

HYPERBARIC OXYGEN FOR TREATMENT OF INTERSTITIAL CYSTITIS: RESULTS OF A PILOT STUDY

Aims of Study

Hyperbaric oxygen (HBO) treatment has already been used extensively and successfully for the treatment of chronic radiation cystitis, a condition that corresponds closely to interstitial cystitis regarding symptoms, histological characteristics and therapeutic approaches. In late stage disease, acute and chronic ischemia of the bladder wall occurs in both the IC and radiation affected bladder. Symptoms commonly associated with both bladder diseases include urinary frequency, urgency, urinary urge incontinence and pelvic pain. Many patients suffering from either radiation cystitis or interstitial cystitis develop a significant reduction in bladder capacity secondary to fibrosis of the bladder wall. Several investigators have studied the use of HBO in patients with radiation cystitis and reported remarkable response rates regarding the reduction of pelvic pain and irritative voiding symptoms, particularly urgency. The encouraging results of HBO treatment for radiation cystitis in addition to the correspondence of histological and clinical characteristics between both bladder diseases led us to conduct a prospective pilot study of HBO in IC patients.

Technically the delivery of hyperbaric oxygen occurs when the patient rests the whole body and breathes 100% oxygen in a treatment chamber which is pressurized to higher than sea level, for example greater than 1 atmospheres absolute (ata.). Pressurization between 1.4 and 3.0 ata. while the patient inhales oxygen meets the *Undersea and Hyperbaric Medicine Society* definition of hyperbaric oxygen treatment.

Methods

The study comprised 1 male and 5 female patients who all met the symptom criteria of the National Institute of Diabetes, Digestive and Kidney Diseases for IC. All patients underwent 30 sessions of 100% oxygen inhalation via a facial mask for 90 minutes in a multiplace hyperbaric chamber. The efficacy of HBO treatment was assessed at the end of treatment and after a followup interval of 1, 3 and 9 months. The measures of efficacy were change in pain and urgency (100 mm. visual analog scales) and alteration in the patient's assessment of overall change in his wellbeing (patient global assessment form). Further measures of efficacy addressed changes in daytime frequency, nocturia, functional bladder capacity (48-hour voiding log) and reduction of urinary urge incontinence (pad count/ voiding diary). Evaluation of symptom severity regarding pain and voiding problems was done using a validated, self-administered index (O'Leary et al.). This index comprises 8 questions assessing major pain and voiding symptoms. The maximum index score of 35 reflects maximum symptom and problem severity and the lowest possible score is 0 (i.e. no symptoms). Finally, patients were requested to rate their satisfaction with the therapeutic outcome.

Results

4 patients rated the therapeutic result as either excellent or good and assessed their wellbeing after HBO treatment as improved. 2 patients showed only short-term amelioration of some of their symptoms and were thus not satisfied with their therapeutic result at followup. Baseline functional bladder capacity ranged from 37-161 ml. in the responder group, and HBO treatment resulted in a bladder capacity ranging from 160-211 ml. in these patients, i.e. a maximum increase of 430%. In the group of responding patients the 24-hour voiding frequency decreased from 15-27 (range) to 6-8 voids per day. Nocturia decreased from 28 to 0-2 voids per night after treatment. Pain and urgency improved remarkably in these 4 patients (pain scale improvement from 20-97 mm. pre-HBO to 3-30 mm. post-HBO; urgency scale improvement from 53-92 mm. to 0-40 mm. respectively). The symptom and pain index score decreased correspondingly from 23-35 points pre-HBO to 1-17 points post-HBO. At baseline 3 patients presented with moderate and 1 patient with severe urge incontinence. All 4 patients experienced sustained and full relief from this condition. No major adverse events were observed in all 6 patients. All 4 responding patients recommended HBO treatment for IC.

Conclusions

HBO seems to be a safe and promising therapeutic option for IC patients. Treatment was well tolerated and resulted in a decrease of pelvic pain and urgency, improvement of voiding patterns and increase of functional bladder capacity. This pilot study served as *proof-of-principle* and a controlled randomized study is currently initiated to add HBO treatment to the contemporary armamentarium of interstitial cystitis therapy.