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MEDICAL CENTER HYPERBARIC DEPARTMENT

Outcomes of Decompression Sickness Treated using UCSD Modified Treatment Table 6

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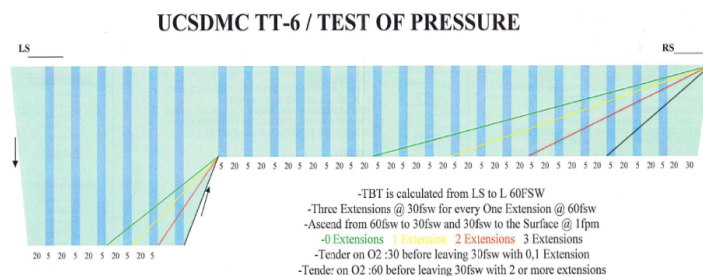
Introduction

- Decompression Sickness (DCS) is a well-recognized complication of scuba diving
- Hyperbaric oxygen therapy is the standard treatment for DCS; however, treatment protocols vary among facilities.
- Additionally, treatment success has been difficult to assess, due to a lack of standardized diagnostic criteria and outcome measures.
- At UCSD, we use a modified Navy Treatment Table 6 for initial treatment of DCS. The aim of our study was to review the DCS cases treated at UCSD over the past twenty years and assess the outcomes of patients treated at our facility using previously studied diagnostic criteria.

Materials and Methods

- 325 cases evaluated at UCSD from 1994-2014 were reviewed
- 87 patients met diagnostic criteria for DCS based on SANDHOG criteria of ≥ 3 points.
- We recorded and evaluated the presenting symptoms and classified them as mild or moderate/severe.
- Mild symptoms included pain and subjective neurologic findings.
- Moderate/severe symptoms included objective neurologic findings, back pain, and inner ear DCS.
- The symptoms at follow-up were assessed and noted for resolution, improvement, or worsening.

UCSD Modified Navy Treatment Table 6



SANDHOG Criteria for DCS

3 Points

- Signs and symptoms of transverse myelitis with both sensory and motor changes within 2 hours of a dive
- Monoparesis with pathological reflexes and associated sensory changes within 2 hours of a dive
- Cutis Marmorata

2 Points

- An exposure (without decompression) that is greater than the loading seen with exceeding the Navy no stop limits by 10% or missed decompression greater than 5 minutes
- Any sign or symptom in the 3 point category occurring 2-6 hours after a dive
- Syndrome of cough, substernal chest pain, and shortness of breath
- The syndrome of inner ear (vestibular) DCS characterized by vertigo, tinnitus, and hearing loss occurring within 2 hours of a dive
- Deep boring pain in a major joint within 2 hours of surfacing from a dive
- Isolated sensory changes in a single limb or at a spinal cord level plus hyperreflexia within 2 hours of surfacing from a dive
- Lymphedema occurring within 24 hours of a dive

1 Point

- Deep boring pain in a major joint occurring 2-6 hours after a dive
- Isolated sensory changes in a single limb or at a spinal cord level plus hyperreflexia 2-6 hours after a dive
- Complete relief from joint pain within 10 minutes of the initiation of recompression therapy
- Complete relief of motor and sensory changes within 40 minutes of therapeutic recompression, or a full number improvement in motor signs during the first two hours of recompression
- Scintillating scotomata occurring after a dive in a patient without prior history of migraine headaches
- A dive profile (without decompression stops) between the "no stop" limits of USN '55 and VVAL 18 or a properly conducted single dive requiring staged decompression

Half Point

- Isolated paresthesias or "tinglies" occurring after a dive
- Fatigue, dizziness, headache, nausea, or vomiting

Minus 1 Point

- Presence of a fever
- History of hypochondriasis or anxiety disorder

Results

Presenting symptoms	At Follow up			
	Resolved	Mild	Moderate/ Severe	Death
Mild (n=37)	28	9	0	0
Moderate/ Severe (n=50)	23	13	12	2

- Patients with residual symptoms at follow-up were more likely to have presented with moderate/severe symptoms ($p=0.005$).
- Overall, 58.6% of cases had complete resolution and this is commensurate with treatment results using other protocols.
- At follow up, 93.3% of those presenting with mild symptoms and 90.9 % of those presenting with moderate/severe symptoms had improved.

Conclusion

- Similar to outcomes seen in other studies, the vast majority of our patients with DCS improved with hyperbaric treatment. We believe that using the UCSD Modified Treatment Table 6 is an effective treatment for DCS.

References

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