



Hyperbaric Oxygen Therapy for Prevention of Sickle Cell Vaso-Occlusive Episodes



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Introduction:

Sickle Cell Disease (SCD) is a common inherited condition which causes abnormal hemoglobin to polymerize under hypoxic conditions. The sickled red blood cells are unable to deform in the microvasculature which leads to vaso-occlusive episodes (VOE) characterized by ischemia, intense pain, and necrosis of tissue. The standard treatment for a VOE requires intravenous fluids, narcotics, and potentially admission and other supportive care. Patients undergoing hyperbaric oxygen therapy (HBO) have a significant increase in the PaO₂ of the blood and tissues. We report on the use of HBO for a patient with SCD who had a reduction in the number of hospital admissions for VOE while undergoing HBO.

Methods

A 22 year-old female with severe SCD was treated with HBO for preparation of graft/compromised graft for a chronic non-healing sickle cell ulcer. HBO was initiated while she was admitted for a VOE. The patient was treated at 2.0 ATA for 90 minutes for a total of 50 treatments over 3 months.

Results

The patient was hospitalized 17 times in 24 months (0.71 admissions per month) for VOE prior to HBO with an average length of stay of 11.4 days. The patient had 1 VOE in 3 months (0.33 admissions per month) while undergoing HBO which occurred after treatment 22 requiring a 12 day stay in the hospital.

Example of Sickle Cell Ulcers



Image taken from <http://www.aafp.org/afp/1999/0601/p3153.html>

Summary/Conclusions

HBO has not been previously reported as a modality for preventing sickle cell crisis. HBO reduced this patient's incidence of sickle crisis from 0.7 admissions per month to 0.3 admissions per month. The dramatic reduction may indicate a role for HBO in the prevention of sickle cell crisis.

Average number of admissions per month due to VOE

