

Two divers with acute vertigo and loss of balance

Graham McGeoch

Key words

Scuba diving, vertigo, decompression illness, inner ear decompression sickness, inner ear decompression illness, inner ear barotrauma, case reports

Abstract

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Two case histories are reported of divers who presented with acute symptoms of vertigo, imbalance and unilateral hearing loss. In one case, a working diagnosis of decompression illness was made and he received recompression therapy with complete resolution of his symptoms. In the other, a working diagnosis of inner ear barotrauma was made and he was treated conservatively. Six weeks later, he remained mildly unsteady particularly when playing sport. Readers are invited to comment on the cases.

Introduction

Along with the report from the Hawaii hyperbaric unit on their experience of isolated inner ear decompression illness in recreational scuba divers breathing air published in this issue,¹ two cases are presented for readers to consider. Were the diagnoses correct? Where were the lesions? And was the management appropriate in both cases?

Case 1

A 30-year-old truck driver was on a six-month dive instructor's course. He was on his twelfth dive with the course but had dived many times in Australia before being trained. He had not dived for six days before the event. He went for a day trip to a sub-alpine lake; it was June and snowing. He dived to 7.2 metres for 30 minutes, suffering from mild mask squeeze and a headache from the cold. He swam to the shoreline along the bottom. He took his regulator out of his mouth when he stood up, and lost his balance. He reported feeling disorientated and mildly nauseated, and said that the ground looked like the ocean. He had some blood from his nose but no ear pain. There was no rotatory component, tinnitus or hearing loss.

He rang the Diver Emergency Service and presented as instructed to the regional emergency department. History included a high alcohol intake at times although not on the day of presentation (a blood alcohol of zero confirmed this). He was reviewed by the duty ENT registrar who noted a mildly ataxic gait. Sharpened Romberg's test was positive, as was Unterberger's test (to the left). Weber test was central with positive Rinne's test on both sides. Vestibular provocation tests were normal. His external canals had small exostoses, and the tympanic membranes were atrophic but moved easily with Valsalva and showed no signs of barotrauma. The fistula test was negative. Pure-tone audiometry revealed a moderate, high-frequency notch on the left with an air conduction threshold of 55 dB at 4 kHz. (Note that on the following day his mother reminded him

that his hearing loss was long standing due to a truck tyre exploding near him.) He finally arrived in the hyperbaric medicine unit at midnight, 12 hours after diving. His affect was slightly elevated, heel-to-toe walking unstable and slow, sharpened Romberg's test less than 5 seconds, and finger-to-nose coordination slow with no other neurological signs.

A working diagnosis of decompression illness presumed to be from cerebral arterial gas embolism was made and a trial of recompression initiated. He was reviewed in the second air break and sharpened Romberg's test was now 60 seconds with no unsteadiness. An RN62 treatment table was completed without incident, followed by a second treatment, using an 18:60:30 protocol, 14 hours later. He remained asymptomatic. An MRI scan to follow up his hearing loss was normal.

Case 2

A 32-year-old, previously fit and healthy farmer went for a single boat dive off the coast in moderately rough conditions. He was an experienced diver. He dived for 25 minutes to 21 metres and surfaced slowly without the ascent rate meter on his dive computer flashing any warnings. The dive was uneventful until he surfaced, when he suffered true vertigo very quickly. He vomited and noted right-sided tinnitus. He discussed his symptoms with his GP and the regional emergency department. He was advised to rest at home overnight, but he remained with poor balance and vertigo the following morning. His GP rang the duty doctor at the nearest hyperbaric medicine unit and he was transferred by ambulance with IV fluids and 100% oxygen.

On arrival in the hyperbaric medicine unit, his symptoms had not improved on oxygen. There were no neurological signs, including no nystagmus, but he was unsteady on trying to stand or walk. A specialist otorhinolaryngologist was consulted, who noted tuning-fork tests consistent with a right-sided sensorineural hearing loss. Pure-tone audiometry

showed a mid-tone dip and a high-tone dip with thresholds that were, at worst, only 15–20 dB worse than in the left ear.

Inner ear barotrauma was the working clinical diagnosis and he did not undergo recompression treatment. He did not improve with 36 hours of bed rest, although the high-tone dip disappeared. MRI scan of the brain and inner ear was normal.

Six weeks later he remained unsteady, particularly when tired, and had difficulty playing tennis. He had no tinnitus or awareness of hearing loss. Audiometry was symmetrical and electronystagmography normal. Valsalva manoeuvre did not affect his balance. He remained unsteady on balance testing.

Reference

- 1 Smerz RW. A descriptive epidemiological analysis of isolated inner ear decompression illness in recreational divers in Hawaii. *Diving and Hyperbaric Medicine*. 2007; 37: 2-9.

Graham McGeoch, MB, ChB, FRNZCGP, is a consultant in the Hyperbaric Medicine Unit, Christchurch Hospital, New Zealand, and a general practitioner with extensive diving medicine experience

Address for correspondence:

Graham McGeoch
Hyperbaric Medicine Unit, Christchurch Hospital
Private Bag 4710
Christchurch, New Zealand
Phone: +64-(0)3-364-0045
Fax: +64-(0)3-364-0017
E-mail: <graham_m@pegasus.org.nz>

Editor's comment:

Readers, especially those with experience in managing such cases, are invited to submit their comments on any aspects of these two cases but most particularly in relation to the diagnoses and their management.

The poetry doctor

Logbook entry of diver: D. Nile

I'm feeling very tired,
So tired I want to sleep.
It must have been the finning
As I sped up from the deep.

My right shoulder is aching,
An ache that's dull and dead.
It must have been the lifting
Of my tank above my head.

My fingers are all tingling
With pins and needles in my palm.
It must be a carpal tunnel
Compressing nerves trapped in my arm.

My head has constant throbbing,
A hammer in my brain.
It must be all the sunlight
Aggravating a migraine.

Both legs have a slight weakness
With a mild numbness combined.
It must be my tight weight belt
Pressing firmly on my spine.

I'm going to take a pain killer
Then a nap so I'll revive
As after lunch and a beer
There's time for two more dives.

John Parker

<www.thepoetrydoctor.com>

BRITISH HYPERBARIC ASSOCIATION Annual General Meeting 1st - 4th November 2007

The 2007 annual meeting of the British Hyperbaric Association will be held in Oban, on the west coast of Scotland, from the 1st to the 4th of November. As well as a full and varied programme of presentations, BHA2007 will also offer an exciting pre-meeting diving programme.

E-mail: info@bha2007.org

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