Calculation of the resistance to CSF outflow

We read the paper by Kahlon et al. with great interest. Comparative studies about the use of different diagnostic techniques to predict the response to shunting in hydrocephalus are of great value as they are likely to form a landmark for future clinical practice. Therefore, it is of paramount importance that the procedures taken for comparison are methodologically sound.

Unfortunately, the interpretation of the lumbar infusion study given by the authors raises our concern. For unknown reasons, the authors have taken into account only the end equilibrium pressure obtained during a constant rate lumbar infusion and neglected the baseline CSF pressure. The authors presumed that this pressure was the same in everybody, this was in disagreement with Rcsf below or above baseline CSF pressure as done by Kahlon et al., we would misjudge 18% of our tests. It is not huge, but still a meaningful fraction.

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Authors’ reply

The comment by Czosnyka and collaborators to Kahlon et al. brings up a highly relevant question concerning the lumbar infusion test in patients with suspected normal pressure hydrocephalus. Namely, if calculations of the resistance to outflow of CSF (Rcsf) is a more adequate measure for predicting the outcome of a CSF shunting procedure than merely recording the steady state CSF pressure level reached during constant rate infusion as originally described by Katzman and Hussey. Czosnyka et al. claim that the latter does not take the initial pressure level (that is, before infusion is started) into account. This is not totally correct. In fact in the equation for calculating Rcsf, the initial pressure level is deducted and only the effect of the fluid volume infused per unit of time is considered. This assumes that the patient’s own CSF production is similar before as well as during the infusion of artificial CSF, which may be true, but is in fact not known. CSF production may well be influenced (downregulated) by long-standing hydrocephalus.

If the measured initial resting pressure is in the high range, the difference to the infusion steady state plateau pressure level will tend to decrease and if low, the difference will tend to increase. Thus, a high initial resting pressure will tend to disqualify the patient from shunt surgery and vice versa if low. These considerations stimulated us to use the uncorrected infusion steady state pressure level as was originally described to predict the outcome of shunt surgery.

Several studies have found Rcsf to be a good predictor of outcome of shunt surgery, but almost a similar number of studies have shown a less favourable predictive value (for references, see Boone et al.). In two recent studies Rcsf and CSF outflow conductance were calculated in patients with suspected normal pressure hydrocephalus, undergoing shunt surgery based on purely clinical symptoms combined with ventricular widening. The results were partly divergent and while Malm et al. concluded that outflow conductance (reciprocal to Rcsf) had no predictive value, Boone et al. found that Rcsf could predict outcome of surgery with the best likelihood ratio at a cut off level of about 18 mm Hg/ml/min. In our study the consequence of using Rcsf calculation with cut off levels of 14 or 18 mm Hg/ml/min had been that 3% (1 of 32 patients) or 22% (7 of 32), respectively, of patients with verified improvement after shunt surgery should have been excluded from treatment.

At present we cannot see any obvious reason for not using the steady state infusion plateau level as a simple measure of CSF absorption capacity in clinical practice. From a theoretical basis we can agree to the reasoning by Czosnyka et al., but if calculation of Rcsf in clinical practice is a better predictor than merely recording the steady state plateau pressure level remains to be proved and further data are warranted. We are currently scrutinising lumbar infusion test curves to further elucidate the role of other details than only the plateau pressure for selection of patients likely to be helped by shunt operations.

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This book is strongly recommended to clinicians and researchers dealing with neuromuscular disorders (and to thoracic surgeons performing thymectomy).

B Lecky

Spinal cord medicine, principles and practice

Edited by D Cardenas, N C Cutter, F Frost, et al. Demos Medical Publishing, New York, 2002, US$225.00, pp 1085. ISBN 1-887899-61-7

Basically, this is a book about the consequences of severe spinal cord lesions, mainly traumatic injury (spinal cord injury; SCI), and the management of them. It is not a book about spinal cord diseases. So, if you are wondering about the pathogenesis of spinal interneuronics or the classification of spinal muscular atrophies, do not look here. But if you spend a significant amount of time involved in the care of patients who are wheelchair dependent as a consequence of SCI or a severe chronic myelopathy such as advanced multiple sclerosis, then the book comes into its own. There are excellent comprehensive chapters about fundamentally important SCI related problems such as respiration and cardiac dysfunction, as well as coverage of more esoteric matters like the immune system and inflammatory response in persons with SCI. Major strengths are found in the multidisciplinary inputs to acute and chronic management and rehabilitation, encompassing for instance functional restoration of the upper extremity in tetraplegia, het erotropic ossification, and medical and surgical management of pressure ulcers.

