

Hyperbaric Oxygen Therapy for the Treatment of Acute Cochlear Disorders and Tinnitus

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Hyperbaric oxygen (HBO) has been successfully used in otology for the treatment of acute acoustic trauma, acute noise-induced hearing loss, idiopathic sudden sensorineural hearing loss (SNHL) and other acute cochlear disorders with or without tinnitus for as many as 35 years [for a review, see 1]. In most clinical trials, HBO was administered only when conventional initial therapy using various drugs, such as rheologically active drugs, plasma expander, vasodilators or glucocorticoids, had failed. A meta-analysis of 50 clinical studies carried out on a total of 4,109 patients who received HBO therapy following unsuccessful conventional treatment with drugs has shown that – providing the onset of disorder was longer than 2 weeks but not longer than 6 weeks – 50% of patients experienced a marked hearing improvement in at least 3 frequencies of 20 dB or more, one third of patients showed a moderate improvement (10–20 dB) and 13% of patients did not show any improvement at all [1]. In addition, 4% no longer suffered from tinnitus, 81.3% observed a decrease in tinnitus intensity and 1.2% a temporary increase in tinnitus intensity, whereas 13.5% revealed their condition to be unchanged [1]. These results were confirmed in current studies [2–6].

Recently four studies have been published on the effect of an initial HBO therapy for the treatment of SNHL [7–10]. Flunkert et al. [7] have found that hearing improve-

ment and the effect on tinnitus after initial HBO therapy were similar compared to the effects of infusion therapy with a plasma expander and vasodilator. Similarly, Kestler et al. [8] revealed no better results after initial HBO therapy than those published in the literature after infusion therapy with a plasma expander which, in turn, did not surpass the rate of spontaneous remission published in the literature. In contrast, Fattori et al. [9] concluded that HBO should be considered the preferred treatment, since significantly more patients experienced a significantly greater hearing improvement in the HBO group as compared to the vasodilator-treated group. Aslan et al. [10] revealed a significantly greater mean hearing gain (37.9 dB) after combined treatment with HBO, glucocorticoids (prednisone) and betahistine compared to patients who received the drugs without HBO (20 dB). The authors concluded that the addition of HBO to conventional treatment significantly improves the outcome of SNHL, especially in patients younger than 50 years, but not in patients older than 60 years.

In the present issue, Racic et al. publish a retrospective clinical trial on 115 patients suffering from SNHL: 51 patients were primarily treated with HBO and 64 patients with infusions of a rheological drug (pentoxifylline) 1 week after onset of hearing loss. Both groups did not differ from each other respecting e.g. age, sex or initial hearing

loss. The mean hearing gain in the HBO group was 46 dB versus 21 dB in the pentoxifylline group. This difference was statistically highly significant ($p < 0.001$). Furthermore, in the HBO group hearing recovered to physiological levels in 24/51 (47%) patients, whereas only 4/64 (6%) completely recovered in the pentoxifylline group. In addition, after HBO therapy 21/51 (41%) patients improved significantly (up to a mild persistent hearing loss), whereas this was the case in only 8/64 (12%) pentoxifylline-treated patients. In summary, 45/51 (88.3%) HBO-treated patients and only 12/64 (12.7%) pentoxifylline-

treated patients recovered completely or partially. A follow-up examination after 9 months confirmed these results, indicating a persistent therapeutic effect of HBO. The present results after pentoxifylline therapy are in accordance with Probst et al. [11] who have proved that pentoxifylline therapy induced an equal mean hearing gain (15.6 dB) as saline infusions and placebo tablets (22.7 dB) in SNHL.

Altogether, these results indicate strong evidence that initial HBO therapy is more effective in the treatment of SNHL than conventional rheological therapy.

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