines]: Barbiturates. *Drug Ther Bull* 1980; **18**: 9-11.

9 Young RJ, Lawson AAH. Distalgesic poisoning — cause for concern. *Br Med J* 1980; **280**: 1045-1047.

10 Proudfoot AT, Stewart MS, Levitt T, Widdop B. Paraquat poisoning: significance of plasma-paraquat correlations. *Lancet* 1979; **2**: 330-332.

11 Young RE, Milroy R, Hutchison S, Kesson CM. The rising price of mushrooms. *Lancet* 1982; **1**: 213-215.

12 Mackay A. Self-poisoning — a complication of epilepsy. *Brit J Psychiat* 1979; **134**: 277-282.

13 Shorvon SD. Epilepsy update. *Hosp Update* 1984; **10**: 541-546.

THE OBSTRUCTED INTUSSUSCEPTION IN CHILDHOOD

by

S. R. POTTS and N. MURPHY

The Royal Belfast Hospital for Sick Children, Belfast

SUMMARY

In intussusception in early childhood, reduction by barium enema is the treatment of choice. In late cases when there is air and fluid distension of the small bowel on plain x-ray, barium enema is less useful. Generally 20-25% of childhood intussusception presents in this way. We have reviewed the experience of 65 intussusceptions at the Royal Belfast Hospital for Sick Children over the past 5 years and found only one successful barium enema reduction in 22 obstructed intussusceptions.

INTRODUCTION

The success rate of barium enema reduction of intussusception in childhood varies in reported series, the best results corresponding with early referral and diagnosis. Presentation with a history in excess of 24 hours reduces by about 50% the success rate of barium enema reduction.[1, 2, 3] When dealing with obstructed intussusception, successful use of the enema is the exception rather than the rule.[4, 5, 6] The fact that this situation is generally inferred rather than stated as a statistic has prompted this review, and special attention is paid to those cases where air and fluid distension of the small bowel has developed.

METHODS

The records of all cases of intussusception presenting at the Royal Belfast Hospital for Sick Children from January 1978 to February 1983 were inspected. Erect and supine abdominal films were examined to determine those in which small bowel obstruction (gaseous distension with fluid levels) was established.

The success, failure or omission of barium enema was noted. The operation note was examined for details regarding intestinal resection or alternative diagnosis. The length of history on referral and the age and sex of the patients was also recorded.

RESULTS

There were 62 children (44 boys, 18 girls) with 65 intussusceptions. Age, distribution and length of history at referral are presented in Tables 1 and 2.

TABLE 1

Age at presentation (months)

	0—3	3—6	6—12	12—24	>24
Number of cases	18	12	20	9	6

TABLE 2

Length of history at presentation (hours)

	0—12	12—24	24—36	36—48	>48
Number of cases	12	19	8	10	16
Number resected	3	5	2	3	4

In the 43 cases with no radiological evidence of obstruction, 32 enemas were given with 22 successes.

Established obstruction as defined was present in 22 cases, 13 of which had an enema, with only one success. The remaining 9 cases were taken directly to operation because of their clinical status. The profile of all cases is presented in Table 3. Intestinal resection was carried out in 17 instances, 4 of which did not present with obstruction clinically or radiologically. Ten enemas were performed in the resected group, 4 in the unobstructed subgroup and 6 in the obstructed subgroup.

TABLE 3

Profile of 65 cases of childhood intussusception

Type of Intussusception	No. of cases	Intestinal obstruction	Intestinal resection	Lead points	Barium enema employed	Barium enema failed
Ileo-colic	48	11	7	—	35	16
Ileo-ileo-colic	14	8	7	—	8	8
Ileo-ileal	3	3	3	3	2	2

Passage of blood per rectum occurred in 30 of the 65 cases (46%). Rectal bleeding was observed in 9 of the 17 cases requiring resection (53%). Thus the appearance of rectal bleeding gave no indication of the viability of the bowel.

DISCUSSION

In this series we have presented our experience with intussusception directed towards those with obstruction and have shown that reduction by barium enema is only occasionally successful in these patients. Previous reports have not made a clear differentiation between obstructed and nonobstructed cases with regard to the efficacy of barium enema.[1, 2, 3, 4, 5, 6, 7] A diagnosis of intussusception can be made in the majority of cases from the history and from plain abdominal x-ray films. The use of barium enema in the obstructed subgroup of childhood intussusception is called into question because of its low therapeutic success rate. The argument that the enema may, by even partial reduction of the intussusception, facilitate operation, is invalid, as adequate access to the left side of the abdomen and pelvis in a child can be gained through a transverse right upper quadrant muscle-cutting incision.

In our series 50% of the cases presented with a history in excess of 24 hours and in 25% it was over 48 hours. It is generally recognised that the success rate in reducing childhood intussusception with barium enema after 24 hours is much reduced.[2, 5] Thus half of our cases presented unfavourably. In addition, increasing length of history carries the risk of impaired viability of the bowel beyond that expected from simple increase in intraluminal pressure. At particular risk in this situation are those under 6 months of age.[8]

We conclude that those with limited experience of intussusception should treat obstructed intussusception as a case requiring immediate operative management. They are likely to find barium enema a therapeutic disappointment which loses valuable time in circumstances where quick intervention may prevent the necessity for an intestinal resection.

REFERENCES

1 Gierup J, Jorulf H, Livaditis A. Management of intussusception in infants and children: a survey based on 288 consecutive cases. *Paediatrics* 1972; **50**: 535-545.

2 Eklof OA, Johanson L, Lohr G. Childhood intussusception. Hydrostatic reducibility and incidence of leading points in different age groups. *Paediatr Radiol* 1980; **10**: 83-86.

3 Freund H, Hurvitz H, Schiller M. Etiologic and therapeutic aspects of intussusception in childhood. *Am J Surg* 1977; **134**: 272-274.

4 Ein SH, Stephens CA. Intussusception. 354 cases in 10 years. *J Paediatr Surg* 1971; **6**: 16.

5 Hutchison IF, Olayiwola B, Young DG. Intussusception in infancy and childhood. *Br J Surg* 1980; **67**: 209-212.

6 Rosenkrantz JG, Cox JA, Silverman FN, Martin LW. Intussusception in the 70s: indication for operation. *J Paediatr Surg* 1977; **12**: 367-373.

7 Ein SH. Leading points in childhood intussusception. *J Paediatr Surg* 1976; **11**: 209.

8 Mercer S, Carpenter B. Mechanism of perforation occurring in the intussusception during hydrostatic reduction of intussusception. *Can J Surg* 1982; **25**: 481-483.

A STUDY OF PAIRED CADAVER KIDNEY TRANSPLANTS

by

D. MIDDLETON,[1] C. C. DOHERTY,[2] J. F. DOUGLAS[3] and M. G. McGEOWN[4]

Northern Ireland Tissue Typing Laboratory, Belfast City Hospital,
and Renal Unit, Belfast City Hospital

INTRODUCTION

The kidney graft survival rate at the Belfast City Hospital has consistently exceeded 80% at two and three years since the transplant programme began in 1968. This graft survival rate compares very favourably with that of other centres and should mean a difference in graft survival for paired kidneys when one kidney is used for a Northern Ireland recipient and the other for a recipient 'outside' Northern Ireland.

It has been suggested that a genetically homogeneous population in Northern Ireland may explain this high graft survival rate. It was therefore decided to investigate the fate of donor kidneys where one of a pair was used for a recipient in Belfast and the other for a recipient outside Northern Ireland.

PATIENTS AND METHODS

During the period 1972-81 there were 117 cases of paired kidneys where one kidney was used in Belfast and the other outside Northern Ireland. It was possible to obtain information on 109 pairs. Sixty-nine of these pairs came from donors outside Northern Ireland and 40 pairs from Northern Ireland donors.

Information was obtained on the length of time of function for each kidney. For those kidneys that were still functioning on 31 December 1982, the length of time of function was taken as the time interval between the date of transplant and 31 December 1982.

A paired t-test was used to find if there were any differences in the length of function of a kidney used for a Northern Ireland recipient and a kidney used 'outside'. Graft survival was also analysed at 12 months' post-transplantation using a chi-squared test with Yates' correction.

RESULTS

Graft survival at 12 months after transplantation for paired kidneys from the same donor is shown in Table I. For the 40 paired kidneys from Northern Ireland donors, there was an 80% survival in the Northern Ireland recipients, but only a 65% survival in the outside recipients, but this difference did not reach statistical significance. For the 69 paired kidneys from outside donors, there was a 77% survival in the Northern Ireland recipients, and only 57% survival in the outside recipients, which was significantly less ($p < 0.02$).

---

[1] Top Grade Scientist, Tissue Typing Laboratory, Belfast City Hospital.

[2, 3, 4] Consultant Physicians, Renal Unit, Belfast City Hospital.

TABLE I

Graft survival 12 months after transplantation for paired kidneys from either Northern Ireland or outside Northern Ireland sources

	N. Ireland recipient	*Outside recipient*	*P*
40 paired kidneys from N. Ireland donors	32 (80%)	26 (65%)	NS
69 paired kidneys from outside donors	53 (77%)	39 (57%)	<0.02
P	NS	NS	

(Probability values for chi-squared test).

Table II compares the length of function of the paired kidneys. The function time of the kidney used for a Northern Ireland recipient was significantly better than the function time of the kidney used for an 'outside' recipient regardless of the donor source.

TABLE II

Function time of paired kidneys

	N. Ireland recipient	*Outside recipient*	*P*
N. Ireland donor (40 pairs)			
Function time of all grafts (months)	1435	1032	<0.05
No. of grants functioning at 31.12.82	28	21	
Outside donor (69 pairs)			
Function time of all grafts (months)	3402	2193	<0.01
No. of grafts functioning at 31.12.82	42	28	
All donors (109 pairs)			
Function time of all grafts (months)	4837	3225	<0.001
No. of grants functioning at 31.12.82	70	49	

Fate of graft analysed at 31.12.82. For those grafts still functioning at 31.12.82, the time of function was taken as the period from date of transplant to 31.12.82. Probability values for paired t-test.

Twelve months after transplantation 40 of the 109 pairs of kidneys had a dissimilar fate (one surviving and one failing). In 30 of these dissimilar pairs the graft to the Northern Ireland recipient survived but that to the outside recipient failed, whereas in 10 the graft to the Northern Ireland recipient failed while that to the outside recipient survived.

DISCUSSION

The graft success rate for renal transplantation in Belfast has always compared very favourably with that of other centres. It has been suggested that one reason for this is that Northern Ireland may have a genetically homogeneous population which is favourable for organ transplantation. If this were true, one would expect graft survival in Northern Ireland recipients to be significantly better when kidneys from a local rather than an outside source were used. The present study has shown that graft survival in Northern Ireland recipients was similar regardless of whether the kidney was from a local or an outside donor.

In addition, the results show that kidneys transplanted to a Northern Ireland recipient function significantly longer than the paired kidney transplanted to an 'outside' recipient, regardless of donor source. This underlines the high graft success rate in Belfast compared with other centres.

Unfortunately, although the graft success rate in Northern Ireland is very good, because of the lack of kidney donors many patients over 55 years worthy of treatment cannot be accepted. At 30 June 1984 there were 2731 patients in the United Kingdom kidney transplant waiting list and the number has doubled in 4 years.

An increased supply of donors would open the way to provision of replacement of renal function for patients who are older, diabetic or otherwise disadvantaged, most of whom could be returned to a good standard of fitness.

We wish to thank U.K. Transplant Service for informing us where the second kidney was used, our colleagues in other Transplant Units for follow-up of their recipients, Miss M. Maxwell for typing the manuscript and the Northern Ireland Kidney Research Fund for funding of equipment.

TOWARDS PAINLESS ORTHOPAEDIC SURGERY

by

DAVID W. BARRON*

The Withers Orthopaedic Centre, Musgrave Park Hospital, Belfast

SUMMARY

Almost one thousand patients underwent either total hip replacement or spinal surgery in which diamorphine 0.5-1.0 mg was injected intrathecally. Approximately one half of the arthroplasty patients and one third of the spinal patients required no other post-operative analgesia. In the remainder, analgesics were not required for 12 hours post-operatively. The benefits of the technique and possible complications are discussed.