With one editor-in-chief, eight associate editors, and more than 130 authors, repetition and redundancy might be predicted, and unfortunately there is lots of it. For example, no fewer than three chapters cover ejaculation in varying detail. The author of the foreword writes that the book is a magnum opus. It might be another magnum opus to go through the whole book and sort out the cross referencing, but it needs it. And there is considerable variability. Normal and abnormal micturition is dealt with in just four pages with seven references. The very next chapter, on renal insufficiency in patients with SCI, has 36 pages and 282 references.

This is an American book written for Americans. All of the contributors work in USA or Canada. Poliomyelitis “no longer exists in the US or Canada” so gets no further mention—by way of the clinical chapter, but no one told the neurophysiologist, who gives polio a whole page (and deals with Kennedy’s syndrome too). There is a whole chapter of addresses of useful North American organisations, the telephone company that will install sip and puff dialling. Readers from many countries, perhaps including the UK, will be gobsmacked at the resources available to and spent on SCI patients in the US. At least some countries less blessed than America do not have gunshots as the cause of 17% of new SCI (41% in “African Americans”).

I welcome this book and trauma centers, SCI units, rehabilitation units, and neurology and neurosurgery libraries will be enriched by it, but the authors need to read each others contributions and adjust their own correspondingly.

R W H Walker
probably many) who have lost contact with their biomedical roots. It was, however, disappointing to see little reference to some of the exciting new imaging studies that are exploring the links between neurobiology and attachment status. Attachment (or affiliation as it is sometimes termed) is covered, but largely in relation to autism and related disorders.

Section two collects together in one place as much information as anyone could want about individual psychotropic agents, but also finds room for chapters on complementary medicine and ECT—strange bedfellows in a subsection on other somatic interventions! The emphasis on placing pharmacological treatments in a developmental context is not flagged up in the preface and is a theme that runs through the book. A holistic and integrated approach to assessment and the management of children’s problems is advocated clearly throughout.

In the third section, the evidence for treatment of a range of different conditions is reviewed and explained—drug treatments are important but not the only treatments available. The authors’ enthusiasm for the potential value of psychopharmacology is tempered with a clear, evidence-based focus, and the chapters in this section are cautious in their interpretation of the literature and open about the absence of good randomised controlled trial evidence in a number of important conditions. Helpful algorithms summarising the evidence and the chapters in this section are recommended, alone or in combination with drug treatments when there is evidence to support this. The MTA study showed the superiority of methylphenidate for the treatment of ADHD, but when treatment as usual was usually methylphenidate. One possible explanation was the manner in which the prescribing was carried out. The large multicentre trial, a concept that is supported here with a chapter on the psychology of prescribing.

The book concludes with a section on research and methodological considerations, including interesting chapters on changes in prescribing trends within the US and around the world. Pediatric psychopharmacology is a rapidly growing field with a burgeoning literature. This book, written by clinicians who understand the need for child psychiatrists to review and explain—drug treatments are important but are not the only treatments available. The authors’ enthusiasm for the potential value of psychopharmacology is tempered with a clear, evidence-based focus, and the chapters in this section are cautious in their interpretation of the literature and open about the absence of good randomised controlled trial evidence in a number of important conditions. Helpful algorithms summarising the evidence and the chapters in this section are recommended, alone or in combination with drug treatments when there is evidence to support this. The MTA study showed the superiority of methylphenidate for the treatment of ADHD, but when treatment as usual was usually methylphenidate. One possible explanation was the manner in which the prescribing was carried out. The large multicentre trial, a concept that is supported here with a chapter on the psychology of prescribing.

