Recognising decompression illness in divers

Dr Fiona Sharp,
Anaesthetist, Fremantle Hospital

Recognising decompression illness (DCI) early is important so timely treatment is given. At Fremantle Hospital we treat about 30 divers a year in the hyperbaric chamber. DCI can be very difficult to diagnose so a high index of suspicion for any symptoms arising within two days of a dive is important. Getting advice from the on-call dive doctor helps.

Pathophysiology

DCI results from nitrogen leaving the body when ambient pressure is lowered. It can present as less serious musculoskeletal and/or skin manifestations, or more serous neurologic, cardiac, and/or pulmonary manifestations. Also called "the bends", DCI symptoms can be due to the development of obvious bubbles in the body, including arterial gas embolism. (A diver may have bubbles after longer deeper dives though not have any illness – so called "silent bubbles" that can be detected on Doppler ultrasound of veins.)

Presentation

Decompression illness is sometimes difficult to diagnose. Any symptom or abnormality that develops within two days (especially within 24 hours) of diving should be considered DCI until proven otherwise, whether the dive profile is considered safe or not.

Signs and symptoms of DCI are very variable, from headache to dizziness, joint pain, fatigue and numbness. It can present as an isolated symptom such as shoulder pain or a combination of symptoms e.g. fatigue and headache. Chest pains, skin irritation, cramps and paralysis are in the symptom mix.

Divers who are 'bent' may be mentally dulled and not realise they have a problem – friends say they are not quite normal.

Another diagnostic difficulty is ear problems in the diver. More serious dizziness may need expert help to differentiate between inner ear barotrauma or inner ear decompression illness (which needs hyperbaric oxygen).

An accurate history of the dive profile is important. A thorough neurological examination should include a sharpened Rhomberg test and MMSE.

Treatment

After discussion with the diving doctor, the diver should be sent to the hyperbaric unit at Fremantle Hospital as quickly as possible at close to atmospheric pressures along with their dive computer. The diver's "buddy" may also need treatment.

Delay in treatment can make resolution of symptoms more difficult. All acute patients presenting with possible DCI should be initially managed with high flow oxygen and fluids (perhaps IV saline and a urinary catheter).

Symptoms that develop within 20 minutes of surfacing may be due to a cerebral arterial gas embolism from pulmonary overinflation. This often occurs after a rapid ascent involving inexperienced divers. This gives a TIA picture and should be managed promptly with supine position, 100% oxygen and IV normal saline. A pneumothorax may need to be excluded before hyperbaric oxygen treatment.

The treatment of DCI is the use of 100% oxygen at greater pressures, usually 18 metres depth equivalent, for at least 5 hours. This enriches the blood and tissues with oxygen and re-dissolves and displaces nitrogen. The divers often feel better and back to 'normal' during this treatment, confirming the diagnosis. Daily treatments are continued until symptoms resolve. ■