INTRODUCTION

Regrettably, the management of post-operative pain has not kept pace with advances in anaesthesia and surgery and has been the subject of several critical editorials. It is generally conceded that intra-muscular opiates, given on a four-hourly basis, produce peaks and troughs of analgesia, which is very unsatisfactory. Dodson,[1] in a review of the available methods of producing pain relief, considers that there may be a place for a nurse with specific responsibilities for this. Many narcotic analgesics are available and these have been assessed critically by Kay and Cohen.[2]

The discovery and location of receptors for opiate alkaloids and endorphins in the spinal cord by Pert, Kuhar and Snyder[3] opened up a completely new field in the management of both chronic and post-operative pain, since it is possible to inject a small amount of opiate in the region of the spinal cord supplying the affected dermatomes, and to produce analgesia which is long-lasting and which, if employed correctly, produces a minimum of side-effects. The receptors are located in the substantia gelatinosa of the posterior columns of the cord, and the opiates probably act by suppressing the release of substance P at laminae I and V.[4]

The action is more pronounced on the C fibres than on the A fibres so that somatic pain is more amenable to treatment than visceral pain.

The use of intraspinal opiates for the relief of post-operative pain following major orthopaedic surgery was begun in our Unit in 1980 and preliminary results were published by Barron and Strong.[5] Preservative-free morphine was given by the epidural route, and diamorphine was used intrathecally at that time. Results with the former were disappointing and we now believe that morphine is too hydrophilic. In contrast to this, results with intrathecal diamorphine have been very rewarding. This opiate is very lipophilic and becomes sequestered in the receptors so that there is less likelihood of respiratory depression.

---

* Consultant Anaesthetist.

METHODS

1. *Spinal surgery:* All patients were premedicated with diazepam and were given a general anaesthetic with relaxant and controlled ventilation. No analgesic was administered during surgery. Towards the end of the operation, the surgeon injected 0.5-1.0 mg diamorphine into the subarachnoid space, as far cephalad as possible, under direct vision. Patients weighing less than 50 kg were given the smaller dose, those weighing 50-70 kg were given 0.75 mg and those over 70 kg were given 1.0 mg.

2. *Total hip replacement:* Lorazepam was employed as premedicant. Anaesthesia was induced with thiopentone, intubation carried out under pancuronium, and controlled ventilation instituted. The patient was then turned with the hip to be operated on uppermost and lumbar puncture was carried out at either L.4/5 or L.5/S.1 using a 25 s.w.g. nedle. 0.5-1.0 mg diamorphine was then injected using the same criteria as above. No other analgesia was employed.

The time of injection of the diamorphine was carefully noted on a special form designed for the investigation, and this was retained in the recovery ward, where all patients were monitored for 24 hours. The usual criteria for assessing need for post-operative analgesics were used and, if these were required, the time was noted. Special observations were made for the known complications of the technique.

RESULTS

Table 1 shows the results and incidence of complications in almost one thousand patients. Tables 2 and 3 present details of the patients in the hip replacement and spinal surgery series. It can be seen that approximately half of the arthroplasty patients required no other analgesia whatsoever and that the remainder were pain-free for 12 hours. In the spinal series nearly one third of patients required no other analgesia and again the remainder were pain-free for 12 hours.

TABLE 1

Incidence of complications following intrathecal diamorphine

	Total Hip Replacement		*Spinal Surgery*	
Headache	92	11.1%	14	9.3%
22 s.w.g. needle	93	11.2%	0	—
25 s.w.g. needle	71	8.6%	14	9.3%
Pruritis	32	3.9%	6	4.0%
Retention	175	21.0%	39	26.0%
Nausea/Vomiting	183	22.0%	20	13.3%
Respiratory depression	0	—	0	—
Number of patients	831		150	

TABLE 2

Details of arthroplasty patients

	Males	*Females*
No. of patients	339	492
Average age	66.3 ± 9.7	69.6 ± 10.4
Average weight (kg)	74.1 ± 12.4	63.1 ± 11.6
No analgesia required	47.4%	51.4%
Average duration in remainder (hours)	13.1	11.9

TABLE 3

Details of patients having spinal surgery

	Males	*Females*
No. of patients	83	67
Average age	40.7 ± 11.8	39.9 ± 13.2
Average weight (kg)	75.0 ± 10.9	59.0 ± 14.6
No analgesia required	31%	23%
Average duration in remainder (hours)	12.2	12.4

DISCUSSION

The technique is not without its complications, the most important of which is respiratory depression, either immediate or delayed. That we have not seen this is, we believe, attributable to our strict adherence to the caveats laid down at the start of the investigation.[5] There is presumably a limit to the number of receptors available and, if these are occupied by other analgesics given either pre- or intra-operatively, the diamorphine can only move passively with the circulation of the cerebro-spinal fluid and will eventually reach the receptors around the aqueduct of Sylvius and cause respiratory depression. Excessive dosage should lead theoretically to the same situation. Nausea and vomiting were worrying complications but, with the judicious use of phenothiazine anti-emetics, the incidence has fallen to acceptable levels. The incidence of headache with the fine 25 s.w.g. lumbar needle is also acceptable. Pruritis, almost certainly encephalinergic in origin[6] is rarely troublesome and can be reversed by the use of naloxone but not by anti-histamines. The incidence of urinary retention is difficult to assess, since many of the arthroplasty patients are elderly males, in whom retention is common, whatever the technique.

Perhaps the most dramatic results of the use of intrathecal diamorphine are seen in patients undergoing laminectomy and disc surgery. Many of these patients are up walking about the ward on the second post-operative day, completely pain-free. Orthopaedic surgeons carrying out these operations are in a unique position to use the technique since the meninges are visualised and accurate placing of the opiate is therefore simple. Apart from the obvious advantages of having pain-free patients,

there is evidence — as yet unpublished — that the stress response is modified to a considerable degree and early mobilisation should lower the incidence of deep venous thrombosis.

I wish to record my indebtedness to my orthopaedic surgical colleagues for their co-operation and encouragement in this study and to the nursing staff for their help and vigilance.

REFERENCES

1 Dodson ME. A review of methods for relief of post-operative pain. *Ann R Coll Surg Engl* 1982; **64**: 324.

2 Kay B, Cohen AT. Post-operative pain relief (2): Narcotic analgesics. *Hosp Update* 1983; **9**: 287.

3 Pert CB, Kuhar MJ, Snyder SH. Opiate receptor: autoradiographic localization in rat brain. *Proc Natl Acad Sci USA* 1976; **73**: 3729.

4 Randic M, Miletic M. Effect of substance P in cat dorsal horn neurones activated by noxious stimuli. *Brain Res* 1977; **128**: 164.

5 Barron DW, Strong JE. Post-operative analgesia in major orthopaedic surgery: epidural and intrathecal opiates. *Anaesthesia* 1981; **36**: 937.

6 Scott PV, Fischer HJB. Interspinal opiates and itching: a new reflex. *Br Med J* 1982; **284**: 1015.

HYPONATRAEMIA AND HYPOTHYROIDISM IN THE ELDERLY — A Case Report and Study

by

T. R. O. BERINGER

Department of Geriatric Medicine, The Queen's University of Belfast, and Belfast City Hospital

THE occurrence of hyponatraemia in hypothyroid patients has been well recognised for many years[1] and attributed to impaired water excretion[2] resulting in dilutional hyponatraemia. The cause of this association is not well understood, and has been variously ascribed to relative deficiency of adrenal cortical hormones,[3] altered proximal and distal nephron function,[2, 4] structural renal abnormalities,[5, 6] inappropriate secretion of antidiuretic hormone (ADH),[7, 8] increased renal sensitivity to ADH[9] and binding of water by hydrophilic connective tissue ground substance.[10] A patient with hypothyroidism demonstrating profound hyponatraemia is described, and a study to establish the prevalence of hyponatraemia in a group of elderly hypothyroid subjects is summarised.

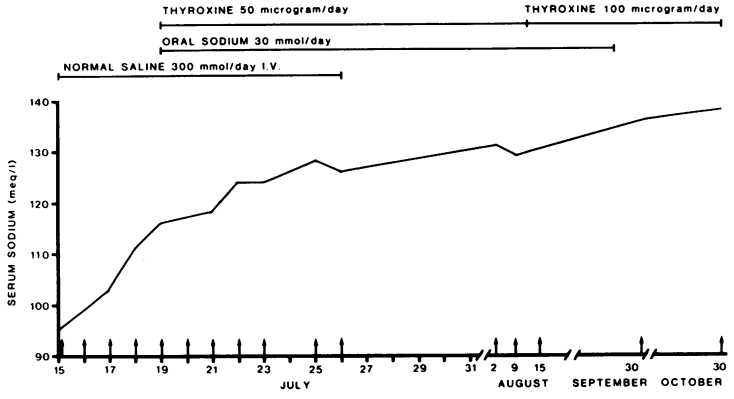
CASE REPORT

A 73-year-old housewife presented with a 2-3 week history of intermittent pain and cramps in the calves: she experienced difficulty in walking, and was reported by relatives to have been increasingly listless and drowsy for several months. She had attended her general practitioner two years previously with headaches, and was prescribed amiloride 5 mg and hydrochlorothiazide 50 mg (Moduretic) daily for hypertension, and advised to avoid adding salt to her diet. This medication was doubled during the week prior to hospital admission. There was no other relevant past medical history or family history. On admission she was drowsy and lethargic with a short attention span, but was fully orientated and responded correctly but slowly to questions when roused. On examination she was neither dehydrated nor oedematous, the oral temperature was 95°F, her skin was pale and facial features puffy but no goitre was palpable. No meningism was elicited, and her speech, visual fields, optic fundi and discs and pupillary reflexes were normal. There was generalised symmetrical muscle weakness, with normal tone and preserved sensation. The tendon reflexes were brisk and easily elicited with a slowed relaxation component. The plantar responses were flexor. Romberg's sign was not present and she was unable to walk unaided due to weakness.

The following investigations were performed:- ESR 23 mm in the first hour, Hb 14.0 g, PCV .45, plasma glucose 6.5 mmol/l, urea 5.4 mmol/l, plasma Na 95 mmol/l, K 3.7 mmol/l, Cl 61 mmol/l, Co_2 25 mmol/l, total protein 75 g/l, serum Ca 2.08 mmol/l and phosphate 0.36 mmol/l. Pseudohyponatraemia was excluded as the calculated expected osmolality and the observed plasma osmolality showed no discrepancy. The Free T_4 was <2 pmol/l, TSH 41 mU/l and thyroid microsomal antibody titre by haemagglutination 25,600, consistent with primary autoimmune hypothyroidism. The 7 am cortisol was 590 nmol/l and the 10 pm cortisol 525 nmol/l. X-rays of the chest and pituitary fossa were normal. Details of the electrolyte concentrations in urine and serum are shown in the Figure.

FIGURE

Clinical and Biochemical Details



SERUM OSMOLALITY	210	247			273		(normal 280-300 mOsm/kg)
URINE OSMOLALITY	188	366			290		(normal 40-1400 mOsm/kg)
URINARY SODIUM	10	96	120		73	144	(mmol/24 hours)
URINARY POTASSIUM	16	59	20		28	58	(mmol/24 hours)
URINARY UREA	66		38			300	(mmol/24 hours)
URINARY PHOSPHATE	9					21 4	(mmol/24 hours)
URINARY VOLUME	1000	1300	1000		1180	1200	(24 hours)
CREATININE CLEARANCE	46				42		(mls/min)

(† indicates days on which sodium was estimated)

In view of the profound hyponatraemia and hypochloraemia, treatment was commenced with intravenous 0.9% saline (two litres daily), and her diuretics were stopped. After biochemical confirmation of hypothyroidism, administration of thyroxine 50 mcg was commenced 4 days following admission in addition to sodium chloride 30 mmol daily. The patient's clinical course was characterised by a fluctuating level of consciousness and the development of mild oedema on the eighth day which resolved following a single intravenous injection of 40 mg of frusemide. By the thirteenth day, the patient's clinical condition was stable and improved; on the fortieth day, the dose of thyroxine was increased to 100 mcg daily. She subsequently made a complete recovery, returning to full independence.

METHODS AND RESULTS

The results of laboratory investigations in the Belfast City Hospital, recorded on computer, were searched over a one-year period to identify patients aged 65 years and over with thyroid function tests consistent with primary hypothyroidism (Free $T_4 \leqslant 8$ pmol/l, TSH $\geqslant 9$ mU/l) and with an accompanying serum electrolyte measurement within a 7-day period. A total of 82 patients were identified (mean age 77.8, range 66-96 years, 72 female, 10 male), of whom 63 had a normal plasma sodium concentration (135-145 mmol/l) and 19 had a plasma sodium concentration less than 135 mmol/l. The mean values of T_4 and TSH are recorded in the Table.

