

Matters arising

We hope that our papers have adopted a balanced rather than a negative view of the practical role of hyperbaric oxygen for patients with chronic multiple sclerosis.

References

- 1 Barnes MP, Bates D, Cartlidge NEF, French JM, Shaw DA. Hyperbaric Oxygen in Multiple Sclerosis. Short term results of a placebo-controlled double-blind trial. *Lancet* 1985;i:297-300.

Neubauer writes:

Sir: I must disagree with the final conclusions of Dr Barnes *et al*¹ in regard to the effectiveness of hyperbaric oxygen in multiple sclerosis. My points of contention are: (1) *Side effects*: their series represented some of the highest incidence of side effects that have ever been reported in the hyperbaric literature. None of these occurred in their control series because the patients were not pressurised equivalently with air. They have drawn conclusions from their own problems that hyperbaric oxygen is fraught with side effects. Little do they realise that the majority of all hyperbaric oxygen pressurisations throughout the world are given in a lay setting on oil rigs with no physician in the chain. In a well run hyperbaric centre, even the slightest side effects of barotrauma are seen only in 1-2% of the cases. The extensive ARMS series in the United Kingdom reports only minimal discomfort. (2) *The expense of the treatment*: the ARMS charity institution in the United Kingdom again attests to both safety and cost effectiveness of this treatment. There are currently 56 ARMS centres where several thousand patients are undergoing treatment. These treatments are performed by trained lay persons. If the patient cannot afford the treatment, it is not withheld. It is my understanding that the treatment now runs about £6 (approx. \$10-50), per treatment; this being the lowest fee for HBO in the world. (3) *Lack of effect*: in spite of possibly preconceived ideas, their data do show significance in regard to the urinary tract improvement. Such data have been previously documented.²⁻⁴ To a multiple sclerosis patient this is of extreme importance. These authors may have had significantly different results if only they had followed the original clinical protocol which stipulated individual pressurisation (dose) and continued treatment with HBO.⁵

Hyperbaric oxygen to the multiple sclerosis patient is analogous to insulin in the

diabetic because of the dependence of the level of vasoconstriction on the inspired partial pressure of oxygen. How one would expect 20 treatments of any modality to permanently affect the continuing lesions is not reasonable. In my original publication, it was stressed that no patient had ever been cured, but hyperbaric oxygen does alter the course of multiple sclerosis. It must be used at the proper time and at the proper dose and continued treatments are mandatory. It is unfortunate that Dr Barnes *et al* used inappropriate pressure, had multiple side effects, and neglected their own data.⁵ Obviously they are proficient neurologists, but they are not involved in the practice of hyperbaric oxygen therapy.

Data continue to unfold confirming my original reports. Previous substantiated effects on the bladder, Barnes *et al*'s lack of cerebellar deterioration and the long term positive double-blind studies by Pirovano *et al*⁶ certainly belie their negative conclusions.

RICHARD A NEUBAUER, MD
President,

American College of Hyperbaric Medicine

References

- 1 Barnes MP, Bates D, Cartlidge NEF, French JM, Shaw DA. Hyperbaric oxygen and multiple sclerosis: final results of a placebo-controlled double-blind trial. *J Neurol Neurosurg Psychiatry* 1987;50:1402-6.
- 2 Fischer BH, Marks M, Reich T. Hyperbaric oxygen treatment of multiple sclerosis. A randomized, placebo-controlled, double-blind study. *N Eng J Med* 1983;308:181-6.
- 3 Wiles CM, Clarke CRA, Irwin HP, Edgar EF, Swan AV. Hyperbaric oxygen in multiple sclerosis: a double-blind trial. *Br Med J* 1986;292:367-71.
- 4 Appell RA, Goodman JR, Deutsch JS, Van Meter K. A double-blind controlled trial of the effect of hyperbaric oxygen therapy on the neurogenic vesico-urethral dysfunction in multiple sclerosis. Proceedings of the sixth annual symposium of the Urodynamics Society, New Orleans 1984;53.
- 5 Neubauer RA. Exposure of multiple sclerosis patients to hyperbaric oxygen at 1.5-2 ATA. A preliminary report. *J Fla Med Assoc* 1980;67:498-504.
- 6 Barnes MP, Bates D, Cartlidge NEF, *et al*. Hyperbaric oxygen and multiple sclerosis: short term results of placebo-controlled, double-blind trial. *Lancet* 1985;i:297-300.
- 7 Pirovano C, Barbier S, Cislighi G, *et al*. Long-term hyperbaric oxygen in multiple sclerosis: a placebo-controlled, double-blind trial with evoked potentials studies. Proc. XIIIth Annual meet. E.U.B.S., Palermo, Italy, 9-12 Sept. 1987:196-202.

Barnes *et al* reply:

Dr Neubauer makes very similar points and the only new point in his letter that we feel needs response is his suggestion that we should have followed his original clinical protocol which stipulated individual pressurisation and continued treatment with HBO. We must point out that a variable dosage is simply not possible in a double blind clinical trial setting and in any case patients did not report any response, objective or subjective, until at least fourteen days of treatment. This obviously makes individual pressurisation according to the patients' response quite impossible. We cannot deny that further benefits may have become apparent after continued therapy. We must point out again that there has been no claim for later improvement with continued therapy but only continuation of improvement that was induced by the original course of oxygen. If there is no original improvement then it seems unlikely that there will be later improvement.

Book reviews

Electromyography in Clinical Practice 2nd ed. By Michael J Aminoff. (Pp 362; £39.50). Edinburgh: Churchill Livingstone, 1987.

The first edition of Michael Aminoff's textbook of electromyography has now been expanded and in some sections rewritten to take account of the advances in the subject that have occurred over the last ten years. The resulting second edition, however, keeps faith with the author's original aims to review the manner in which electromyography may be of value in the investigation of patients and to make clinicians more aware of the scope and limitations of the investigative procedures.

