

colour of the fluorescent material must be. If you are working in very greenwater, you would be best wearing white luminous tape that shows up pretty well in the water.

Bob Cumberland

I spend a lot of time looking out for divers bobbing up here, there and everywhere. Invariably, because of the reflection of light on the surface of the water, all divers, no matter what they are wearing, appear, at any distance, as black blobs. You cannot distinguish any colour, even if they are wearing a brightly coloured wetsuit, until you are close. In my experience divers are little black blobs when they surface, hopefully not too far away.

Dr Ray Leitch

We have a check list at the end of every dive that includes depth and time. It would be simple to add "Did you have any problems, if so give a report". I find I tend to forget things by the next day.

MIGRAINE, HEADACHES AND DIVING

Rosalind Lloyd-Williams

I have had migraines since I was about 16 and I think I am qualified to discuss it from a patient's point of view, as well as the doctor's.

Migraine has been defined as a unilateral episodic headache.

Many migraine patients often have a prodromal period lasting for 24 to 48 hours before the onset of the headache. Mood changes, appetite changes, urinary or bowel symptoms allow some people to predict when they are about to have an attack. Symptoms associated with migraines are unilateral, thumping headaches, unilateral nasal stuffiness, runny eyes, scalp tenderness, neck pain, nausea, vomiting, diarrhoea and for some, diuresis. Migraines occur in about 10% of the population, but are more common in females by about 3 to 1. However, they are more common in boys than in girls until puberty. Migraine starts early in life. Even a two year old child can have a headache of the migraine type. Children often have abdominal migraine, which then goes on to be the adult common migraine. The point is that 5% to 10% of fit young people who may present to you for diving medicals can be migraine sufferers.

The cause still remains unknown despite wide research. It is terribly difficult to bring on attacks experimentally. In divers it has been found that in deep diving, platelet counts fall, clumping increases and there is an increase in certain enzymes suggesting an increase in metabolic activity, similar to that in the post-traumatic condition, as the diver is coming up. It is the same sort of general inflammatory type of reaction that Fred Bove discussed in relation to the treatment of decompression sickness (see SPUMS Journal, July to September 1982). It is postulated that the divers have some altered vascular chemistry in the frontal area and that these changes are most likely to occur there first. Possibly air bubble formation is a factor.

There are various factors which can trigger a migraine in a susceptible patient. They can differ from time to time in each individual. Changes in blood sugar, either up or down, can cause it. So can changes in sleep, either too much or too little, also dietary factors such as red wine, chocolate, oranges and so on. Tyramine has been postulated to be a factor. Migraine sufferers are very susceptible to glare. Excitement, especially in children, effort and exercise, noise and smells have all provoked migraine. There was a case of a man who only got a migraine when he smelled a certain food. Hormonal factors, especially premenstrual factors in women, precipitate migraine. However, it very rarely occurs in pregnancy.

Cold has been postulated as a factor, but there is no real evidence for this. Migraine sufferers are often told to wear wetsuits with hoods to prevent cold. However, during an attack, cold packs to the head can be a great help. Stress can cause it, but migraine occurs after a stress not during it. There is classic 'weekend' or 'relaxation' migraine. I suppose it depends whether one looks at diving as a relaxation or a stress, whether migraine is likely to be precipitated for that particular individual. A fall in atmospheric pressure has been shown to precipitate migraine.

There are very few references to migraine sufferers and diving. However, in 1965 Anderson in "Neurology" published a paper about when migraine sufferers were decompressed from a hyperbaric environment or subjected to a fall in barometric pressure during high altitude flying. They frequently got attacks of headache and visual disturbance. Migraine patients are more likely than others to get headaches when they undergo barometric pressure changes. In the study of four people in a chamber which went down from 66 feet to 135 feet all these patients had headache and an abnormal EEG. Two were 'classical' migraine sufferers, and one 'common' migraine sufferer.

When you are presented with a diver with a headache, there are quite a few things to help you. You have the history of attacks, the recurrent nature of the attacks, and the family history quite often. There is a simple test that has been published in "Headache" in 1981, which tests for vascular dilatation headaches. Vascular dilatation headache improves during a Valsalva manoeuvre and then worsens within two to five seconds afterwards, and is back to the normal level of headache in 15 to 30 seconds. The second part of the test is the Valsalva manoeuvre plus compression of the superficial temporal artery. The pain improves during straining and increases at the end of the strain in external carotid system dilatation which is what happens with migraine.