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Neurosurgery of arteriovenous malformations and fistulas: A multimodal approach

Edited by Hans-Jakob Steiger, Robert Schmid-Elseeesser, Alexander Muacevic, Hartmut Bruckmann, and Berndt Wowra. Springer, New York, 2002, £228, pp 473. ISBN 3-211-83703-5

This is an interesting text aimed solely at arteriovenous malformations but including the often forgotten arteriovenous fistulas. The authors consist of the Neurovascular Surgical Team at the Ludwig-Maximilians-Universität, Munich, in conjunction with the Chairman of Neuroradiology at the same institution and the Director of the Gamma Knife Centre in Munich. The spectrum of authors covers the multimodal approach described in the title of the book. The aim of the book is therefore to appeal to specialists of surgical, radiological, and endovascular disciplines. Its aim is to highlight the evolution of treatment of arteriovenous malformations and arteriovenous fistulas since the first neurosurgical efforts to deal with occluding and excising these lesions, as well as the growth in what were initially adjunctive treatments, but are now part of a multimodal combination of treatments. I think the book does this very well. It begins by reiterating the basics with a literature review covering definitions, epidemiology, and clinical characteristics, as well as treatment options of AVMs and fistulas of the CNS, including brain and spine.

It also considers the classification systems based on theory and the pathoanatomical relationship between morbid intervention and thus choice of treatment. It then goes on to discuss the result of the various modalities of surgery, embolisation, and radiosurgery in a detailed literature review. This is followed by an in-depth analysis of the principles of surgery, endovascular, and gamma knife options. The relative risks and merits of each are compared. Finally, in true keeping with its clinical perspective, the book concludes with a number of case studies illustrating the combination of both surgical and endovascular approaches as well as exclusively endovascular, exclusively surgical, and finally major surgical cases.

I found the book was well structured and illustrated, making for an easy and informative read. It would be a very welcome addition to the library of any neurovascular unit and it would be of interest to all the disciplines involved in treating these abnormalities.

K O'Neill

HIV neurology

B J Brew. Oxford University Press, New York, 2001, £75.00, pp 252. ISBN 0-19-513363-3

Do we need books anymore? I found myself asking this rather shocking question when an exceptionally keen medical student brought a series of current reviews relating to a patient we had seen in clinic together, downloaded from the internet within minutes of the clinical ending. HIV neurology provides at least one rationale for book publishing. Given the epidemiology of HIV in the UK, most neurologists will encounter HIV associated neurological problems rarely. Most of the physicians who look after patients with HIV disease are unfamiliar with neurovascular or neurological problems. Neurologists will therefore tend to find themselves either considering HIV associated disease as part of the differential diagnosis in patients whose HIV status is not known, or being asked for opinions once more straightforward HIV complications have been considered. This book seems to have been designed with this in mind and is organised to allow ease of reference.

The first section provides an overview of HIV disease with a succinct and accessible summary of the virology, with an outline of general treatment. The approach to neurological diagnosis is explored including useful concepts to help neurologists abandon Occam’s razor, as they must in HIV disease. These include “time locking”, the linking of the potential complication to the stage of HIV infection; “parallel tracking”, the recognition that multiple levels of the nervous system can be involved in the same disease process to confuse the clinical presentation; and “layering”, the idea that multiple pathologies can affect the same level of the nervous system. The subsequent sections are based on the levels of the nervous system affected: predominately non-focal complications relating to the brain; focal complications; spinal cord; peripheral nerve; and finally muscle. Each section discusses the many complications on conventional lines, epidemiology, clinical features, investigations, neuropathology, pathogenesis, and treatment. These are well referenced and throughout there is strong feeling that they have been written by someone with an extensive practical experience of the clinical problems described.

Reading the book in the usual way I did find some repetition, but this is an unfair criticism as the book is intended for reference section by section. There is also an assumption that somehow all neurological symptoms suffered by patients with HIV are in some way related to HIV and that they are immune to more conventional problems. The section on “HIV headache”, a commonly occurring throbbing headache for which no cause is found and which anecdotaly responds to amitriptyline, which in other clinics seems familiar enough, perhaps best illustrates this. These minor gripes aside I think this is a useful book, although expensive at £75. It is much more than the sum of the references within it as it brings a thoughtful integration of the clinical approach to patients with HIV neurology. For most neurologists this book will beat the internet.

G Fuller

Ageing and dementia. Current and future concepts

Edited by KA Jellinger, R Schmidt and M Windsch. Springer Wien New York, Wien, 2002, €108 000, pp 376. ISBN 3-211-83797-3

This contribution represents a summary of an international symposium on “ageing and dementia”, which took place in Vienna at the end of September 2001. The premise stated that as a result of the aftermath of 11 September 2001, the hitherto internationally renowned invited speakers had to be reorganised within a short time. Three key issues were addressed in the meeting—factors that contribute to brain ageing, detection of mild cognitive impairment, and preventive and therapeutic methods that alter these effects. The result is 376 pages comprising 33 contributions over a range of subjects and covering a wide array of approaches from basic science to clinical matters. The authors represent a wide span of interests and countries (although I guess the first author of the publication was not necessarily always the presenting author at the symposium).