Not surprisingly then, the strength of the book lies in its discussions of the clinical relevance or otherwise of the neurophysiological findings. For example, there is an excellent chapter on the investigation of root and plexus lesions—the *bête noire* of neurophysiology. The pros and cons of needle examinations, motor and sensory nerve conduction studies, H-reflex and F-wave studies, somatosensory evoked potentials and dermatomal evoked poten-

tials are all carefully considered and their findings put in perspective. Somatosensory evoked potentials from upper limb nerves, for instance, are honestly described as "... no more useful than careful clinical examination in determining the severity or prognosis of cervical spondylosis."

There are also strong chapters on the technical aspects of electromyography including a section on how to report results, upper and lower limb nerves and the investigation of neuromuscular transmission.

I have no hesitation in recommending the book to clinical neurophysiologists and to their clinical colleagues striving to assess the relevance of test results.

K R MILLS

The Cavernous Sinus. Edited by VV Dolenc. (Pp 419; DM240.00.) Vienna: Springer-Verlag, 1987.

This book, as so many others these days, is the product of a symposium, and, therefore, must be expected to be patchy. It has, however, considerable merit. It brings together authoritative papers on the anatomy from a variety of European authors notably in France and in Vienna whose particular interest is the cavernous sinus, with a detailed chapter on the cavernous sinus by Dwight Parkinson, one of the first to suggest that this area was in fact open to surgical interference. These chapters are amongst the best in the book. Also to be commended are the series of chapters, although of very varied quality on intravascular techniques which are now widely accepted.

The review of surgical techniques is perhaps a little less happy, although the stress placed upon the collaboration between surgeons of various disciplines is welcome and reflects the increased realisation that collaboration between neurosurgeons and their plastic, surgical and ENT colleagues is the way in which the subject may be advanced.

There are several papers on the management of aneurysms actually within the cavernous sinus which represent a distinct surgical advance and an interesting review of the world's literature on trigeminal neuroma curiously appended to the report of a single case.

The book contains many illustrations and is some 419 pages long including a rather

incomplete index. It will be of value to those who in the first place can afford the considerable cost (nearly £80 in British money), but who will welcome the outstanding chapters mentioned above with their profuse references. Its place, however, is likely to be in departmental rather than in individual libraries because of its cost.

LINDSAY SYMON

Central Nervous System Disorders of Aging: Clinical Intervention and Research. (*Aging, Vol 33.*) Edited by R Strong, W Wood, WJ Burke. (Pp 256; \$44.50.) 1987.

This is another symposium publication. It is based on a meeting held in Missouri in September 1986, sponsored by the St Louis VA Geriatric Research, Education and Clinical Center. It presents "information on the current state of knowledge of age-related neuropsychiatric disorders, neurodegenerative diseases, stroke, and molecular and cellular changes in the aging brain. Rather than providing a general overview ... selected topics in which significant advances have recently been made are examined in detail." It covers many clinical and experimental observations of Alzheimer's disease, it reviews pseudo-dementia, tardive dyskinesia, intervention in acute stroke, aging and sleep apnoea as well as papers devoted to molecular biology and membrane structure.

The clinical sections will be of interest to physicians, yet being in varying degrees discursive and exegetic these contributions are uneven and in many ways are less than satisfactory. The editors could have tried to link or harmonise the various sections to make for a more digestible text with at least some continuing theme.

There is an authoritative summary of the pathology of Alzheimer's disease, Parkinson's disease and ALS degenerations by Hirano, based on his Guam work. A survey of imaging details the technical principles of PET, MRI and SPECT scanning but experience in dementia and Parkinsonian states does not yet allow of any useful clinical inferences. The section on tardive dyskinesia provides a pharmacologist's view without giving deductions or experience to influence the treatment or prevention. There is a stimulating chapter on tran-synaptic degeneration by Burke *et al* who consider both forward and retrograde neuronal delay, the

latter invoking the post-synaptic receptor site as the primary lesion in Alzheimer's disease.

The basic science section is in some ways the most interesting, and certainly to the clinician the most informative. And yet, the necessary leap between the scientist and the patient is not made: there is sparse mention of disease, pathological processes and almost none of clinical issues in these sections which thus appear divorced and remote from the other chapters.

The publishers have chosen to use type-faces of varying styles and of varying density and size. The margins are ragged rather than justified and though clearly legible the appearance is congested and distinctly unattractive. Had this been achieved in the interests of rapid publication of the symposium within a six month period, it might have been excusable. Neurological readers—by their cautionary advice to purchasing librarians and with their own discretion in pulling out their own chequebooks will no doubt convey the general view of the current pretentious trend to the publication of each and every small meeting.

JMS

Neurosurgical Anaesthesia and Intensive Care 2nd ed. Edited by TV Campkin and JM Turner. (Pp 352; £40.00.) Guildford: Butterworth Scientific Ltd, 1986.

This volume follows 7 years after the authors' excellent first edition and is divided into four parts *Physiology and Pharmacology, Basic Considerations, Clinical Neuroanaesthesia, and Intensive Care*. The reader is provided with a comprehensive, well written review of current literature integrated with thoughtful discussion of controversial issues incorporating the 50 years combined neuroanaesthetic experience of the authors. The chapters on clinical neuroanaesthesia particularly benefit from clear descriptions of the authors' experiences and clinical techniques, although the latter flavour the book towards the European market. There is an excellent reference section at the end of each chapter, a comprehensive subject index, and reasonable cross referencing between different parts of the book. The text contains few typographical errors but the CT scans have not reproduced well and might benefit from adjacent labelled line diagrams.