TABLE

Details of Hypothyroid Survey Patients

	No.	*Age* *years* *(range)*	*Plasma Free T_4* *pmol/l* *(range)*	*Plasma TSH* *mU/l* *(range)*	*Plasma Sodium* *mmol/l* *(range)*	*Plasma Potassium* *mmol/l* *(range)*
Patients with normal plasma sodium (5 male, 58 female)	63	77.4 (66-96)	5.5 (1-8)	26.9 (9-65)	139.6 (135-149)	4.0 (2.1-5.7)
Patients with low plasma sodium* (5 male, 14 female)	19	79.2 (67-91)	4.8 (2-8)	30.2 (9-50)	128.4 (95-134)	4.3 (1.7-7.7)

*Plasma sodium less than 110 mmol/l in 1 patient, less than 120 mmol/l in 1 patient, and less than 130 mmol/l in 6 patients.

The records of the 19 patients with hyponatraemia were searched for possible contributing factors, and the following were identified: (1) diuretic therapy, which included frusemide (5 cases), cyclopenthiazide/triamterene (1 case), polythiazide (1 case), bendrofluazide (1 case), spironolactone in addition to frusemide (2 cases); (2) diabetes mellitus (2 cases); (3) chronic renal failure (1 case). No contributing factor other than hypothyroidism was identified in 2 cases.

DISCUSSION

The aetiology of the hyponatraemia in this case report is difficult to unravel. Factors in favour of a depletional cause for the hyponatraemia include the low salt intake, the preceding hot summer weather and the diuretic therapy with hydrochlorothiazide and amiloride promoting sodium loss from the distal tubule. However, the patient was not clinically volume-depleted and there was no elevation of the blood urea or packed cell volume. The presence of satisfactory renal and normal adrenal function without hypotension and oedema would seem to indicate a dilutional hyponatraemia due to water retention. The finding of an appropriately lower urine osmolality than serum osmolality with a low urinary sodium excretion and improvement with fluid replacement with saline rather than fluid restriction is not, however, in keeping with a diagnosis of inappropriate ADH secretion, and suggests a possible structural or functional nephron impairment resulting in water retention. The markedly lowered serum phosphate, which is normally reabsorbed in the proximal tubule, indicates that this may be the site of the renal abnormality, causing an inability to regulate salt and water balance in addition to phosphate, and resulting in dilutional hyponatraemia. Evidence of impaired proximal renal tubular function in hypothyroidism has been described by Derubertis et al,[2] who reported improvement in distal volume delivery and urine flow after the administration of acetazolamide. The history, clinical and laboratory findings suggest that this patient had combined depletional and dilutional hyponatraemia resulting in a plasma sodium of 95 mmol/l, considerably lower than the values recorded in a 25-year

review of hyponatraemia myxoedema cases.[11] Her survival and avoidance of irreversible cerebral oedema and coma supports a slow onset of hyponatraemia allowing homeostatic adjustments to occur, and similarly favours treatment by slow sodium replacement with normal saline rather than vigorous hypertonic saline therapy. While the classical treatment for dilutional hyponatraemia includes fluid restriction, this was considered inappropriate in view of the depletional contribution to the hyponatraemia. Although the serum sodium rose significantly during the initial 4 days of treatment with intravenous saline, this was not accompanied by a dramatic clinical response, and it was not until the thirteenth day after concurrent treatment with thyroxine and sodium that the patient's condition was stable and improved. However, the relative importance of sodium and thyroxine treatment remains conjectural, and it is not possible to confirm the suspected role for thyroxine in the reversal of the biochemical changes.

The survey of 82 elderly hypothyroid patients demonstrated a low plasma sodium in 19 (23%) of cases. Patients with a low plasma sodium had a lower mean Free T_4 concentration (4.8 pmol/l) and higher mean TSH concentration (30.2 mU/l) than the Free T_4 concentration (5.4 pmol/l) and mean TSH concentration (26.9 mU/l) of the patients with a normal plasma sodium concentration. In only 2 of the 19 hyponatraemic patients (11%) was hyponatraemia considered to be a result of hypothyroidism alone, while in 14 of the 19 patients (74%), hyponatraemia was contributed to by diuretic therapy, as has been previously reported.[12, 13] These findings suggest that the combination of diuretic therapy and hypothyroidism may have a synergistic action on the renal tubule in the elderly, often resulting in a low plasma sodium, with its attendant mortality and morbidity.[11, 14]

Diuretics should be used with care in elderly patients with untreated hypothyroidism. However, since hypothyroidism may often be difficult to detect clinically in the elderly and may remain unrecognised, patients should have careful assessment of their thyroid status before attributing hyponatraemia solely to diuretic therapy.

I wish to thank Dr. S. G. Welshman for providing the laboratory results, the physicians and surgeons who allowed access to their patients' records, and Professor R. W. Stout for permission to report the case and for his helpful advice.

REFERENCES

1 Curtis RH. Hyponatraemia in primary myxoedema. *Ann Intern Med* 1956; **44**: 376-385.

2 Derubertis FR, Michelis MF, Bloom ME, Mintz DH, Field JB, Davis BB. Impaired water excretion in myxoedema. *Am J Med* 1971; **51**: 41-53.

3 Vogt JH. Impaired water excretion capacity in primary myxoedema improved by corticosteroids, corticotrophin and thyroid substitution. *Acta Endocrinol* 1960; **35**: 277-284.

4 Discala VA, Kinney MJ. Effects of myxoedema on the renal diluting and concentrating mechanism. *Am J Med* 1971; **50**: 325-335.

5 Salomon MI, Di Scala V, Grishman E, Brener J, Churg J. Renal lesions in hypothyroidism: a study based on kidney biopsies. *Metabolism* 1967; **16**: 846-852.

6 Lebacq EG, Tirzmalis A, Heller F. Mechanism of hyponatraemia in myxoedema. *Ann Endocrinol* (Paris) 1974; **35**: 694-702.

7 Bartter FC, Schwartz WB. The syndrome of Inappropriate Secretion of Antidiuretic Hormone. *Am J Med* 1967; **42**: 790-806.

8 Salomez-Granier F, Lefebvre J, Racadot A, Dewailly D, Linquette M. Plasma antidiuretic hormone (AVP) in patients with myxoedema *Presse Med* 1983; **12**: 1001-1004.

9 Wessen LG. Hormonal influences on renal function. *Ann Rev Med* 1960; **12**: 77-92.

10 Aikawa JK. The nature of myxoedema: alterations in the serum electrolyte concentrations and radiosodium space and in the exchangeable sodium and potassium contents. *Ann Intern Med* 1956; **44**: 30-39.

11 Shalev O, Naparstek Y, Brezis M, Ben-Yishai D. Hyponatraemia in myxoedema: a suggested therapeutic approach. *Israel J Med Sci* 1979; **15**: 913-916.

12 Mataverde AQ, Abbasi AA, Hossain Z, Bissell GW. Hydrochlorothiazide-induced water intoxication in myxoedema. *JAMA* 1974; **230**: 1014-1015.

13 Valiquette G, Pesant P, Matte R. Myxoedema coma and dilutional hyponatraemia. *Union Med Can* 1974; **103**: 1082-1090.

14 Sunderam SG, Mankikar GD. Hyponatraemia in the elderly. *Age and Ageing* 1983; **12**: 77-80.

ISOLATED INJURY TO THE DISTAL RADIOULNAR JOINT
Case Report and Cadaver Study

by

G. F. McCOY,[1] H. K. GRAHAM[2] and D. E. BEVERLAND[3]
The Fracture Unit, The Ulster Hospital, Dundonald, Belfast

INTRODUCTION

Injury to the distal radioulnar joint (DRUJ) is well recognised in association with fractures of the distal radius and ulna. Damage to the articular disc or, more correctly, the triangular fibrocartilage complex of the joint, occurring at the time of injury, is now well recognised as a major cause of persistent symptoms following Colles' fracture.[1] Isolated injury to the distal radioulnar articulation is much less common. It is frequently misdiagnosed and often treated inappropriately, resulting in prolonged disability.[2]

Anterior subluxation of the distal end of the ulna was first described in the English literature by Sir Astley Cooper in 1822 when he reported its presence in a woman who had sustained a supination injury in a riot. He noted the ulna to be unduly prominent at the front of the wrist. Reduction was extremely difficult and was only achieved at the fourth attempt by forceful pronation of the forearm using two assistants and countertraction from a wall! Since then occasional articles and case reports have appeared in the literature,[1, 3, 4, 5, 6] but the injury is rare, and can only be expected to present to an orthopaedic surgeon on average once in his professional lifetime.[3]

Case Report

A 66-year-old woman attended Casualty following a twisting (supination) injury to her left wrist. Following this injury, she was unable to pronate her forearm, and was extremely tender over the distal ulna, which was unduly prominent anteriorly. Radiographs showed the characteristic features of this rare injury (Figure 1) with anterior subluxation of the distal ulna relative to the radius. Under light anaesthesia, reduction was achieved by applying an increasing pronation force to the hand with direct pressure over the distal ulna, until the forearm 'unlocked'. Post-reduction x-rays demonstrated restoration of the normal bony alignment at the wrist. She was immobilised in a long arm plaster cast in pronation for five weeks. After removal of the plaster she was encouraged to mobilise. At last review, four months from the original injury she had regained full forearm rotation with the exception of the last 10° of supination.

Anatomical considerations

To elucidate the mechanism of this injury, we undertook a cadaver dissection. Using a fresh cadaver, we exposed the anterior aspect of the waist and DRUJ. With the anterior capsule and distal radioulnar ligaments intact, supination produced no anterior subluxation of the ulna (Figure 2B). Following section of the anterior

---

[1] Senior Registrar, Fracture Clinic, Royal Victoria Hospital.
[2] Senior Registrar, Withers Orthopaedic Centre, Musgrave Park Hospital.
[3] Research Assistant, Department of Orthopaedic Surgery, Musgrave Park Hospital.

capsule and ligament, supination produced volar subluxation of the ulna preceded by rupture of the triangular fibrocartilage (Figure 2C). The triangular fibrocartilage and its associated structures, the anterior capsule and distal radioulnar ligaments are thus seen to be a stabilising influence on the distal radioulnar articulation.

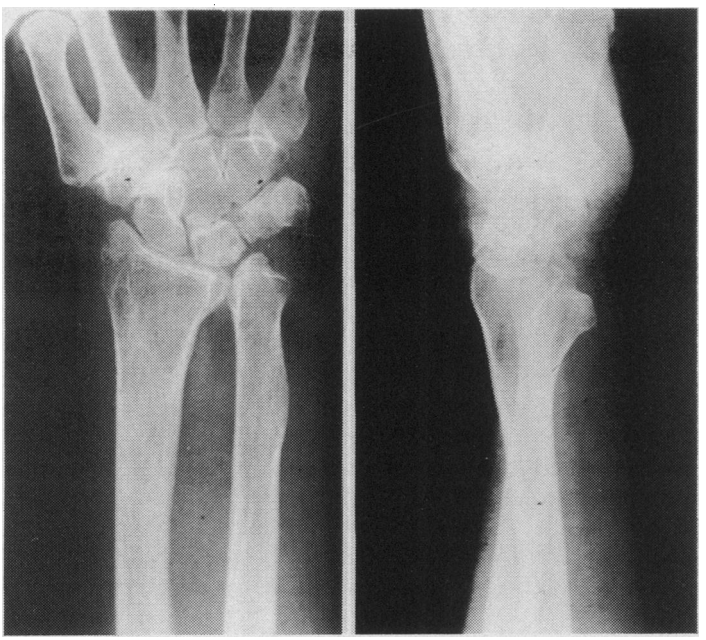


FIGURE 1

AP and lateral radiographs of the wrist showing anterior subluxation of the ulna relative to the radius.

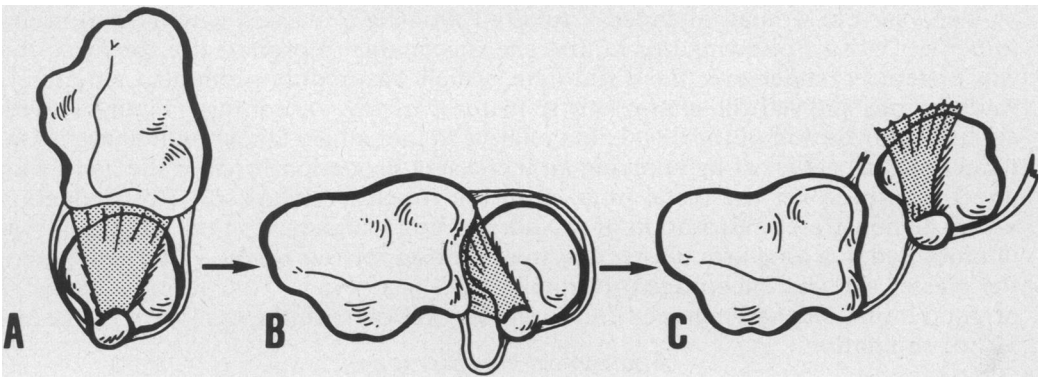


FIGURE 2

Relative positions of the radius and ulna with their associated anterior and posterior ligaments and articular disc in . . .

