

Safety and Effectiveness of Hyperbaric Oxygen Therapy for Systemic Sclerosis Ulcers

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SESSION INFORMATION

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Session Title: Systemic Sclerosis, Fibrosing Syndromes, and Raynaud's - Clinical Aspects and Therapeutics - Poster III

Session Time: 9:00AM-11:00AM

Background/Purpose: Vascular complications of systemic sclerosis (SSc, scleroderma) can result in ulcers in the distal extremities, which limit function and are often refractory to conventional treatments. Hyperbaric oxygen therapy (HBOT) has been used in the treatment of non-healing wounds, but its utility in patients with SSc is uncertain. The primary objective of this study was to evaluate the safety of HBOT for SSc ulcers. We secondarily evaluated the effectiveness of HBOT for SSc ulcers, and patient selection criteria for treatment of SSc ulcer patients with HBOT.

Methods: We conducted a cohort study of SSc patients who were evaluated for treatment with HBOT in the Toronto Scleroderma Program and the Toronto General Hospital Hyperbaric Unit between 2002 and 2015. HBOT treatments involved 30-50 sessions in a monoplace or multiplace chamber with compression to a maximum depth of 2.5 atm and breathing oxygen for a total of 90 minutes 5 days per week. Ulcers were defined as lesions with a visually discernable depth and loss of epithelial continuity. Reasons for declining access to HBOT, adverse events and effectiveness in ulcer healing were evaluated. An ulcer was categorized as healed if it achieved epithelial continuity or National Pressure Ulcer Advisory Panel (NPUAP) stage X (stable necrotic tissue core or eschar). Transcutaneous oxygen tension criteria for evaluating 'healability' in diabetic foot ulcers were applied as none have been validated for the SSc.

Results: 2261 subjects were reviewed to identify 36 HBOT treated ulcers in 10 SSc subjects. They had a mean \pm SD age of 58.0 ± 13.9 years. Eighty-seven percent were female. Ulcer locations included fingertip (n=10 (28%)), hand-PIP/DIP (n=11 (31%)), hand-MCP (n=2 (6%)) and lower extremity (n=10 (28%)). Thirteen SSc subjects did not receive HBOT due to reasons that included lack of achieving "healable" response to oxygen on transcutaneous oximetry and technical limitations in sensor placement options (n=4), presence of moderate - severe pulmonary arterial hypertension (n=2) and confinement anxiety (n=1). Of the HBOT treated subjects, adverse events included brief episodes of otic barotrauma (n=2) and nausea (n=2). Twenty-three (64%) ulcers improved after HBOT.

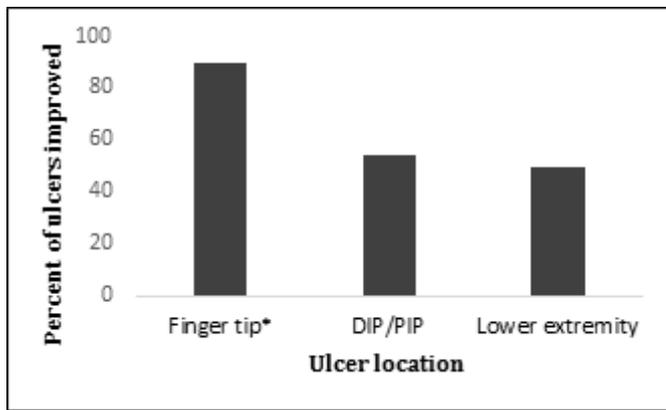


Figure 1. Ulcer improvement by location

Conclusion: HBOT may be an effective option for SSc patients with non-healing ulcers. Therapy was generally well-tolerated, with no significant adverse events although transient self-limiting otic barotrauma was reported. Patient selection criteria specific to the SSc population may need to be developed as the presence of pulmonary arterial hypertension is considered a contraindication to HBOT.

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