Guillain-Barre or DCS?

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Introduction

Guillain-Barre Syndrome is a heterogeneous group of immune mediated processes characterized by motor, sensory and autonomic dysfunction. Symptoms may include ascending muscle weakness, paralysis with or without sensory or autonomic involvement. In the setting of compressed air diving such neurologic complaints are usually treated with recompression therapy. We report two cases of proven Guillain-Barre syndrome occurring after multiday, multidive exposures treated with recompression with no improvement and, indeed, worsening of symptoms.

Case 1

A 53-year old white male noted pain in his right leg after a series of 28 dives over 7 days using 34% Nitrox in Indonesia. He performed an additional 3 dives the next day to a deepest depth of 120 feet. His symptoms lessened, and 24 hours later he flew back to the U.S.A. Of note, he suffered a bout of diarrhea during the week of diving. En route, his symptoms worsened and now included lower back pain, problems walking, pain in both knees and tingling of the hands and feet. He received a series of two Hart-Kindwall hyperbaric treatments with progression of symptoms. Guillain-Barre was confirmed by spinal tap showing elevated protein (65 mg/dl) and absent cells Treatment with immunoglobulin resulted in resolution of symptoms.

Case 2

A 40-year old male noted tingling of his left foot after a series of 12 dives in the Turks and Caicos Islands. On arrival back in the U.S.A. he resumed his normal routine, including physical workouts. Several weeks earlier, he suffered a bout of pharyngitis. Because of increasing symptoms of tingling of both feet and muscle weakness, he sought hyperbaric treatment at a local free-standing clinic and received two treatments of unknown protocol. Over the next two weeks he consulted two neurologists and was seen in the emergency department of a major San Francisco hospital. An MRI was negative. Because of concern that he had partially treated DCS, he was referred to our facility for definitive recompression therapy some 17 days after his initial complaints. Neurologic exam showed reduced vibratory sense of the left hand, decreased pin prick of both lower extremities, abnormal Romberg, and inability to perform heel-to-toe gait.
The patient received a Hart Kindwall protocol with no improvement and, indeed, worsening of symptoms. A third neurologist was consulted the next day and found marked weakness of all extremities, absent deep tendon reflexes of all extremities, and decreased vibratory and positional sense both lower limbs. Spinal fluid showed 251 mg/dl protein and absent cells. The patient received immunoglobulin and made a complete recovery.

Guillain-Barre Syndrome

A heterogeneous group of immune mediated processes characterized by motor, sensory, and autonomic dysfunction. Cranial nerves may be involved. Severe cases may develop respiratory paralysis. First described by Landry in 1859 and later by Guillain and Barre in 1916. Now recognized as an acute demyelinizing process.

Guillain Barre

- Incidence is 1-3 /100,000
- Most common cause flaccid paralysis in U.S.A.
- High association with Campylobacter (40-70%)
- C. Jejuni and Cytomegalovirus may be involved
- Mortality 2-12%
- Full functional recovery by 18 mo. 85%

Guillain-Barre Differential Diagnosis

Partial list:

- Cauda equina syndrome
- Botulism
- Transverse myelitis
- Lyme disease
- Neurotoxic fish poisoning
- Polio
- Various toxins
- DCS not mentioned

Discussion

The diagnosis of Guillain-Barre Syndrome can be exceedingly difficult in the setting of recent compressed air diving. Lack of improvement or progression of signs and symptoms with recompression therapy militates for formal neurologic consultation, preferably by a neurologist versed in the varied presentations of DCS.
The difficulty of the problem is evidenced by the failure to establish the diagnosis in Case 2 after multiple visits to the emergency room and two neurologists.

Summary

- Differentiating the myriad signs and symptoms of decompression sickness from other neurologic disorders is difficult.
- Given a recent history of compressed air diving, an abundance of caution frequently justifies recompression therapy.
- A recent history of viral illness or diarrhea may be a clue to consider other causes/diagnoses.
- Failure to improve or worsening of symptoms should prompt a reassessment and early neurologic consultation.

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