A *neutral position of the forearm*

B *maximal supination*

C *hypersupination injury with volar subluxation of the ulna.*

DISCUSSION

Isolated injury to the DRUJ is rare. Failure to diagnose it however, and to treat it correctly, leads to serious morbidity. Some authors[6] stress the importance of isolated fracture of the ulnar styloid in alerting the clinician to the possibility of such an injury. Vesely[7] describes, as we have demonstrated in dissection, how rupture of the anterior capsule and ligament allows volar dislocation of the ulna in hypersupination injuries. Interest in these structures (and the articular disc) as integral parts of the DRUJ, and, as causes of persistent symptoms following injury, is increasing.[8] The anatomy and function are however poorly understood, the overall structure being more complex than was previously thought. Palmer and Werner[9] in their excellent paper describe the anatomy and function in great detail. They have coined the term triangular fibrocartilage complex (TFCC) to describe the stabilising structure of the distal radioulnar articulation, namely the triangular cartilage (articular disc) itself, the meniscus homologue, the ulnar collateral ligament, the radioulnar ligaments and the sheath of extensor carpi ulnaris. They relate how the articular disc acts as a cushion for the ulnar carpus by facilitating loading of the ulna in the neutral position of the forearm, and how, as we have already mentioned, it also acts as a major stabiliser of the radioulnar articulation. The articular disc is subject to degenerative change, exhibited by thinning and ultimately perforation of the disc (in between 30[10] and 53%[9] of cases), luno-ulnar abutment, and degeneration of the articular cartilage concerned.[10] Such degeneration may manifest itself as chronic wrist pain (often following an injury such as we have described) for which some have advocated excision of the disc,[1] especially where perforation is arthrographically demonstrated. This procedure, although giving reasonable short-term results, will, according to Palmer and Werner[9] exacerbate the symptoms. The close anatomical relationship between the central (articular) disc and the anterior and posterior distal radioulnar ligaments and capsule, makes removal of one impossible without damage to the other. Such damage may exacerbate instability and accelerate the tendency to degeneration within the joint. A greater understanding of the anatomy and function of the TFCC will undoubtedly lead to increasing efforts towards its repair and preservation rather than excision, thus mirroring the greater conservatism in the treatment of meniscal injuries in the knee joint.

Our thanks to Mr. J. A. Halliday for his permission to report this case, to Mr. Brendan Ellis and Mr. Ronnie Wood for the illustrations and photographs, and to Miss Lily McGuffin for the typing of the manuscript.

REFERENCES

1 Coleman HM. Injuries to the articular disc at the wrist. *J Bone Joint Surg* 1960; **42B**: 522-529.

2 Edmonson AS, Crenshaw AH (eds). Campbell's Operative Orthopaedics. St. Louis: C. V. Mosby 1980: 447.

3 Gibson A. Uncomplicated dislocation of the inferior radioulnar joint. *J Bone Joint Surg* 1925; **B (7)**: 180-189.

4 Rose-Innes AP. Anterior dislocation of the ulna at the inferior radioulnar joint. *J Bone Joint Surg* 1960; **42B**: 515-521.

5 Pezeshki C, Weiland AJ. Bilateral dorsal dislocation of the distal radioulnar joint. *J Trauma* 1978; **18**: 673-676.

6 Morrissy RT, Nalebuff EA. Dislocation of the distal radioulnar joiny: Anatomy and clues to prompt diagnosis. *Clin Orthop* 1979; **144**: 154-158.

7 Vesely DG. The distal radioulnar joint. *Clin Orthop* 1967; **51**: 75-91.

8 Fisk GR. The wrist, Review article. *J Bone Joint Surg* 1984; **66B**: 396-407.

9 Palmer AK, Werner FW. The triangular fibrocartilage complex of the wrist; Anatomy and function. *J Hand Surg* 1981; **6**: 153-162.

10 Mikic ZDL. Age changes in the triangular fibrocartilage of the wrist joint. *J Anat* 1978; **126**: 367-384.

Requests for reprints to G. F. McCoy, F.R.C.S.

Case Report :

MANAGEMENT OF SEVERE THEOPHYLLINE OVERDOSAGE BY CHARCOAL HAEMOPERFUSION

by

A. C. UPRICHARD,[1] R. BAILIE[2] and E. McATEER[3]
Royal Victoria Hospital, Belfast

XANTHINE derivatives are widely used in the treatment of asthma and related conditions and are increasingly implicated in cases of attempted suicide by overdosage. We report the case of a potentially lethal overdose of a long-acting theophylline preparation successfully treated by charcoal haemoperfusion.

A 28-year-old unemployed bar manager presented to the Casualty Department at 4.00 am having consumed fifty 400 mg tablets of a slow-release preparation of theophylline ("Uniphylline" — Napp Laboratories) three hours previously. An asthmatic since childhood, he had been taking 400 mg of this preparation daily for the previous year. There was no past psychiatric history and the taking of the overdose of tablets appeared to be a reactionary gesture following a disagreement with a close friend.

He was fully alert and orientated although nauseated and retching. His pulse was regular (160 per minute), blood pressure 120/70 mmHg. He was not dehydrated and showed no cerebral irritability. ECG showed sinus tachycardia with no other disturbance of rhythm. The stomach was washed out. He was transferred to the Coronary Care Unit for cardiac monitoring. The initial serum theophylline level was greater than 80 mg/L (60 mg/L is accepted as representing severe poisoning[1]). Two hours later this had fallen slightly and it was decided to continue conservative management, but later that morning he developed signs of increasing toxicity with a tachycardia of 200 per minute, and his blood pressure fell to 90/60 mmHg. Five hours after admission, serum theophylline was greater than 120 mg/L and the patient was transferred to the Intensive Care Unit for charcoal haemoperfusion.

Femoral arterial and venous cannulae were inserted and he was started on haemoperfusion through a standard adult haemoperfusion column. He was intubated and ventilated for the duration of the procedure. Constant haemoperfusion was continued for nine hours. During haemoperfusion his platelet count fell to 65,000/uml and he required a transfusion of platelets from six donors. Two short runs of self-terminating ventricular tachycardia occurred early on in the procedure, but otherwise he remained in sinus rhythm throughout. Acid-base and electrolyte status remained normal during this time.

The following morning (24 hours after admission) his theophylline level was within the therapeutic range and he was transferred to a general medical ward and discharged (after phychiatric assessment) three days later.

---

[1] Neurology Registrar, Ward 21. [2] Senior House Officer, Department of Anaesthetics.
[3] Consultant Anaesthetist, Respiratory and Intensive Care Unit.

Theophylline

Theophylline is a xanthine derivative (1, 3 dimethylxanthine) from which a number of long-acting preparations have been derived. Its prime use is in the treatment of asthma and chronic obstructive airways disease, but its pharmacological effects involve a number of other systems of which the cardiac and cerebral are the most important. Even in therapeutic dosage, theophylline toxicity is a relatively common problem although a well-defined plasma level (10-20 mg/L) has been established.[2] The most prominent symptoms of early toxicity are anorexia, nausea, vomiting, insomnia, restlessness and irritability. Signs of severe toxicity include delirium, tachycardia, dehydration, convulsions and coma. Hypotension is a grave prognostic sign.

The treatment of theophylline overdosage has classically been with stomach washout up to four hours after the overdose and with symptomatic management of arrhythmias and convulsions. Haemodialysis or peritoneal dialysis have little to offer, but the introduction of charcoal column haemoperfusion represents a significant advance, and with its use there have been reports of patients surviving with initial levels as high as 190 mg/L.[3]

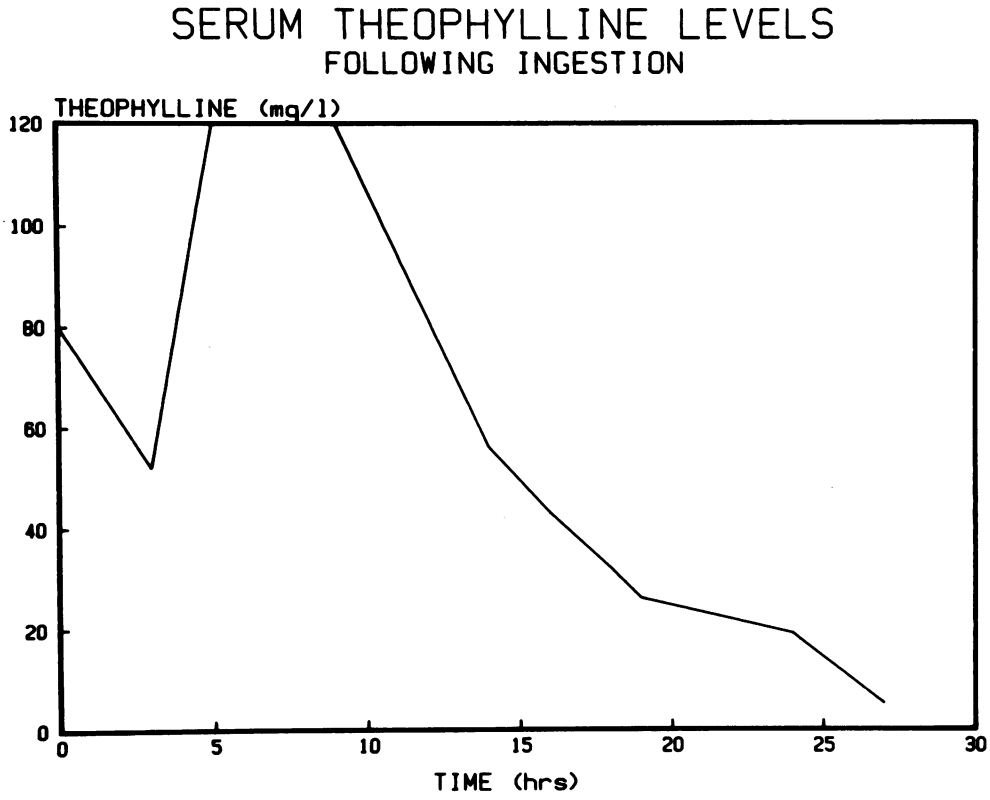
Charcoal Haemoperfusion

Although haemoperfusion was described as a measure of dealing with theophylline overdose as early as 1979,[4] our patient was the first treated by this method in Northern Ireland. Two previous patients referred to this hospital with serum levels of greater than 60 mg/L died from extreme hypotension. We currently use an arterio-venous pump system. After cannulation of the femoral artery and vein, systemic arterial pressure is used to drive blood through the charcoal column, where theophylline adsorption takes place, and the blood is then returned to the patient. Local heparinisation of the column is used to prevent clotting, and is monitored by frequent measurement of activated clotting time. For successful haemoperfusion, a systolic blood pressure of 100 mmHg is required, and this may need to be maintained with volume loading and inotropes. We hope in the near future to change to a synchronised venous pump system which will avoid the need for arterial cannulation and allow haemoperfusion of more hypotensive patients.

A recognised complication of the technique is a fall in the circulating platelet count, which we measure two-hourly during perfusion. A number of explanations have been offered for the thrombo-cytopenia, the most likely being that platelets adhere to the column. This is often a transitory phenomenon, but it is not unusual for platelet transfusion to be required.

COMMENTS

The purpose of presenting this case is to make two points. Firstly, we wish to emphasise the importance of **repeated** serum theophylline levels during the management of theophylline overdosage. Clinical features do not correlate well with the plasma levels and early signs of toxicity may not always be present.[5] The graph shows a biphasic pattern in that the initial fall in theophylline levels was followed by a sudden and potentially lethal rise. This may be due in part to the sustained release of the theophylline preparation, although a delayed secondary rise in theophylline concentration with recurrence of the features of toxicity has been ascribed to compartmental distribution of the drug.[6]



Secondly, the Royal Victoria Hospital Intensive Care Unit would wish physicians throughout the province to be aware of the service now offered for serious overdosages with theophylline levels greater than 60 mg/L. As charcoal haemoperfusion is, at present, technically impossible in the hypotensive patient, we would advocate early referral in all such cases.

