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The Editor
Undersea & Hyperbaric Medicine

Neurological manifestations in Japanese Ama divers

Dear Sir

The interesting paper on neurological manifestations in Japanese Ama by Kohshi et al discusses the arterialisation of venous bubbles. The concept was first suggested by Boycott et al in 1908 who pointed out that high nitrogen tensions in the spinal cord from long duration air dives would allow bubble growth. Such high tensions will not occur in breath-hold diving, a situation is similar to altitude decompression sickness, where again cerebral symptoms are common and spinal cord involvement is rare. Microbubbles generated by saline agitation used as ultrasonic contrast may also pass through the lung microcirculation and again cause cerebral rather than spinal cord symptoms. Repetitive dives will promote the onward transmission of bubbles trapped in the lungs as Spencer and Johanson demonstrated in 1974. Prevention is obviously the best strategy and this can be achieved simply by the divers taking a breath of oxygen rather than air to undertake the dive. This will completely prevent the uptake of nitrogen and therefore supersaturation and bubble formation. It is also inexpensive; a medium sized oxygen cylinder, demand valve and oronasal mask would be sufficient for over a hundred dives. The oxygen would also be valuable for resuscitation in, for example, cases of near drowning.

Yours faithfully,

Philip B James

3. Fryer DI. Subatmospheric decompression sickness in man. NATO AGARDograph No. 125, Technivision Services Slough 1969,
Reply from authors of “Neurological manifestations in Japanese Ama divers.”

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To the Editor

Thank you for giving us the opportunity to respond to Professor James. As Professor James pointed out, it is possible to prevent DCI in breath-hold (BH) divers by taking a breath of oxygen. This may be the best method for recreational or competitive BH divers in a controlled setting. However, many Japanese diving fishermen are not accustomed to the use of oxygen for their diving work. It is also known as Cross has noted that those BH divers who take a longer surface interval experience no diving accidents (1). We postulate that DCI could be best prevented in Ama divers by a reduction of their hard diving schedules. This approach is simple and good for the fishermen, as well as for the conservation of marine resources. In fact, we have not witnessed any DCI in Ama divers since we recommended that they reduce their continuous diving periods.