

atm abs for pacemakers and 4.9 atm abs for ICDs, but vary by manufacturer and model. 2) ICD defibrillation during HBO₂ has not been reported, nor tested. 3) If there is an ICD discharge (defibrillation) in the presence of lead damage, ignition could occur. We advise that present-day ICDs should be deactivated before HBO₂ therapy (monitoring the patient and the capability for defibrillation would therefore be important).

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HBO₂ IN PATIENTS WITH DELAYED VENTILATION

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Oral Presentation

BACKGROUND: Delayed ventilation from emphysema or lung bullae may increase risk for pulmonary barotrauma during decompression from hyperbaric oxygen (HBO₂) therapy,¹ which can be lethal.² However, recommendations about quantifying risk of HBO₂ in patients with delayed ventilation are lacking.

METHODS: Patients with lung disorders (emphysema, asthma, radiation therapy, pneumonia, trauma, surgery, smoking history) and referred for HBO₂ had chest radiography and if abnormal, or clinical suspicion for delayed ventilation, also had xenon ventilation scanning. Pulmonary function tests (PFT) and high resolution CT were done if clinically indicated.

RESULTS: From 1/2005 to 2/2006 we identified 19 patients at risk for delayed ventilation. Fifteen patients had abnormal chest radiographs (radiation scarring, wedge-resection, traumatic pneumatocele, pneumonia, nodules, or pleural effusion). Nineteen patients had ventilation scans. Eight patients had PFTs: obstruction-6, air-trapping-2, hyperinflation-1, normal-1. Seven patients had chest CT scans showing air trapping, nodules, granulomas, COPD, emphysema, or fibrotic changes. One patient with bullous emphysema (xenon washout >40 minutes) was excluded from HBO₂ treatment because of lung and cardiac risk factors. A second patient with delayed ventilation healed her wound without HBO₂, and a third had a normal ventilation scan. Sixteen patients with delayed ventilation (mean ± 1SD = 7.8±4.4, range 2 to 18 minutes) were treated with HBO₂ (425 hyperbaric sessions) without adverse events. HBO₂ therapy was discontinued early (session #15) secondary to breathlessness in one, and in another due to reevaluation of risk/benefit after 4 HBO₂ sessions. Twelve of 16 patients with delayed ventilation >5 minutes were decompressed slowly. Six of these 16 patients with reversible airflow obstruction were given bronchodilators immediately prior to each HBO₂ treatment.

CONCLUSIONS: Patients with delayed ventilation

may be treated with HBO₂. Bronchodilators may improve ventilation in some. HBO₂ was not offered to the patient with lung bullae, so we cannot extrapolate these results to bullous disease.

1 Unsworth IP. Pulmonary barotraumas in a hyperbaric chamber. *Anaesthesia*. 1973 Nov; 28(6): 675-8.

2 Wolf HK, Moon RE, Mitchell PR, Burger PC. Barotrauma and air embolism in hyperbaric oxygen therapy. *Am J Forensic Med Pathol*. 1990 Jun; 11(2):149-53.

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CRITICAL CARE OF PATIENTS TREATED IN MONOPLACE HYPERBARIC CHAMBERS, PAST 20 YEARS

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BACKGROUND: There has not been a systematic review of treating intubated, critically ill patients in monoplace hyperbaric chambers, yet some critically ill patients may need hyperbaric oxygen (HBO₂) therapy delivered within monoplace chambers.

METHODS: From 1986 to 2006 we reviewed records of all critically ill, intubated patients treated with HBO₂ in Sechrist 2500B and 3200B monoplace chambers. Patients were ventilated with the Sechrist 500A or the Omni-vent ventilators. They were sedated and occasionally paralyzed. Data is reported as mean±SD (range).

RESULTS: Baseline characteristics: 182 patients (1,281 HBO₂ sessions in intubated patients) in 61 females, 121 males; age=44±19 (2-83) years; 90 with necrotizing fasciitis, 44-CO poisoning, 14-crush injury, 10-gangrene, 7-AGE, 4-mucormycosis, 4-arterial insufficiency, 4-failing flaps, 4-osteomyelitis, 1-radiation necrosis. Until 1995 we did myringotomies in 66 patients and from 1995 did not do them in 116 patients. Of 108 patients, the APACHE II=17.6±7.5(6-44). The average number of IV lines per session = 3.8±1.8 (1-11). Of 154 patients, 27 died from their disease or withdrawal of support. Complications necessitating decompression included: Cardiac arrest (post-HBO₂ hypoxia-1, VT/VF-1); hypoxemia with air breathing-2; arterial line/connectors-5; ventilator circuit-8; ventilator malfunction-2; seizures-3; air-trapping-4; inadequate sedation-5; arrhythmias-4 (35/1,281=2.7%).

Arterial Blood Gases (N=155)				Ventilator Parameters		
Pressure (ATA)	PaO ₂	PaCO ₂	pH	Parameter	Baseline	Chamber
0.85	263±121 (66-545)	36.3±7.2 (21-55)	7.38±0.02 (7.01-7.55)	V _E (l/min)	16±4 (7-37)	16±4 (8-13)
1.9-2.2	1023±330 (210-1255)	35.7±10.6 (26-68)	7.41±0.08 (7.24-7.50)	V _T (ml)	654±133 (200-950)	622±128 (200-930)
2.4-2.6	1117±205 (535-1504)	35.9±7.6 (21-59)	7.39±0.08 (7.21-7.56)	PEEP (cm H ₂ O)	3.2±3.4 (2-25)	6.9±3.6 (2-28)
2.8-3.0	1281±264 (711-1809)	40±8.3 (28-68)	7.26±0.09 (7.13-7.55)	P _i (cm H ₂ O)	24±8 (10-68)	31±9 (12-72)
				EtCO ₂ (side-stream)	34±15 (11-99)	17±8 (7-60)