Our thanks go to the Biochemistry Department, Royal Victoria Hospital, for their help in supplying quick and accurate theophylline levels throughout the night while our patient was being haemoperfused. Our thanks also to Dr. J. A. Weaver for his assistance and to Miss M. Hazlett and Mrs. M. Loughran for typing the manuscript.

REFERENCES

1 Vale JA, Meredith TJ. Poisoning: diagnosis and treatment. London: Update Books, 1981; 67-68.

2 Mitenko PA, Ogilvie RI. Rational intravenous doses of theophylline. *N Engl J Med* 1973; **289**: 600-603.

3 Ehlers SM, Zaske DE, Sanchuk RJ. Massive theophylline overdose. *JAMA* 1978; **240**: 474-475.

4 Muir KT, Pond SM. Removal of theophylline from the body by haemoperfusion. *Clin Pharmacokinet* 1979; **4**: 320-321.

5 Stirt JA, Sullivan SF. Aminophylline — a review article. *Anesth Analg* (Cleve) 1981; **60**: 587-602.

6 Connell JMC, McGeachie JF, Knepil J, Thomson A, Junor B. Self-poisoning with sustained release aminophylline: secondary rise in serum theophylline concentration after charcoal haemoperfusion. *Br Med J* 1982; **284**: 943.

Case Report :

LHERMITTE'S SIGN AS THE PRESENTING SYMPTOM OF VITAMIN B_{12} DEFICIENCY

by

T. R. O. BERINGER[1] and V. H. PATTERSON[2]

Department of Neurology, Royal Victoria Hospital, Belfast

Vitamin B_{12} deficiency is a potential cause of permanent neurological damage. Early diagnosis and treatment with hydroxocobalamin may reverse the clinical signs and prevent permanent neurological damage.

A 47-year-old garage proprietor presented with a three-month history of numbness and tingling of his feet and subsequently of both hands. These symptoms were accompanied by a sensation of electric shocks in his arms and legs, precipitated by forward flexion of the neck. There was no history of trauma to the cervical spine and he had previously been in good health.

General physical examination was normal. There was no abnormality of the cranial nerves and no limitation of neck movement. No weakness or wasting of the limbs was present. There was no impairment of light touch, pin-prick, joint position, temperature or vibration sense. The plantar responses were flexor, with normal deep tendon reflexes and gait. Investigations revealed haemoglobin 13.6 g/dl, a mean corpuscular volume of 105 fl (normal 80-96) and a white blood cell count of 4.9×10^9/l. The serum folate was 27 nmol/l (normal 4.5-34.0) and the serum vitamin B_{12} by radioisotope assay on three separate occasions 162, 133 and 213 pmol/l (normal 88-664). Bone marrow examination showed the presence of megaloblastic erythropoiesis. X-ray of the cervical spine in flexion showed moderate anterior subluxation of C_4 on C_5 and to a lesser extent C_5 on C_6. A metrizamide myelogram demonstrated only minor disc protrusions at $C_{3/4}$ and $C_{5/6}$. Cerebrospinal fluid cells and protein were normal. The Schilling test confirmed a B_{12} absorption defect which was corrected with intrinsic factor. The serum gastrin was 1050 pg/ml (normal 0-100) in keeping with achlorhydria. Antibodies to gastric parietal cells and intrinsic factor were present. Following treatment with injections of hydroxocobalamin 1 mg daily for seven days and monthly thereafter, the patient's Lhermitte's sign and sensory symptoms resolved completely over the subsequent four months. At follow-up one year later he remains well with a normal mean corpuscular volume of 90 fl.

DISCUSSION

Lhermitte's sign, a sensation of sudden tingling or electric discharge down the spine and limbs on flexion of the neck, was first described following trauma to the head by Marie and Chatelin in 1917,[1] and after trauma to the neck by Babinski and Dubois in 1918.[2] In 1924 Lhermitte et al[3] described a patient with disseminated sclerosis presenting with this symptom, but it was not until 1933 that its occurrence in sub-acute combined degeneration of the spinal cord was reported.[4, 5]

---

[1] Senior Registrar, Geriatric Medical Unit. [2] Consultant Neurologist, Department of Neurology.

It is generally accepted that Lhermitte's sign results from damage to the sensory pathways in the cervical cord and is most commonly found in multiple sclerosis and also in vitamin B_{12} deficiency.[6, 7] The common pathological mechanism of these two conditions is demyelination which has been well described in vitamin B_{12} deficiency.[8] Animal studies confirm that demyelinated axons are stimulated by mechanical deformation.[9] In the human, similar deformation of the cervical cord occurs during neck flexion resulting in excitation of demyelinated axons.

The present case is remarkable in that Lhermitte's sign was encountered without any indications of posterior column disease and with a normal vitamin B_{12} level. We postulate that the moderate co-existant subluxation of the cervical spine during flexion deformed the spinal cord more than usual, and thus generated excitation in only mildly demyelinated sensory neurones. Treatment with vitamin B_{12} reversed the demyelination, resulting in clinical resolution of the dysaesthesia and Lhermitte's sign, despite the persistent bony abnormalities of the cervical spine.

It has been recognised for many years that the neurological complications of vitamin B_{12} deficiency may precede or occur without haematological abnormalities, but it is also becoming apparent that neurological disease may occur with normal vitamin B_{12} levels.[10] This case confirms that a normal vitamin B_{12} level does not exclude vitamin B_{12} deficiency, and demonstrates the importance of proceeding to further investigation including a Schilling test if early diagnosis and treatment are to prevent irreversible neurological damage. Patients presenting with Lhermitte's sign who do not have clear evidence of multiple sclerosis should have vitamin B_{12} deficiency excluded.

REFERENCES

1 Marie P, Chatelin C. Note sur certains symptômes vraisemblablement d'origine radiculaire chez les blessés du crâne. *Rev Neurol* (Paris) 1917; **24**: 143-144.

2 Babinski J, Dubois R. Douleurs à forme de décharge électrique, consécutives aux traumatismes de la nuque. *Presse Med* 1918; **26**: 64.

3 Lhermitte J, Bollak, Nicolas M. Les douleurs à type de décharge électrique consécutives à la flexion céphalique dans la sclérose en plaques. Un cas de forme sensitive de la sclérose multiple. *Rev Neurol* (Paris) 1924; **31**: 56-62.

4 Hassin GB. Paraplegia in flexion and the symptom of Lhermitte. *Arch Neurol Psychiatry* 1933; **29**: 855-861.

5 Olkon DM. Subacute combined degeneration of the spinal cord with the symptom of Lhermitte in "pernicious anemia", and a report of a case. *J Nerv Ment Dis* 1933; **77**: 256-258.

6 Gautier-Smith PC. Lhermitte's sign in subacute combined degeneration of the cord. *J Neurol Neurosurg Psychiatry* 1973; **36**: 861-863.

7 Kanchandani R, Howe JG. Lhermitte's sign in multiple sclerosis: a clinical survey and review of the literature. *J Neurol Neurosurg Psychiatry* 1982; **45**: 308-312.

8 Pant SS, Asbury AK, Richardson EP. The myelopathy of pernicious anemia. A neuropathological reappraisal. *Acta Neurol Scand* 1968; **44** (Suppl 35): 2-36.

9 Smith KJ, McDonald WI. Spontaneous and mechanically evoked activity due to central demyelinating lesion. *Nature* 1980; **286**: 154-155.

10 Cooper BA, Whitehead VM. Evidence that some patients with pernicious anemia are not recognised by radiodilution assay for cobalamin in serum. *N Engl J Med* 1978; **299**: 816-818.

Case Report :
AORTOCAVAL COMPRESSION SECONDARY TO AN OVARIAN CYST

by

K. R. MILLIGAN,[1] P. G. LOUGHRAN,[2] J. A. MOORE,[3] P. WEIR [4]

Department of Anaesthetics, Belfast City Hospital, Belfast

SUPINE hypotension is a common complication of late pregnancy and is due to the compression of the abdominal aorta and inferior vena cava between the spine and the gravid uterus.[1] Tilting the patient to the left or right displaces the uterus and relieves the pressure on the major vessels. A case is reported where this manoeuvre failed.

The patient was a healthy 29-year-old primigravida, weighing 63 kg, who was referred to the antenatal clinic with 12 weeks' amenorrhoea. She refused pelvic examination, but an ultrasonic scan confirmed a singleton pregnancy.

No ovarian or other pelvic abnormality was observed. The pregnancy was uneventful apart from a persistent breech presentation. At 42 weeks' gestation it was decided to deliver the patient by elective lower uterine segment Caesarean section under epidural anaesthesia because of the breech presentation and large fetus. Pelvic examination prior to delivery was otherwise unremarkable.

Ranitidine 150 mg was given orally as routine antacid treatment. Vascular preloading was with 1.0 litres of Hartmann's solution, and throughout this process the patient received 40% oxygen in air via a face mask. The epidural space was cannulated at L2-3 and correct placement of the catheter was confirmed with 3 ml of 0.5% bupivacaine plain. A further 10 ml was injected with the patient sitting upright, followed 10 minutes later by 9 ml with her supine and tilted 15 degrees to the left.

Pinprick testing revealed a sensory block to the T5 dermatome on the left and to the T10 on the right. A 15 degree right lateral tilt was then instituted to displace the uterus, and a further 4 ml of bupivicaine was administered, giving a total dose of 130 mg.

Within a minute of being tilted to the right, the patient developed pallor and complained of feeling 'sick and dizzy'. Her blood pressure, which had been satisfactory at 140/90 mm Hg during the earlier period of left lateral tilt, fell to 90/60 mm Hg. The pulse rate decreased from 90 to 74 beats per minute. Further manual displacement of the uterus to the right failed to relieve the situation.

The patient was then quickly tilted to the left with immediate improvement in colour and symptoms, the blood pressure returning to 130/80 mm Hg.

---

[1] Senior House Officer, [2] Senior Registrar, [3] Consultant Anaesthetist, [4] Senior Registrar, Obstetrics

Adequate block developed without further adjustments, and a healthy male child was delivered with 1 and 5 minute Apgar scores of 7 and 9 respectively. Intra-operatively a ten centimetre diameter right ovarian cyst was found encased in dense fibrous adhesions and intimately adherent to the right uterine cornu and Fallopian tube. The left ovary and Fallopian tube were completely obscured by dense adhesions. To minimise further tubo-ovarian damage, simple aspiration of the cyst was performed, yielding 500 ml of clear fluid which subsequently showed no cytological abnormality. At follow-up the cyst had not recurred.

DISCUSSION

Supine hypotension is more common in patients receiving epidural anaesthesia than in those given a general anaesthetic for Caesarean delivery. To diminish its frequency and severity, adequate fluid preloading and lateral tilting are essential parts of its management.[2] It has been shown that, despite these measures, hypotension can still occur and is more frequent if right lateral tilt is used.[3] The abrupt fall in blood pressure with associated symptoms of nausea and faintness which presented here, occurred only when the patient was in the right lateral position and did not respond to right manual uterine displacement, because the available intra-abdominal space was occupied by the cyst, preventing movement of the uterus with resultant aortocaval compression.

A similar episode of acute hypotension has been reported,[4] associated with epidural anaesthesia for Caesarean delivery, but in that case the associated abnormality was a bicornuate uterus. It is worth remembering therefore that parturients given epidural anaesthesia who develop hypotension unresponsive to uterine displacement may have space occupying abdominal pathology and the opposite lateral tilt should be instituted immediately.

We wish to thank Professor G. Harley for permission to report this case.

REFERENCES

1 Scott DB. Inferior vena caval occlusion in late pregnancy, and its importance in anaesthesia. *Br J Anaesth* 1968; **40**: 120-128.

2 Crawford JS. Obstetric analgesia and anaesthesia. Edinburgh: Churchill-Livingstone, 1982: 97-99.

3 Buley RJR, Downing JW, Brock-Utne JG, Cuerden C. Right versus left lateral tilt for Caesarean section. *Br J Anaesth* 1977; **49**: 1009-1015.

4 Magee DA. Bicornuate uterus and aortocaval compression. *Anaesthesia* 1983; **38**: 352-354.

BOOK REVIEWS

CLINICS IN ENDOCRINOLOGY AND METABOLISM NOVEMBER 1983. Neuroendocrinology, Vol. 12 No. 3. Edited by M. F. Scanlon. (Pp 858. Illustrated. £12.50). London, Philadelphia, Toronto: W. B. Saunders Company Ltd., 1983.

CLINICS in Endocrinology and Metabolism is now a well established review series for those interested in the specialty, and also for any clinician who might want to review in depth a particular aspect of endocrine patient management.

