

HYPERBARIC OXYGEN THERAPY FOR PAINFUL BLADDER SYNDROME / INTERSTITIAL CYSTITIS RESISTANT TO CONVENTIONAL TREATMENTS: LONG TERM RESULT OF A PILOT STUDY IN JAPAN

Hypothesis / aims of study

The biological mechanism of Hyperbaric oxygen (HBO) originated from hypersaturating plasma with dissolved oxygen due to treatment. This phenomenon results in an increased diffusion gradient between the circulation and surrounding tissues, forcing oxygen into the damaged hypoxic urothelial tissues. HBO therapy has been mainly available for chronic radiation cystitis and hemorrhage cystitis since 15 years ago. In particular, chronic radiation cystitis represents some histological alterations including submucosal hemorrhage, interstitial fibrosis and smooth muscle fibrosis, which correspond to painful bladder syndrome/ interstitial cystitis (PBS/ IC). Recent studies demonstrated that bladder filling in patients with PBS/ IC was associated with decreased bladder perfusion, in contrast with increased perfusion seen in normal bladders. Thus, HBO treatment could improve perfusion of the bladder wall and significantly improve disease symptoms as well as remarkable histological changes (glomerulations, Hunner's ulcer and interstitial fibrosis) in patients with PBS/ IC.

Study design, materials and methods

We treated eight cases of PBS/ IC that were resistant to some conventional therapies with hyperbaric oxygen (HBO). All patients underwent 20 sessions of 100 % oxygen inhalation (2.0 atmosphere absolute (ATA) for 60 minutes/ day × 5 days/ week for 4 weeks) in a hyperbaric chamber. The outcome measures included functional bladder capacity, 24-hour voiding frequency, visual analog pain scale (VAS) and endoscopic findings.

Results

Patients were followed up median 14.5 months (7- 38 months) after therapy. Six of eight patients rated the therapeutic result as responders, and assessed their well being after HBO as being improved. Two patients had only short-term improvement and were considered non-responders. These non-responders had non-ulcerative endoscopic findings. After 12 months the baseline functional bladder capacity remained increased from 30-80 mL to 100-170mL in the responder group. The 24-hour voiding frequency decreased from 17-25 to 8-17 voids/day and pain and urgency scales significantly improved. Two cases in the responder group underwent secondary 10 sessions of HBO treatment at 13, 14 months after initial HBO therapy, respectively. There were transient eustachian tube dysfunction in one case and reversible exudative otitis media in two cases.

Interpretation of results

HBO showed a significant decrease of urinary frequency and pelvic pain, along with an increase of bladder capacity. Furthermore, the effects in symptoms have been sustained for several months. HBO therapy is well tolerated.

Concluding message

HBO could be used for treatment of PBS/ IC patients resistant to conventional therapies.

References

1. Eur Urol. (2004) 46; 108-13.
2. Int J Urol (2007) 14; 563-565

Specify source of funding or grant	none
Is this a clinical trial?	Yes
Is this study registered in a public clinical trials registry?	No
What were the subjects in the study?	HUMAN
Was this study approved by an ethics committee?	Yes
Specify Name of Ethics Committee	Osaka City University Graduate School of Medicine
Was the Declaration of Helsinki followed?	Yes
Was informed consent obtained from the patients?	Yes