
The range of techniques for studying the topography of cerebral function has recently been expanded by the development of PET, SPECT, MRI spectroscopy and magnetoencephalography (MEG). At the same time a fresh impetus has been given to the mapping of electrical activity by the development of the low cost coloured computer graphics available commercially as devices for brain electrical activity mapping (BEAM). This book records a symposium held in 1987 which brought together expertise in topographical EEG and evoked response (ER) analysis, MEG, PET and SPECT. Several reports concern correlative studies of magnetic and electric measurements for EEG and regional blood flow or metabolism.

The first section devoted to localisation of electrical and magnetic ER sources is introduced by technical and theoretical reviews of interest both to the specialist (Nunez, Meij & al) and the more general reader (Kaufman & Williamson, Romani). Several studies indicate the possibilities for resolving basic ERs into the activities of topographically distinct generators (Huttunen et al, Bertrand et al). Some interesting results emerge, for instance that the fields produced by simultaneous stimuli in different sensory modalities are not simply the sum of sources for the ERs to each individual modality (Weinberg et al).

Section II considers what Gevins and Bressler term "functional topography", not simply mapping electrical fields nor deriving equivalent dipoles, but using statistical techniques to analyse functional relationships between activities at different sites. Pfurtscheller and colleagues approach this by considering event-related desynchronisation in relation to sensory processing and memory, and a single contribution on motor mapping by direct electrical stimulation through the scalp is provided by Cohen and Hallett.

Conventional BEAM is introduced by a critical review of methodology and current problems by Duffy, Petsche et al, employ significance probability mapping to display differences during various tasks, and Etevenon et al adopt a similar approach to pharmacological studies. Reports on psychiatric material include a study by Gruzelier et al showing that memory tests which discriminate between schizophrenics and controls are also accompanied by anomalies of EEG topography in the former.

The final section on PET and SPECT (disappointingly MRI spectroscopy is omitted) covers a good deal of familiar ground but includes a very full review by Engel of the relationship between PET and EEG findings in partial epilepsies.

It is the view of many clinical neurophysiologists that the introduction of BEAM in clinical EEG practice has thus far been counter-productive. In centres of excellence it has proved a useful research tool, offering improved insights into the typography of ERs in particular, but, as indeed Duffy points out, more generally its clinical use has been rather naively, as a supposedly simple substitute for proper EEG recording and interpretation, or frankly exploitative. A coloured brain map looks as impressive as a PET scan and is cheaper to produce. The present volume provides a much needed corrective to the many recent publications which have misrepresented and trivialised brain mapping. It describes exciting and innovative approaches to the topographical study of cerebral function, some of which must surely become standard neurodiagnostic techniques in the future. This book is not easily read, partly because of the wide range of technologies covered, but certainly merits the attention of experimental and clinical neurophysiologists, cognitive psychologists and other scientists.

Colin B Binder


This volume is the fifth in the series Frontiers of Clinical Science and attempts to provide the clinician caring for stroke patients with a working knowledge of non-invasive techniques for investigating cerebral ischaemia.

Divided into nine chapters, it includes sections on echocardiography, Doppler, CSDH and MRI, SPECT, PET and, rather incongruously, cerebral monitoring during endarterectomy.

The section on echocardiography, written by a cardiologist, is little more than a very basic text on echocardiography and its only concession to the investigation of cerebral ischaemia amounts to 16 lines with no useful
Introduction


This production is somewhat reminiscent of the Vinken and Bruyn Handbook of Clinical Neurology and aims to provide a "comprehensive and current coverage of both experimental and clinical aspects of neuropsychology". The first volume, which forms the basis for this review, starts with some introductory chapters on history, methodology, cerebral dominance, neuropsychological assessment etc; goes on to deal with attentional disorders, including confusional states, orientation and hemispatial neglect; and concludes with the first ten chapters of the section on aphasia and related disorders. Apart from completing the section on aphasia, subsequent volumes will contain sections on disorders of visual behaviour, amnesia, emotional behaviour, the split brain and hemisphrectomy, and issues surrounding ageing and dementia.