This particular edition is edited by Dr. Maurice Scanlon of Cardiff, a well-known figure in the field, and provides a reasonably comprehensive update of recent progress in neuroendocrinology. Among the chapter topics are the investigation of hypothalmic pituitary disease, current approaches to radiology of the region and medical and surgical management of pituitary adenomas. There is also a chapter on hyperprolactinaemia. The physiology and pathophysiology of gonadotrophin releasing hormone, corticotrophin releasing factor and growth hormone releasing factor and their clinical use are also covered, but it is not surprising that already these review chapters are being left behind by the current explosion of literature on these particular topics.

There are some surprising statements and omissions, eg. the statement that the presence of a normal diurnal rhythm virtually rules out a diagnosis of Cushing's Syndrome. In the radiology chapter it is surprising that no mention is made of possible side-effects of repeated CT scanning, nor is any guidance given as to how frequently this may safely be repeated.

In summary this is an enjoyable book to read, and is a good source of review articles and of references. It will not quite satisfy the requirements of those who want to be totally abreast of the most recent developments in a rapidly evolving area of endocrinology.

ABA

A PHOTOGRAPHIC QUIZ IN MEDICINE. By P. Ebden, M. A. N. Reiris and M. J. Dew. (Pp 212. Illustrated. £9.00). London: Lloyd-Luke, 1984.

THIS book contains a selection of 106 medical photographs arranged in quiz form. The authors hope that it will be of use to all students of medicine, but it is those taking the MRCP (UK) Part 2 written examination who will find it most useful, since the format is similar to the slide recognition section of this examination. The questions are generally too difficult for undergraduate students.

The photographic reproductions are of a high quality and a good range of conditions is represented. Inevitably in a book of this type there is a bias towards dermatology; perhaps a few more neurological or classical endocrine disorders would provide a better balance.

I would recommend that membership candidates spend a couple of evenings reading this book before the examination; for such brief usage they may well be satisfied to economise by borrowing a copy from the library.

PMB

TISSUE GROWTH FACTORS. Edited by William H. Daughaday. Clinics in Endocrinology and Metabolism, Vol. 13, No. 1. (Pp 229. £12.50). London: Saunders, 1984.

THIS Volume sees *Clinics in Endocrinology and Metabolism* enter its thirteenth year. Any sub-specialty review series like this will inevitably include some volumes with wide appeal and which are of value to the general physician, and others whose readership is more likely to be limited to those in the specialty. The current volume is certainly in the latter category, and is likely to be of greater interest to academic rather than to purely clinical endocrinologists, if such a distinction is valid. The editor is no doubt correct when he states that study of tissue growth factors is beginning to affect clinical thinking, but I cannot agree that it is yet beginning to affect clinical practice.

BOOK REVIEWS

CLINICS IN ENDOCRINOLOGY AND METABOLISM NOVEMBER 1983. Neuroendocrinology, Vol. 12 No. 3. Edited by M. F. Scanlon. (Pp 858. Illustrated. £12.50). London, Philadelphia, Toronto: W. B. Saunders Company Ltd., 1983.

CLINICS in Endocrinology and Metabolism is now a well established review series for those interested in the specialty, and also for any clinician who might want to review in depth a particular aspect of endocrine patient management.

This particular edition is edited by Dr. Maurice Scanlon of Cardiff, a well-known figure in the field, and provides a reasonably comprehensive update of recent progress in neuroendocrinology. Among the chapter topics are the investigation of hypothalmic pituitary disease, current approaches to radiology of the region and medical and surgical management of pituitary adenomas. There is also a chapter on hyperprolactinaemia. The physiology and pathophysiology of gonadotrophin releasing hormone, corticotrophin releasing factor and growth hormone releasing factor and their clinical use are also covered, but it is not surprising that already these review chapters are being left behind by the current explosion of literature on these particular topics.

There are some surprising statements and omissions, eg. the statement that the presence of a normal diurnal rhythm virtually rules out a diagnosis of Cushing's Syndrome. In the radiology chapter it is surprising that no mention is made of possible side-effects of repeated CT scanning, nor is any guidance given as to how frequently this may safely be repeated.

In summary this is an enjoyable book to read, and is a good source of review articles and of references. It will not quite satisfy the requirements of those who want to be totally abreast of the most recent developments in a rapidly evolving area of endocrinology.

ABA

A PHOTOGRAPHIC QUIZ IN MEDICINE. By P. Ebden, M. A. N. Reiris and M. J. Dew. (Pp 212. Illustrated. £9.00). London: Lloyd-Luke, 1984.

THIS book contains a selection of 106 medical photographs arranged in quiz form. The authors hope that it will be of use to all students of medicine, but it is those taking the MRCP (UK) Part 2 written examination who will find it most useful, since the format is similar to the slide recognition section of this examination. The questions are generally too difficult for undergraduate students.

The photographic reproductions are of a high quality and a good range of conditions is represented. Inevitably in a book of this type there is a bias towards dermatology; perhaps a few more neurological or classical endocrine disorders would provide a better balance.

I would recommend that membership candidates spend a couple of evenings reading this book before the examination; for such brief usage they may well be satisfied to economise by borrowing a copy from the library.

PMB

TISSUE GROWTH FACTORS. Edited by William H. Daughaday. Clinics in Endocrinology and Metabolism, Vol. 13, No. 1. (Pp 229. £12.50). London: Saunders, 1984.

THIS Volume sees *Clinics in Endocrinology and Metabolism* enter its thirteenth year. Any sub-specialty review series like this will inevitably include some volumes with wide appeal and which are of value to the general physician, and others whose readership is more likely to be limited to those in the specialty. The current volume is certainly in the latter category, and is likely to be of greater interest to academic rather than to purely clinical endocrinologists, if such a distinction is valid. The editor is no doubt correct when he states that study of tissue growth factors is beginning to affect clinical thinking, but I cannot agree that it is yet beginning to affect clinical practice.

BOOK REVIEWS

CLINICS IN ENDOCRINOLOGY AND METABOLISM NOVEMBER 1983. Neuroendocrinology, Vol. 12 No. 3. Edited by M. F. Scanlon. (Pp 858. Illustrated. £12.50). London, Philadelphia, Toronto: W. B. Saunders Company Ltd., 1983.

CLINICS in Endocrinology and Metabolism is now a well established review series for those interested in the specialty, and also for any clinician who might want to review in depth a particular aspect of endocrine patient management.

This particular edition is edited by Dr. Maurice Scanlon of Cardiff, a well-known figure in the field, and provides a reasonably comprehensive update of recent progress in neuroendocrinology. Among the chapter topics are the investigation of hypothalmic pituitary disease, current approaches to radiology of the region and medical and surgical management of pituitary adenomas. There is also a chapter on hyperprolactinaemia. The physiology and pathophysiology of gonadotrophin releasing hormone, corticotrophin releasing factor and growth hormone releasing factor and their clinical use are also covered, but it is not surprising that already these review chapters are being left behind by the current explosion of literature on these particular topics.

There are some surprising statements and omissions, eg. the statement that the presence of a normal diurnal rhythm virtually rules out a diagnosis of Cushing's Syndrome. In the radiology chapter it is surprising that no mention is made of possible side-effects of repeated CT scanning, nor is any guidance given as to how frequently this may safely be repeated.

In summary this is an enjoyable book to read, and is a good source of review articles and of references. It will not quite satisfy the requirements of those who want to be totally abreast of the most recent developments in a rapidly evolving area of endocrinology.

ABA

A PHOTOGRAPHIC QUIZ IN MEDICINE. By P. Ebden, M. A. N. Reiris and M. J. Dew. (Pp 212. Illustrated. £9.00). London: Lloyd-Luke, 1984.

THIS book contains a selection of 106 medical photographs arranged in quiz form. The authors hope that it will be of use to all students of medicine, but it is those taking the MRCP (UK) Part 2 written examination who will find it most useful, since the format is similar to the slide recognition section of this examination. The questions are generally too difficult for undergraduate students.

The photographic reproductions are of a high quality and a good range of conditions is represented. Inevitably in a book of this type there is a bias towards dermatology; perhaps a few more neurological or classical endocrine disorders would provide a better balance.

I would recommend that membership candidates spend a couple of evenings reading this book before the examination; for such brief usage they may well be satisfied to economise by borrowing a copy from the library.

PMB

TISSUE GROWTH FACTORS. Edited by William H. Daughaday. Clinics in Endocrinology and Metabolism, Vol. 13, No. 1. (Pp 229. £12.50). London: Saunders, 1984.

THIS Volume sees *Clinics in Endocrinology and Metabolism* enter its thirteenth year. Any sub-specialty review series like this will inevitably include some volumes with wide appeal and which are of value to the general physician, and others whose readership is more likely to be limited to those in the specialty. The current volume is certainly in the latter category, and is likely to be of greater interest to academic rather than to purely clinical endocrinologists, if such a distinction is valid. The editor is no doubt correct when he states that study of tissue growth factors is beginning to affect clinical thinking, but I cannot agree that it is yet beginning to affect clinical practice.

This is a valuable reference book for those working in this field, and the nine chapters seem to cover the subject comprehensively without too much overlap. In some of the chapters I found that the style of referencing (authors' names and date, as opposed to a numerical reference) tended to interrupt the flow of the text, particularly where this was of a technical nature and contained numerous abbreviations. Despite this minor criticism, I would commend the editor and the authors for presenting this subject in such a way that it will appeal to 'the experts', while also being made comprehensible to those who may be unfamiliar with the concept of growth factors.

LK

BAILLIÈRE'S ABBREVIATIONS IN MEDICINE. By Edwin B. Steen. 5th Edition. (Pp 256. £3.75). London: Baillière Tindall, 1984.

THIS book takes itself seriously. It lists over 15,000 medical and related abbreviations. The blurb says it 'should find a place on the desk of everyone'. The author, Edwin B. Steen (EBS), a Professor Emeritus of Anatomy (PEA), claims that the *Dictionary of Abbreviations in Medicine* (DAM — this one is really listed) was written 'to introduce a measure of standardisation into an otherwise chaotic field'. He has certainly exposed the field, unploughed, boulder-strewn and perhaps a little arid. But there is a fascination about it. There is a mesmeric appeal in the 51 potential meanings of the innocent capital letter P, and in the fact that AA can range over subjects as disparate as Alcoholics Anonymous and the Association of Anaesthetists — well, perhaps they are not so very far apart. It's splendid to see that virtually the same condition can be COAD, COPD, COLD (chronic obstructive airway, pulmonary or lung disease) or COPE (chronic obstructive pulmonary emphysema), and that the Master of Science's mitral stenosis may be the Master of Surgery's medical survey of multiple sclerosis, modal sensitivity or the Mongolian Spot.

There are instances of duplication of non-medical abbreviations — BBC (brombenzylcyanide), IRA (immunoreactive alpha globulin) — there is no UVF. Be wary about calling your ageing relative an OAP; there might be some confusion with the Office of Adolescent Pregnancy. Though some of the abbreviations are almost unpronounceable, some read easily. There is a vocal resonance about CURN, BAB, GARP, FUB, HEK and ERF, only bettered by the onomatopaeic and expressive CWOP (childbirth without pain). I also liked CARF, BIGGY and BLOT and I enjoyed meeting EDNA, ELISA, DAD and BESS.

Should you buy this little paperback? Why not. It's only £3.75, cheaper and probably less harmful than four packets of cigarettes and there are more laughs than you'll get out of Cecil's *Textbook of Medicine* or *MIMS*.

NPSC

BAILLIÈRE'S CONCISE MEDICAL TEXTBOOKS — RHEUMATOLOGY. By David M. Grennan. (Pp 231. Tables, Illustrations. £5.95). London: Baillière Tindall, 1984.

IN 1983 PHN Wood and EM Bradley produced a report on the availability of rheumatological specialists (*If you've got arthritis—expert advice is badly needed,* London: Arthritis and Rheumatism Council). As if in response to this request to improve medical education in rheumatology, a number of similar publications have now appeared. This book deals with the clinical examination, diagnosis and management of common and some not so common rheumatic diseases. It is not outstandingly good or bad amongst the others. It is certainly readable, even discursive. It is well produced and competitively priced. Diagrams and radiographs are clearly reproduced and helpful, and there are useful tables, though the monochrome photographs add little.

Whether it is 'comprehensive and suitable for both medical students and candidates preparing for MRCP' I doubt. It is perhaps this lack of a clear purpose that has led to an imbalance between sections, and there are occasional frustrations due to omissions of details in differential diagnoses. Perhaps the book best fills one space on the bookshelf of the generalist who wishes to keep in touch, but in this case he will find that the list of NSAIDs has been overtaken by recent events.

