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.

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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.

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, Cislaghi 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.

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 surprsingly 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-