

# Letters to the Editor

## Malignant otitis externa: experience with hyperbaric oxygen therapy

Dear Editor,

I have read with great interest the recently published series of patients treated with hyperbaric oxygen therapy (HBOT) for malignant otitis externa (MOE).<sup>1</sup> I agree that the treatment of this disease presents a challenge and, because of its low incidence, randomised controlled studies are impossible.

I am surprised by the high percentage of serious adverse effects of HBOT encountered in this study. The authors report that five out of 17 patients had serious adverse effects with two cases of pulmonary oedema, one hyperoxic seizure (which after careful reading turns out to be more likely a hypoglycaemic episode), one tympanic membrane perforation and one case of claustrophobia which occurred during the patient's first session. Even after discounting the case of claustrophobia, the remaining incidence of 24% is still extremely high compared to the expected incidence of side effects in this patient group. In the discussion (page 199, paragraph 2), it says "*complications such as oxygen toxic seizures and acute pulmonary oedema are directly related to high intra-arterial oxygen tensions and are well documented in the literature*". The quoted paper here (reference 14, Leach et al 1998) refers to pulmonary symptoms and subsequently pulmonary oxygen toxicity and not to acute pulmonary oedema.<sup>2</sup> Pulmonary oedema as a side effect purely of HBOT is extremely rare and we have not seen pulmonary oxygen toxicity in patients treated for 2 hours per day, as would be the case in MOE. Further on in the discussion (page 199, paragraph 2), the authors quote a recent review which has the wrong reference (this should be reference 21 not 18) and where they report a complication rate of 20%, whereas in the original quoted paper by Huang et al it is 1.83%.<sup>3</sup> Further on, the incidence of serious complications quoted in this publication by Saxby et al is 1.7% (they include pulmonary oedema, even though the original paper by Huang only talks about central nervous system toxicity), but the incidence in the original publication by Huang et al was 0.109%.<sup>3</sup>

At the 2010 Annual Scientific Meeting of the European Underwater and Baromedical Society, we presented a series of nine patients with MOE who received HBOT at Whipps Cross Hospital, London.<sup>4</sup> In our series, none of the patients experienced any severe adverse events during a similarly long treatment programme of 23 to 40 sessions. This treatment was sufficient to yield a benefit in seven of the nine patients (with benefit defined as both a significant improvement of symptoms – pain, discharge and cranial nerve palsies – and normalisation of inflammatory markers post-treatment).<sup>4</sup> We have similar positive results in the patient series in Plymouth (unpublished observations).

The high incidence of serious side effects reported by the authors gives me cause to wonder how patients in this retrospective study were screened for their suitability for HBOT. I am concerned that non-hyperbaric specialists reading this paper might conclude that the risk-benefit of using hyperbaric oxygen in MOE is in favour of avoiding its use, with a high risk (29%) of serious side effects and a very low benefit.

Indeed, we had problems convincing our local health authorities to fund treatment for our patients, hence a published paper talking about five out of 17 patients having serious side effects from the treatment would just reinforce their belief that HBOT is dangerous and not beneficial. Hyperbaric physicians should be careful when publishing data that could be interpreted in the wrong way by specialists unversed in hyperbaric medicine.

### References

- 1 Saxby A, Barakate M, Kertesz T, James J, Bennett M. Malignant otitis externa: experience with hyperbaric oxygen therapy. *Diving Hyperb Med.* 2010;40:195-200.
- 2 Leach RM, Rees PJ, Wilmshurst P. Hyperbaric oxygen therapy. *BMJ.* 1998; 317(7166):1140-3.
- 3 Huang KC, Hsu WH, Peng KT, Huang TJ, Hsu RW. Hyperbaric oxygen therapy in orthopedic conditions: an evaluation of safety. *J Trauma.* 2006;61:913-7.
- 4 Lechner M, Heywood R, Patel N, Ignatescu M. Hyperbaric oxygen therapy in malignant otitis externa. *Proceedings of the Annual Scientific Meeting of the European Underwater and Baromedical Society*; 2010. p. 52.

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### Reply

We thank Dr Ignatescu for her thoughtful comments on our recent case series of malignant otitis externa (MOE).<sup>1</sup> Dr. Ignatescu raises some interesting and important issues, and we are pleased with the opportunity to discuss these further. We agree the incidence of serious side effects is high in this patient group, but are perhaps less surprised that this is so than Dr Ignatescu. One of the reasons we wished to do this review of our experience was our clinical impression that these generally elderly patients with many co-morbidities were indeed prone to adverse effects of their therapies and of suffering poor outcomes despite all our efforts. Dr Ignatescu quotes our numbers correctly; five of 17 patients suffered significant adverse effects and this confirmed our clinical suspicion. Whether one interprets the seizure included here as hyperoxic or hypoglycaemic is of little consequence; this patient still suffered an adverse event of therapy. Please