SDR

This is a valuable reference book for those working in this field, and the nine chapters seem to cover the subject comprehensively without too much overlap. In some of the chapters I found that the style of referencing (authors' names and date, as opposed to a numerical reference) tended to interrupt the flow of the text, particularly where this was of a technical nature and contained numerous abbreviations. Despite this minor criticism, I would commend the editor and the authors for presenting this subject in such a way that it will appeal to 'the experts', while also being made comprehensible to those who may be unfamiliar with the concept of growth factors.

LK

BAILLIÈRE'S ABBREVIATIONS IN MEDICINE. By Edwin B. Steen. 5th Edition. (Pp 256. £3.75). London: Baillière Tindall, 1984.

THIS book takes itself seriously. It lists over 15,000 medical and related abbreviations. The blurb says it 'should find a place on the desk of everyone'. The author, Edwin B. Steen (EBS), a Professor Emeritus of Anatomy (PEA), claims that the *Dictionary of Abbreviations in Medicine* (DAM — this one is really listed) was written 'to introduce a measure of standardisation into an otherwise chaotic field'. He has certainly exposed the field, unploughed, boulder-strewn and perhaps a little arid. But there is a fascination about it. There is a mesmeric appeal in the 51 potential meanings of the innocent capital letter P, and in the fact that AA can range over subjects as disparate as Alcoholics Anonymous and the Association of Anaesthetists — well, perhaps they are not so very far apart. It's splendid to see that virtually the same condition can be COAD, COPD, COLD (chronic obstructive airway, pulmonary or lung disease) or COPE (chronic obstructive pulmonary emphysema), and that the Master of Science's mitral stenosis may be the Master of Surgery's medical survey of multiple sclerosis, modal sensitivity or the Mongolian Spot.

There are instances of duplication of non-medical abbreviations — BBC (brombenzylcyanide), IRA (immunoreactive alpha globulin) — there is no UVF. Be wary about calling your ageing relative an OAP; there might be some confusion with the Office of Adolescent Pregnancy. Though some of the abbreviations are almost unpronounceable, some read easily. There is a vocal resonance about CURN, BAB, GARP, FUB, HEK and ERF, only bettered by the onomatopaeic and expressive CWOP (childbirth without pain). I also liked CARF, BIGGY and BLOT and I enjoyed meeting EDNA, ELISA, DAD and BESS.

Should you buy this little paperback? Why not. It's only £3.75, cheaper and probably less harmful than four packets of cigarettes and there are more laughs than you'll get out of Cecil's *Textbook of Medicine* or *MIMS*.

NPSC

BAILLIÈRE'S CONCISE MEDICAL TEXTBOOKS — RHEUMATOLOGY. By David M. Grennan. (Pp 231. Tables, Illustrations. £5.95). London: Baillière Tindall, 1984.

IN 1983 PHN Wood and EM Bradley produced a report on the availability of rheumatological specialists (*If you've got arthritis—expert advice is badly needed,* London: Arthritis and Rheumatism Council). As if in response to this request to improve medical education in rheumatology, a number of similar publications have now appeared. This book deals with the clinical examination, diagnosis and management of common and some not so common rheumatic diseases. It is not outstandingly good or bad amongst the others. It is certainly readable, even discursive. It is well produced and competitively priced. Diagrams and radiographs are clearly reproduced and helpful, and there are useful tables, though the monochrome photographs add little.

Whether it is 'comprehensive and suitable for both medical students and candidates preparing for MRCP' I doubt. It is perhaps this lack of a clear purpose that has led to an imbalance between sections, and there are occasional frustrations due to omissions of details in differential diagnoses. Perhaps the book best fills one space on the bookshelf of the generalist who wishes to keep in touch, but in this case he will find that the list of NSAIDs has been overtaken by recent events.

SDR

This is a valuable reference book for those working in this field, and the nine chapters seem to cover the subject comprehensively without too much overlap. In some of the chapters I found that the style of referencing (authors' names and date, as opposed to a numerical reference) tended to interrupt the flow of the text, particularly where this was of a technical nature and contained numerous abbreviations. Despite this minor criticism, I would commend the editor and the authors for presenting this subject in such a way that it will appeal to 'the experts', while also being made comprehensible to those who may be unfamiliar with the concept of growth factors.

LK

BAILLIÈRE'S ABBREVIATIONS IN MEDICINE. By Edwin B. Steen. 5th Edition. (Pp 256. £3.75). London: Baillière Tindall, 1984.

THIS book takes itself seriously. It lists over 15,000 medical and related abbreviations. The blurb says it 'should find a place on the desk of everyone'. The author, Edwin B. Steen (EBS), a Professor Emeritus of Anatomy (PEA), claims that the *Dictionary of Abbreviations in Medicine* (DAM — this one is really listed) was written 'to introduce a measure of standardisation into an otherwise chaotic field'. He has certainly exposed the field, unploughed, boulder-strewn and perhaps a little arid. But there is a fascination about it. There is a mesmeric appeal in the 51 potential meanings of the innocent capital letter P, and in the fact that AA can range over subjects as disparate as Alcoholics Anonymous and the Association of Anaesthetists — well, perhaps they are not so very far apart. It's splendid to see that virtually the same condition can be COAD, COPD, COLD (chronic obstructive airway, pulmonary or lung disease) or COPE (chronic obstructive pulmonary emphysema), and that the Master of Science's mitral stenosis may be the Master of Surgery's medical survey of multiple sclerosis, modal sensitivity or the Mongolian Spot.

There are instances of duplication of non-medical abbreviations — BBC (brombenzylcyanide), IRA (immunoreactive alpha globulin) — there is no UVF. Be wary about calling your ageing relative an OAP; there might be some confusion with the Office of Adolescent Pregnancy. Though some of the abbreviations are almost unpronounceable, some read easily. There is a vocal resonance about CURN, BAB, GARP, FUB, HEK and ERF, only bettered by the onomatopaeic and expressive CWOP (childbirth without pain). I also liked CARF, BIGGY and BLOT and I enjoyed meeting EDNA, ELISA, DAD and BESS.

Should you buy this little paperback? Why not. It's only £3.75, cheaper and probably less harmful than four packets of cigarettes and there are more laughs than you'll get out of Cecil's *Textbook of Medicine* or *MIMS*.

NPSC

BAILLIÈRE'S CONCISE MEDICAL TEXTBOOKS — RHEUMATOLOGY. By David M. Grennan. (Pp 231. Tables, Illustrations. £5.95). London: Baillière Tindall, 1984.

IN 1983 PHN Wood and EM Bradley produced a report on the availability of rheumatological specialists (*If you've got arthritis—expert advice is badly needed,* London: Arthritis and Rheumatism Council). As if in response to this request to improve medical education in rheumatology, a number of similar publications have now appeared. This book deals with the clinical examination, diagnosis and management of common and some not so common rheumatic diseases. It is not outstandingly good or bad amongst the others. It is certainly readable, even discursive. It is well produced and competitively priced. Diagrams and radiographs are clearly reproduced and helpful, and there are useful tables, though the monochrome photographs add little.

Whether it is 'comprehensive and suitable for both medical students and candidates preparing for MRCP' I doubt. It is perhaps this lack of a clear purpose that has led to an imbalance between sections, and there are occasional frustrations due to omissions of details in differential diagnoses. Perhaps the book best fills one space on the bookshelf of the generalist who wishes to keep in touch, but in this case he will find that the list of NSAIDs has been overtaken by recent events.

SDR

THE HISTORY OF MEDICINE IN IRELAND. By John F. Fleetwood. Second Edition. (Pp xii + 373. Illustrated. £15). Dublin: Skellig Press, 1983.

A PORTRAIT OF IRISH MEDICINE. Edited by Eoin O'Brien. (Pp xv + 307; 276 illustrations. £45). Swords (Co. Dublin): Ward River Press.

TO judge by the many histories of hospitals and other medical institutions and the medical biographies that have been written, doctors are foremost among devotees of the Muse of History. The latest evidence of this is afforded by the two books which are the subject of this review.

The first to appear, *The History of Medicine in Ireland,* is the second edition of the book; the first was published in 1951. Fleetwood has covered the history of medicine in Ireland, north and south, from the pre-Christian era to the 20th century.

It is inevitable that the medical institutions and personalities of Dublin should occupy nearly the whole of the book, and this reviewer must confess almost total ignorance of the Dublin medical scene. It was not always so, for as late as the early years of the present century there was a close connection between the Dublin and Belfast Medical Schools. Most medical students in Queen's College, Belfast, sat their examinations in Dublin, and many studied in Dublin hospitals. With the establishment of the Queen's University of Belfast all that changed.

What then of the chapter on Belfast medicine? Within the small space devoted to it Fleetwood has succeeded in presenting a good account of hospital development in Belfast since the opening of the Belfast Fever Hospital in 1797, the direct ancestor of the Royal Victoria Hospital. Accompanying this is an account of the Belfast Medical School from its foundation in the Royal Belfast Academical Institution in 1835.

There is mention also of other hospitals in Belfast and elsewhere in Northern Ireland in considerable detail. An example is the statement that John H. Maconchy of the Infirmary in Downpatrick was the first Irish surgeon to report on the use of Lister's antiseptic method.

Space has also been found for a brief account of Belfast medical societies since 1806 and of the occasions when the British Medical Association held its annual meeting in Ireland. The list of these occasions ends with the Belfast meeting in 1937 but fails to include the Belfast meeting in 1962 during the presidency of Sir Ian Fraser.

In the chapter on the 20th century, Lady Aberdeen's crusade against tuberculosis in Ireland attracts attention but there is not a word about the establishment of the Northern Ireland Tuberculosis Authority in 1946 — an unique body which met with much success. Neither is there any mention of the coming of the National Health Service in 1948. These important events should find a place in a book which aims to cover the whole of Ireland.

The text is accompanied by 21 black and white illustrations. The bibliography is extensive, and it will be found to be a useful guide to any who desire to study further the history of medicine in Ireland.

A Portrait of Irish Medicine commemorates the two hundredth anniversary of the Royal College of Surgeons in Ireland. It is a most handsome, lavishly illustrated volume which amply fulfils the hope of its begetters that 'through this illustrated history, which joins the heritage of medicine with that of art, we have produced a humble but fitting tribute to such a great occasion'.

Five medical men and two art historians have contributed the various chapters of the book. The longest chapter (written by the Professor of the History of Art in Trinity College, Dublin) is devoted to medical portraiture (paintings, sculpture and metals). It covers three centuries. Appended are biographical notes of the subjects and a guide to the whereabouts of the paintings and sculptures. Those depicted are mostly Dublin and Belfast doctors.

Accuracy in detail is essential in any historical work. It is lacking here. Two of the portraits are located in the "Belfast Institute". This name is unknown to me. Some portraits are located in the rooms of the Ulster Medical Society, which I cannot recollect seeing there. A.G. Malcolm becomes 'A.S.', and many portraits are located in the Royal Victoria Hospital which are in the adjacent Clinical Institute of the Queen's University or even in another hospital.

It is stated in the text that the Belfast surgeon, James Moore, who was an accomplished landscape painter 'unfortunately never attempted medical subjects' when in fact he illustrated a textbook of surgery. The general reader will not be aware of this unless he reads the notes at the end of the book. And to mention what may or may not be trifles — it is ironic that Andrew Fullerton has been given the title 'Sir' 50 years after his death, which he earned but was not given during his life. Again, William MacCormac's title has been taken from him and conferred on his father Henry.

The decline in the intimacy between Dublin and Belfast medicine which I have referred to earlier is also mentioned in the chapter 'Medicine in Ulster' by the President and Vice-Chancellor of the Queen's University who describes how the Belfast School of Medicine 'grew increasingly remote from the other provinces in Ireland . . . ' This chapter provides a worthwhile account of the Belfast school (or schools) of medicine over the last 200 years.

If the Dublin chapters are as good as the Belfast chapter (which the present reviewer cannot well judge) the whole book is a most valuable contribution to the history of medicine and art in Ireland.

The illustrations are superb and judged by their resemblance to those portraits with which I am familiar, the colour reproductions are of the highest quality. I regret that the original bust of James McDonnell, the foremost of the founders of the Belfast Medical School, was not photographed for the book. The bronze cast of the bust was used instead with a poor result which entirely fails to portray the lively face of McDonnell.

All those concerned in the writing, the photography and the production of the book are to be congratulated on a highly meritorious performance.

HGC

(Originally published in *The Linen Hall Review,* Vol. 1, No. 2, 1984)

HUTCHISON'S CLINICAL METHODS. By Michael Swash and Stuart Mason. 18th Edition. (Pp 502. Figures, Illustrations. £5.50). London: Baillière Tindall, 1984.

