



Type 2 decompression sickness in a multiplace chamber inside observer



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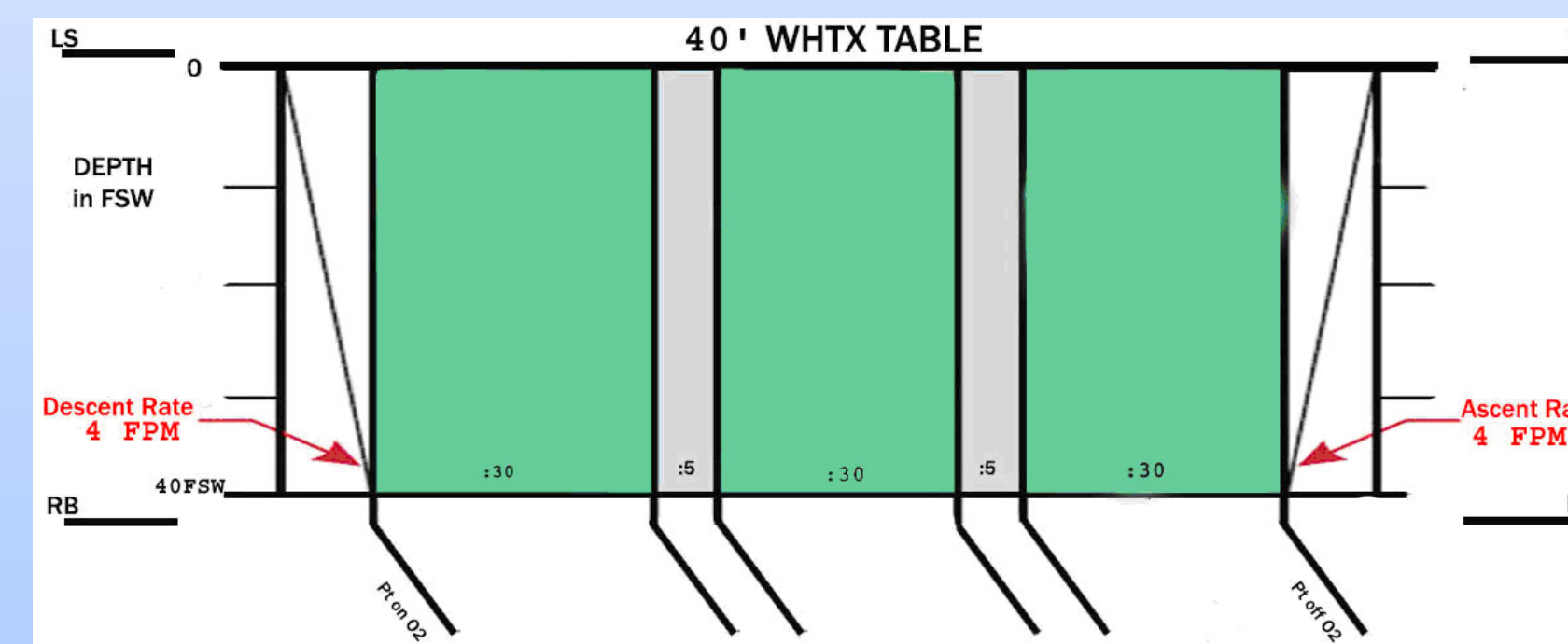
Background:

- Decompression sickness (DCS) of the inside observer (IO) is rarely reported in multiplace hyperbaric operations
- We report a case of type 2 DCS in an IO which occurred following a routine wound healing treatment to 40 feet of sea water (FSW)/2.2.atmospheres absolute (ATA)

Case Report:

- A 50 year-old male with extensive civilian and military hyperbaric experience, worked as an IO in a multiplace facility
- The IO had no past medical history, took no medications, and did not smoke cigarettes or drink alcohol
- The facility's standard wound treatment algorithm, depicted in Figure 1, included 120 minutes of compression to 40 FSW/ 2.2 ATA
- The IO inspired air during the entire treatment as per the hyperbaric facility's policy at the time
- On this day, the IO completed the treatment algorithm uneventfully; also, no complications were reported in any of the patients who were being treated
- Within ten minutes after the conclusion of the treatment, the IO experienced irritability, confusion, and difficulty with ambulation
- Physical examination revealed decreased sensation below the T7 dermatomal level and weakness of both lower extremities

Figure 1: Standard wound healing treatment algorithm



Case Report, continued:

- A diagnosis of Type 2 DCS was established, and plans were made for immediate recompression treatment
- Recompression was performed using a USN TT6, during which the patient reported having improved lower extremity strength and sensation
- Due to the persistence of mental status changes, he was treated with three additional standard wound healing treatments (40 FSW/2.2 ATA, 90 minutes at 100% O₂) over the next two days; after the last treatment, his mental status was normal
- Sixteen months after the DCS episode, the patient underwent transthoracic echocardiography with bubble study which revealed the presence of a large patent foramen ovale (PFO)

Discussion:

- The incidence of DCS in multiplace IO's is reported to be less than 1%¹
- The incidence of DCS in IO's may be directly related to increased depths of compression and personal characteristics of the IO
- It is unclear why this IO, who had a large PFO but who had experienced hundreds of hyperbaric exposures in the past without having adverse health events, developed DCS on this particular occasion

Conclusion:

- DCS is a rare but serious occupational hazard of multiplace hyperbaric IO's
- Definitive treatment with immediate recompression is recommended for Type 2 DCS, and evaluation for predisposing risk factors should be performed on affected individuals

¹Uzun G, Mutluoglu M, Ay H, Yildiz S. Decompression sickness in hyperbaric nurses: retrospective analysis of 4500 treatments. J Clin Nurs 2011;20:1784-1787.

THE FULL REPORT OF THE CASE PRESENTED HERE HAS BEEN ACCEPTED FOR PUBLICATION IN THE SEPTEMBER/OCTOBER 2012 ISSUE OF *UNDERSEA AND HYPERBARIC MEDICINE*