The differential diagnosis is important with divers. The main thing we have to worry about is confusion with decompression sickness which normally responds to recompression. Migraine does not. Delirium and confusion are not connected with migraine. Other headaches are hangovers, trigeminal neuralgia, cold induced headaches and CO₂ induced headaches which are usually fairly easily diagnosed.

Back to deciding fitness to dive. Migraine patients are barred from professional and decompression diving in the United States and I presume also in Australia. The hazards of migraine underwater are that a large proportion of migraine patients have impaired vestibular function and quite often there is a benign recurrence of vertigo during the attack. There is likely to be vomiting with migraine.

There are hazards associated with vomiting underwater. Migraine can lead to errors in judgement. Very rare complications which may occur are stroke, a monocular visual defect, and transient amnesia, but these are extraordinarily rare, about one case recorded every six years or so.

I feel there is quite a large safety factor with migraine patients. Migraine is not of sudden onset. One has a fair idea of when it is coming. It is very rare for a patient to have a first attack underwater. Patients have a knowledge of their own headache type. One can always stop the dive if one starts to get a headache, or one is feeling sick, or one gets benign prodromal symptoms. If one gets the aura underwater one has at least ten minutes in which to get to the surface, so there is no great hurry. If you have a headache you can assess your responses to analgesics before the dive. Incidentally the increase in CO which you get with the diving environment is helpful.

I shall only mention drugs briefly to alert people to the fact that migraine sufferers are often on such things as beta blockers or clonidine.

I feel that patients normally should be allowed to dive with migraine unless they are known to have really severe neurological symptoms every time they get it. I have never had migraine underwater and have had no problems with diving over the past five years. I should be interested to hear of anybody who has had trouble with migraine underwater.

Dr Bill Douglas

In my experience unilateral headaches following diving are not uncommon.

Dr Rosalind Lloyd-Williams

This is quite possible. Postural changes can start a migraine. An abnormal position can trigger an attack. The main danger is getting the full blown headache underwater. When you are on the surface, headache and the other symptoms are not particularly important.

Unilateral headaches and neck problems can occur with the weight of the tank. The headache often starts first and the neck pain follows from muscle tension in response to the headache, rather than the neck pain first with the headache afterwards.

Question:

Suggestions have been made that post diving headaches could possibly be caused by CO₂ retention following skip breathing. Yesterday we heard that with exercise there is no increase in PCO₂. Is CO₂ retention believed to be a factor in causing migraine?

Dr Rosalind Lloyd-Williams

The CO₂ retention type of headache is totally different from migraine. It is all over the head, a very severe, thumping headache, often accompanied by nausea. Migraine is typically a unilateral headache. Migraine patients who have had both headaches are quite able to distinguish between them. I feel that CO₂ retention does occur during a strenuous dive, due to the resistance of the regulator.

ROCKHAMPTON MEETING
QUEENSLAND REGIONAL COMMITTEE
AUSTRALIAN AND NEW ZEALAND INTENSIVE
CARE SOCIETY
29th and 30th October 1983

ALL SPUMS MEMBERS WELCOME

Draft Programme

SATURDAY 29th OCTOBER

9.00 am	Registration	
10.00 am	Morning Tea	
10.25 am	Introduction and Welcome	I Airey
10.30 am	Envenomation (Chairman)	C Acott
10.30 am	Taipan Snake Bite - Case Presentations	J Orton
10.45 am	Management of Snake Bite in Australia	S Sutherland
11.15 am	Anaphylaxis complicating Snake Bite and its Treatment	I Airey
11.30 am	Clinical Sequelae of Snake Bite	A McKillop
11.45 am	Panel Discussion	
12.00 md	LUNCH	
1.30 pm	Underwater Medicine (Chairman)	I Airey
1.30 pm	Hypothermia	J Knight
1.55 pm	Drowning - The Initial Insult	A Holloway
2.10 pm	The Drowned Lung	V Callanan
2.25 pm	Salt Water Aspiration Syndrome	B McKenzie
2.35 pm	The Cerebral Sequelae of Drowning	P DeBuge
2.50 pm	Panel Discussion	
3.00 pm	Afternoon Tea	
3.30 pm	Envenomation (Chairman)	K McLeod
3.30 pm	Management of Spider Bite	S Sutherland
4.00 pm	Sea Snake Envenomation Case Presentation	H Mercer
4.15 pm	The Box Jelly Fish Sting	J Williamson