The concept of vascular dementia is summarised very well by the senior editor, and a discussion of the relevance of vascular changes and their rating on brain scans follows. Some discussion on basic process in the genetics of Alzheimer’s disease is intermingled with a contribution discussing a specific marker, followed by discussions of treatment approaches in Alzheimer’s disease and mild cognitive impairment.

The volume is something of a mixed bag, with a very useful overview written by leaders in the field, coupled with detailed experimental results. They represent, presumably, a faithful summary of the presentations at this particular symposium, but lack something of a thread with which to draw the contributions together. A degree of organisation with perhaps a brief introduction to particular subjects would have been helpful and easily achieved, with reference to the organisers’ aspirational themes. Some of the contributions are lengthy, while others are rather curt. That being said, because of its wide approach, it will have wide appeal, and one can safely say that there is something for everybody within its covers. The editors and contributors have succeeded in producing a volume that is of relevance and a pleasure to read. One cannot underestimate the difficulties the organisers had in sustaining the impetus to continue with the meeting after the terrifying events of the 11th September, and this compendium, perhaps, is a piece of evidence to show that things can and should continue as usual.

A Burns
The nucleus of Theodor Meynert (1833–1892)

In 1664 Thomas Willis described distinct subcortical structures, then called the corpus striatum. It was believed to be the “sensorium commune” as defined by Aristotle; a central structure that received sensory modalities and initiated motor acts. By 1914, Wilson wrote that the corpus striatum “seemed to fall from its high estate and depreciate in physiological significance”. It gained importance with the discoveries that lesions of these areas would result in abnormal motor functions. The corpus striatum came to be viewed as the major “extrapyramidal motor system”.

Meynert developed new techniques and used thin serial sections stained with carmine or gold with quantitative neurohistological measurements. His major aim was to relate cortical function to varied cell types and to establish the neural association fibres (radiations of Meynert) within the brain. This preceded the work of Fritsch and Hitzig in 1870.

He thereby produced the first description of the lamination and cellular diversity of the cerebral cortex in Stricker's Handbook of human and animal histology (1872). In section three he describes a clearly extended ganglion underneath the fibres of the ansa peduncularis as the second layer of substantia innominata, named “Ganglion der Hirnschenkel- chlinge”. Its large spindle-like hyperchromatic nerve cells were measured. Because of this new element in the substantia innominata, Meynert distinguished four parts of the area: ansa peduncularis; nucleus (ganglion) of the ansa peduncularis; inferior (ventral) peduncle of the thalamus; and anterior part of the stratum zonale thalami.

Meynert’s powers of description were not the most lucid, and in 1896 Albert Duncle of the thalamus; and anterior part of the stratum zonale thalami. Duncle of the thalamus; and anterior part of the stratum zonale thalami.

Meynert’s novel ideas drew the work of Fritsch and Hitzig in 1870.

Central integration of brain as an organ. Central integration was dependent on the association processes. He considered the motor cortex and basal nuclei as functionally antagonistic; thus, disease would lead to extrapyramidal disorder. He went on to point out the sensory feedback from muscles to the cortex. These and other highly original ideas were published in his Klinische Vorlesungen über Psychiatrie auf wissen schäftlichen grundlagen, in 1890.

Meynert was editor of the Wiener Jahrbücher für Psychiatrie and co-publisher of the Archiv für Psychiatrie und Nervenkrankheiten (Berlin) and of Vierteljahrschrift für Psychiatrie. He was President of the Wiener Verein für Psychiatrie und Forensische Psychologie.

He inspired the work of Paul Emil Flechsig (1847–1929), Karl Wernicke (1848–1905) and Auguste-Henri Forel (1848–1931), Putnam, Bernard Sachs, and Sigmund Freud (1856–1939).

In 1870 he was appointed Director of the Psychiatric Clinic and he started a neurological outpatient clinic in 1887. In later years he enjoyed high civic honours. However, he suffered grave personal losses in his family and untimely died at Klosterburg on 31 May 1892.

James Papez lists many of his main publications and biographies.

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