Undoubtedly, the whole series is a major undertaking. As far as can be judged from the contents of the first volume, together with the outline in the preface, the coverage across the series as whole is not quite as comprehensive as is claimed. There is a bias to the theoretical and experimental aspects rather than the practical and clinical. Thus the whole of neuropsychological assessment is reduced to two chapters and it appears that there is no systematic discussion of the management of neuropsychological impairments despite the burgeoning literature on this topic. The anatomical approach to neuropsychology based around the impairments associated with lesions in different parts of the brain (e.g. the effects of frontal lobe damage) is not specifically covered. The editors might claim that much of the same material comes up in the sections on amnesia, aphasia, etc., but this would not be a wholly convincing response. These quibbles apart, the series does look as if it will cover a very extensive chunk of neuropsychology.

The individual contributions to the first volume are mainly of a standard appropriate to a work that obviously sets out to become a definitive reference. The chapter by Bisiach and Vallar on hemineglect stands out particularly as well worth reading. There are some problems however. Aphasia is undoubtedly a major topic that is difficult for any single author or small group of authors to cover authoritatively in all its aspects. Splitting the field into so many different chapters written by a multiplicity of experts may help to enhance the depth of the analysis of each small aspect. The disadvantage is that it makes the overall treatment of the topic appear rather fragmentary. Possibly this will be minimised in practice since many of those consulting the volume will do so to look up particular issues, such as naming or agraphia, and will not attempt to read the whole in sequence. Inevitably there are also some minor problems or omissions within individual chapters. For example, the chapters on methodology do not give single case experimentation anything like the prominence that might follow from the frequency with which it is encountered in the literature.

Taken as a whole, the first volume suggests that the Handbook of Neuropsychology will turn out to be a very useful series which is likely to be a welcome addition to many libraries. Although stronger on the more theoretical and experimental aspects than material of direct practical application, the latter is by no means totally neglected. The series as a whole certainly seems set to bring together a wealth of material from the rapidly expanding field of neuropsychology in a generally competent and authoritative manner. The first instalment will certainly not languish unconsulted on this reviewer's bookshelves.

E MILLER


The preface to the book states that the topics were chosen from papers delivered at the 4th International Child Neurology Congress and the Satellite Symposium of Child Neurology & Developmental Paediatrics that was held in Jerusalem in 1986. Authors of papers selected were given an opportunity to update their contributions. There are 34 chapters and 84 authors.

Chapters 1 to 12 cover recent developments in aetiology, diagnostic categorisation and pathogenesis of some nervous system disorders in childhood. The first paper is an introduction to the biochemical and newer techniques of molecular genetics. The Dutch group give a good review of the spectrum of paroximal disorders and suggest a comprehensive list of biochemical tests for the screening and diagnosis of these disorders. The discussion on the pathogenesis of virus-induced nervous system injuries including both acute infections and viral persistence in the CNS, is fairly comprehensive.

The effects of seizures on the developing brain is brief but adequate and concludes with prognostic features to indicate long-term outcome. Opiate peptides and their relationship to seizures is covered in detail with the conclusion that ACTH, a peptide derived from the same precursor molecule as B-endorphin, is the only demonstrably effective anticonvulsant in certain childhood seizure states.

Discussion

The next four chapters thoroughly cover Doppler ultrasound in its various guises with a useful discussion on the correlation between duplex Doppler and arteriography but not on the indications for or use of either of these. They do, however, err on the lengthy side with the section on transcranial Doppler almost amounting to an operator's manual with far more detail than a clinician requires. The longstanding habit of Doppler enthusiasts of confusing velocity with flow is at least partly addressed by use of the term "flow velocity" though I would suggest that "velocity" by itself would be less presumptuous.

To read the chapter on MRI and CT one could be left with the conclusion that CT by comparison is almost useless in stroke. The benefits of MRI in imaging lacunar and posterior fossa infarcts are stressed but is it really necessary in routine practice to use MRI because it may diagnose supratentorial infarction a few hours earlier than CT? Conversely perhaps, the commonest reason for early diagnosis in stroke i.e. haemorrhage or infarct in an anticoagulated or fibrillating patient is not mentioned, though CT is superior to MRI for this. SPECT is covered satisfactorily, though the resolution of the camera used is poor and HMPAO scarcely touched upon. Kushner provides a useful and succinct review of PET in cerebral ischaemia and the book finishes with a short chapter on cerebral function with an endarterectomy which may be of use if a role is found for endarterectomy.

Though the subject is adequately reviewed overall, the book is poorly balanced between and within chapters and it is difficult to see at whom the book is aimed; it is too detailed for non-specialists and those who have an interest in vascular neurology will be familiar with the vast majority of the material. It may deserve the making of space on the library bookshelf but not in the wallet.

JV BOWLER