SINCE 1897, successive editions of Hutchison's *Clinical methods* have attempted to provide students at the introductory stage of their clinical studies with an account of accepted practice in history-taking and eliciting physical signs. The first of these subjects is excellently covered in just 24 pages in this new 18th edition with a full and systematic approach to history-taking — although in this liberal age the whole of venerology surely cannot be summed up in an exhortation to include a tactful enquiry about venereal disease. This history-taking section has been supplemented and much improved by the completely new 25-page chapter on psychiatric assessment which is again systematic and concise.

The section on physical examination is much less satisfactory. It is very long, about 400 pages, and many important points are submerged by a mass of detail. In the chapter on the cardiovascular system, for example, the correct position of the patient for auscultation of the various murmurs is not emphasised; it is just as difficult to understand the diagrams of cardiac studies and echocardiograms as to hear the murmurs which they purport to illustrate; there is much discussion of a,c and v waves in the internal jugular vein, but no real description of what is seen in the neck in tricuspid incompetence. How extraordinary, moreover, to discuss the jugular venous pressure without reference to the HJR! (This area which causes difficulty for many students is covered better in the 1905 edition).

The layout of information in the various chapters on examination is generally systematic, with the exception of that on liver disease where the reader might need to consult eight different sections to cover all the physical signs in one patient — and surely one of the four accounts of jaundice should mention that it is most easily seen in the sclerae. The sections on investigations are useful as concise introductions to the subject, especially those on chest X-ray and the ECG, although it seems strange to include half a page on aspiration of amoebic abscesses, encountered in the Royal Victoria Hospital about once every five years, and yet to ignore the liver function tests carried out 500 times each day.

Despite its disappointing deficiencies the book is quite a good buy at £5.50 and one of the better works available in this field.

MEC

It is stated in the text that the Belfast surgeon, James Moore, who was an accomplished landscape painter 'unfortunately never attempted medical subjects' when in fact he illustrated a textbook of surgery. The general reader will not be aware of this unless he reads the notes at the end of the book. And to mention what may or may not be trifles — it is ironic that Andrew Fullerton has been given the title 'Sir' 50 years after his death, which he earned but was not given during his life. Again, William MacCormac's title has been taken from him and conferred on his father Henry.

The decline in the intimacy between Dublin and Belfast medicine which I have referred to earlier is also mentioned in the chapter 'Medicine in Ulster' by the President and Vice-Chancellor of the Queen's University who describes how the Belfast School of Medicine 'grew increasingly remote from the other provinces in Ireland . . . ' This chapter provides a worthwhile account of the Belfast school (or schools) of medicine over the last 200 years.

If the Dublin chapters are as good as the Belfast chapter (which the present reviewer cannot well judge) the whole book is a most valuable contribution to the history of medicine and art in Ireland.

The illustrations are superb and judged by their resemblance to those portraits with which I am familiar, the colour reproductions are of the highest quality. I regret that the original bust of James McDonnell, the foremost of the founders of the Belfast Medical School, was not photographed for the book. The bronze cast of the bust was used instead with a poor result which entirely fails to portray the lively face of McDonnell.

All those concerned in the writing, the photography and the production of the book are to be congratulated on a highly meritorious performance.

HGC

(Originally published in *The Linen Hall Review,* Vol. 1, No. 2, 1984)

HUTCHISON'S CLINICAL METHODS. By Michael Swash and Stuart Mason. 18th Edition. (Pp 502. Figures, Illustrations. £5.50). London: Baillière Tindall, 1984.

SINCE 1897, successive editions of Hutchison's *Clinical methods* have attempted to provide students at the introductory stage of their clinical studies with an account of accepted practice in history-taking and eliciting physical signs. The first of these subjects is excellently covered in just 24 pages in this new 18th edition with a full and systematic approach to history-taking — although in this liberal age the whole of venerology surely cannot be summed up in an exhortation to include a tactful enquiry about venereal disease. This history-taking section has been supplemented and much improved by the completely new 25-page chapter on psychiatric assessment which is again systematic and concise.

The section on physical examination is much less satisfactory. It is very long, about 400 pages, and many important points are submerged by a mass of detail. In the chapter on the cardiovascular system, for example, the correct position of the patient for auscultation of the various murmurs is not emphasised; it is just as difficult to understand the diagrams of cardiac studies and echocardiograms as to hear the murmurs which they purport to illustrate; there is much discussion of a,c and v waves in the internal jugular vein, but no real description of what is seen in the neck in tricuspid incompetence. How extraordinary, moreover, to discuss the jugular venous pressure without reference to the HJR! (This area which causes difficulty for many students is covered better in the 1905 edition).

The layout of information in the various chapters on examination is generally systematic, with the exception of that on liver disease where the reader might need to consult eight different sections to cover all the physical signs in one patient — and surely one of the four accounts of jaundice should mention that it is most easily seen in the sclerae. The sections on investigations are useful as concise introductions to the subject, especially those on chest X-ray and the ECG, although it seems strange to include half a page on aspiration of amoebic abscesses, encountered in the Royal Victoria Hospital about once every five years, and yet to ignore the liver function tests carried out 500 times each day.

Despite its disappointing deficiencies the book is quite a good buy at £5.50 and one of the better works available in this field.

MEC

PAIN RELIEF IN CANCER. Edited by Robert G. Twycross. Clinics in Oncology, Vol. 3, No. 1. (Pp 217. Illustrated. £12.50). London: Saunders, 1984.

THIS issue represents an extension of the guest editor's previous publication *Symptom control in far advanced cancer,* based on his successful five-day course at Oxford. Indeed, many of the quotes, figures and tables are taken from it.

It is a multi-author, specialist work from both sides of the Atlantic which divides easily into four sections. The first examines the incidence, classification and assessment of pain in the cancer patient. Strict attention to basic clinical principles ensures a careful, respectful assessment of the pain complaint for both patient and physician. The Cicely Saunders idea of 'total' or 'somatopsychic' pain is introduced. This incorporates non-physical forms of distress — emotional, social, bureaucratic, financial and spiritual. Since no individual possesses all skills, a team approach is advocated. The family is seen as a unit of care. The patient, as part of this, is a person who has a right to be involved in discussions about what is happening.

The second section looks at ways of modifying the pathological process to reduce pain. The judicious use of radiotherapy, hormonal/chemical therapy and orthopaedic surgery are advocated. Avoidance of overtreatment and prolongation of life in the presence of unrelieved pain is stressed.

The third section deals well with the available pharmacological measures. A useful working classification of agents is given and the place of some of the more recent preparations is examined. The thrust of the advice is to use a few analgesics well rather than to have a passing acquaintance with a wide variety. Dose titration, and the place of co-analgesics and psychotropic drugs is discussed. Most of the myths surrounding the use of morphine are killed by Twycross. He also explains why Brompton Cocktail is no longer considered the best method of administration.

The final section rounds off the book and is devoted to the more controversial area of non-drug treatment. It briefly discusses verbal and non-verbal communication and indicates that the previous practice of evasion and deceit must not now be replaced by total candour. Non-invasive measures such as hypnotherapy, relaxation/meditation, biofeedback and acupuncture are discussed, though not in great detail since these have not yet been fully evaluated in cancer patients. Nerve blocks, cordotomy and hypophysectomy are discussed in reasonable detail. Finally, there is a very important Postscript from the editor. It is a nice touch, but it could have made more impact if used in the introduction.

Altogether this is a compact readable book designed not only for the specialist clinician but also for the generalist whose ingenuity is equally challenged by such demanding yet rewarding responsibilities.

RJA

THE PRACTICAL MANAGEMENT OF HEAD INJURIES. By John M. Potter and Michael Briggs. Fourth Edition. (Pp 100. £5.00). London: Lloyd-Luke (Medical Books) Ltd.

FOR some twenty years I have been a frequent reader and admirer of succeeding editions of this little book. The central problem which it tackles is how, among the many head injuries which are progressively recovering, to spot at an early stage the patient who is deteriorating and who urgently needs operation. As one would expect, this edition has been updated especially to give a further picture of how CAT scanning may be used to assist in solving this problem. However, the book remains firmly based in a careful description of the pathology, and wise advice and the clinical examination. The message is that with this understanding, you will be able to monitor the progress of your patient, and should deterioration set in to intervene before it is too late.

A recent article in the British Medical Journal by a group of neurosurgeons suggests that this approach alone is no longer enough. Instead of waiting and watching for deterioration, they suggest that we should be spotting the high risk cases and submitting them to CAT scanning before deterioration occurs. This permits much earlier intervention and greatly reduces the risks. The advent of this new philosophy does not make the clinical skills taught in this book unnecessary. They will long remain essential. But the old skills and concepts need to be incorporated within a new framework. Until the fifth edition emerges, I would suggest that anyone who purchases this book should staple a photocopy of the article by the group of neurosurgeons inside the back cover (*Brit Med J* 1984; **288**: 938-985).

WHR

PAIN RELIEF IN CANCER. Edited by Robert G. Twycross. Clinics in Oncology, Vol. 3, No. 1. (Pp 217. Illustrated. £12.50). London: Saunders, 1984.

THIS issue represents an extension of the guest editor's previous publication *Symptom control in far advanced cancer,* based on his successful five-day course at Oxford. Indeed, many of the quotes, figures and tables are taken from it.

It is a multi-author, specialist work from both sides of the Atlantic which divides easily into four sections. The first examines the incidence, classification and assessment of pain in the cancer patient. Strict attention to basic clinical principles ensures a careful, respectful assessment of the pain complaint for both patient and physician. The Cicely Saunders idea of 'total' or 'somatopsychic' pain is introduced. This incorporates non-physical forms of distress — emotional, social, bureaucratic, financial and spiritual. Since no individual possesses all skills, a team approach is advocated. The family is seen as a unit of care. The patient, as part of this, is a person who has a right to be involved in discussions about what is happening.

The second section looks at ways of modifying the pathological process to reduce pain. The judicious use of radiotherapy, hormonal/chemical therapy and orthopaedic surgery are advocated. Avoidance of overtreatment and prolongation of life in the presence of unrelieved pain is stressed.

The third section deals well with the available pharmacological measures. A useful working classification of agents is given and the place of some of the more recent preparations is examined. The thrust of the advice is to use a few analgesics well rather than to have a passing acquaintance with a wide variety. Dose titration, and the place of co-analgesics and psychotropic drugs is discussed. Most of the myths surrounding the use of morphine are killed by Twycross. He also explains why Brompton Cocktail is no longer considered the best method of administration.

The final section rounds off the book and is devoted to the more controversial area of non-drug treatment. It briefly discusses verbal and non-verbal communication and indicates that the previous practice of evasion and deceit must not now be replaced by total candour. Non-invasive measures such as hypnotherapy, relaxation/meditation, biofeedback and acupuncture are discussed, though not in great detail since these have not yet been fully evaluated in cancer patients. Nerve blocks, cordotomy and hypophysectomy are discussed in reasonable detail. Finally, there is a very important Postscript from the editor. It is a nice touch, but it could have made more impact if used in the introduction.

Altogether this is a compact readable book designed not only for the specialist clinician but also for the generalist whose ingenuity is equally challenged by such demanding yet rewarding responsibilities.

RJA

THE PRACTICAL MANAGEMENT OF HEAD INJURIES. By John M. Potter and Michael Briggs. Fourth Edition. (Pp 100. £5.00). London: Lloyd-Luke (Medical Books) Ltd.

FOR some twenty years I have been a frequent reader and admirer of succeeding editions of this little book. The central problem which it tackles is how, among the many head injuries which are progressively recovering, to spot at an early stage the patient who is deteriorating and who urgently needs operation. As one would expect, this edition has been updated especially to give a further picture of how CAT scanning may be used to assist in solving this problem. However, the book remains firmly based in a careful description of the pathology, and wise advice and the clinical examination. The message is that with this understanding, you will be able to monitor the progress of your patient, and should deterioration set in to intervene before it is too late.

A recent article in the British Medical Journal by a group of neurosurgeons suggests that this approach alone is no longer enough. Instead of waiting and watching for deterioration, they suggest that we should be spotting the high risk cases and submitting them to CAT scanning before deterioration occurs. This permits much earlier intervention and greatly reduces the risks. The advent of this new philosophy does not make the clinical skills taught in this book unnecessary. They will long remain essential. But the old skills and concepts need to be incorporated within a new framework. Until the fifth edition emerges, I would suggest that anyone who purchases this book should staple a photocopy of the article by the group of neurosurgeons inside the back cover (*Brit Med J* 1984; **288**: 938-985).

WHR