WHAT IS AN ADEQUATE DIVING MEDICAL ?

Martin Sher

Introduction

The problem of what constitutes an adequate dive medical is not a new one, and has been discussed at SPUMS meetings before.[1] This talk is concerned more with the attitude and philosophy of diving medicine. Doctors practicing diving medicine seem to be becoming more remote from their clients, the divers. This cannot be a good thing, and can lead to problems.

The diving medical

It is possibly inappropriate that I am giving this talk, as I do no diving medicals and practice very little diving medicine. However I have done a lot of diving and I come from Cairns, a town with a population of just under 100,000.

A lot of diving happens in Cairns (54% of the diver-days in Queensland, where conservative estimates place the number of dives per year at over 250,000).[2] I have many discussions with medical practitioners, those in the dive industry, and the divers themselves, and possibly see things from a different angle to the usual diving medicine doctor.

While I believe that problems occur at all levels of diving medicine, I have chosen the dive medical to illustrate the problem. I must stress that I acknowledge the great work being done by people, like Des Gorman, who are helping to improve our understanding of the patho-physiology of diving problems. I also feel that the training of GPs in diving medicine is essential. This talk is limited to medicals for sport diving. Professional diving is a separate issue, and I do not believe the two can be equated.

As I have said before much of the problem with dive medicals is with the attitude toward them. Is it not rather strange that other hazardous pastimes, such as hang-gliding, mountaineering, parachuting, snorkelling require no medical, while scuba-diving requires an extremely stringent one? The only other activity requiring a similar "pass or fail" medical is a pilot's licence. I do not believe the two are at all comparable, as a pilot in trouble is likely to injure others, whereas a diver is only likely to injure himself or herself. It is interesting to note that the pilot of an ultra-light aircraft is only required to state that he or she is fit to drive a car.

Having said that, I do recognize that because of the unique nature of diving, that a dive medical is essential. However it is relevant that we are prepared to allow people to undertake other hazardous pastimes without a medical.

Most of the medical conditions relevant to diving are detectable by taking a good history (e.g. spontaneous pneumothorax, epilepsy, diabetes, asthma, medications). In fact without an honest and accurate history many of these can be undetectable.

Even with the best dive medical on Earth it is impossible to predict who may have a spontaneous pneumothorax in the future. Until it occurs one is fit to dive but afterwards no more diving. Stories of people having thorough medicals and then having a spontaneous pneumothorax abound.[1] Recently patent foramen ovale has been linked to an increase in neurological decompression sickness (DCS).[3,4] This condition is extremely difficult to pick up, even with expensive and potentially hazardous tests. Yet the Editorial in a recent SPUMS journal (Oct 1989) the suggestion is made that testing for patent foramen ovale should be part of the dive medical of the future. If present the person should be declared Unfit to Dive.[5] What of the 60,000-120,000 current divers who are expected to have this condition, which occurs in 15% - 30% of the population ?[6,7] Are they retrospectively unfit to dive ? How will they react when told ?

I think it is high time we admitted to ourselves, and our clients, that we do not really know who is fit, or is not fit, for sport scuba diving. We can provide valuable advice, but unfortunately there are still more grey areas, than black and white. The speciality of diving medicine is in its infancy, and very little of what we practice and preach is scientifically proven. We seem particularly keen to find bandwagons to jump on.

The question of asthma in divers illustrates this very well. Asthma has long been an absolute contraindication to diving. However where does one draw the line. To quote from the SPUMS Journal "anyone who has a history of asthma, even if it is only a suspicion, now bears the burden of proving he does not have asthma."[8] From the same journal there was an article reprinted from Diver where asthmatics are allowed to dive if wheeze free. The author stated that "our more lenient policy has proved itself over the years by the absence of any recorded serious incidents involving asthmatics".[9]

In January 1990 an article appeared in the British Medical Journal on the diving practices of scuba divers with asthma. The authors circulated a questionnaire for divers with asthma in the magazine *Diver*, which has a circulation of 38,000. They received 104 replies from asthmatics who between them had logged 12,864 dives. Most took b_2 agonists before diving. 22 wheezed daily. Most of the asthma was induced by cold air, exercise and allergy. Their conclusions, "Our study suggests that the British Sub-Aqua Club's recommendation to divers.....not to dive within 48 hours of wheezing is safe".[10] This is the closest thing I can find to a study paper on asthma. Who is right ? I certainly do not know, and I suggest no-one does. Also many respiratory physicians feel smoking is worse than asthma, as it affects small airway closure, yet we do not ban all smokers from diving.

I believe that I have shown that there are problems with diving medicals for sports divers. Another problem I believe is on the increase is diver dishonesty. Divers conveniently forget they are asthmatic, epileptic, or whatever, for fear of failing the medical. I believe the reason for this is lack of confidence in their doctors.

Suggestions

Do I have any solution to these problems ? Not really, but I can offer some suggestions:-

1 Honesty on the part of the doctor! Let us be frank and admit we do not really know all the answers. This can be done in the form of an explanatory note given to every intending diver. It might read something like this:

> "The sport of scuba-diving takes place in an environment entirely foreign to humans. The human body is not designed to function, and especially not to breathe, whilst underwater. The normal body copes remarkably well with these conditions. However the reaction to certain medical conditions can be much more marked than when on land.
>
> This is why it is extremely important to fill out your medical questionnaire, and answer any questions the doctor might ask, accurately. If you have any doubts *ask the doctor*. It is only with all the relevant information that the doctor can give you valid advice on whether you should, or should not, take up scuba-diving. The medical is not strictly a "Pass" or "Fail" test, rather it is to give you advice as to any increase in the risk of diving in your case.
>
> It is obviously in your best interest to mention any pre-existing condition(s) you may have, or have had in the past. Without this knowledge your doctor may not warn you of any risk factors and give advice on how to minimize them.
>
> It is also important to note that even a thorough medical may not detect several conditions that increase the risk of diving, and that diving related illnesses can occur in people with no pre-existing problems. The only way to be certain you will not have a diving related illness is not to dive.
>
> Should you take up diving it is extremely important that if you develop some change in health status, e.g. become asthmatic, you should contact a doctor *experienced in diving medicine* for a further medical before diving again. In any case it is a good idea to have a dive medical every five years or so.
>
> Remember the aim of a diving medical is to make sure you are aware of any risk factors that you may have, and to give advice on how to minimize them. The only one put at risk by inaccurate or incomplete information is YOU.
>
> If your doctor warns against scuba diving, listen carefully to the reasons given, as they are NOT in any way related to general fitness. e.g. you may be a fit triathlete and still have risk factors that make scuba-diving a hazardous pastime. Make sure you understand why you have been warned not to dive, if you do not, ask the doctor to explain again".

2 A standard dive medical questionnaire for history taking. (Both these items should be available in several languages).

3 An appropriate physical examination. For instance should it include spirometry ?

4 I would do no further testing if the questionnaire and examination are both negative.

5 We should think before ordering further tests. In my opinion audiograms have no relevance in a sport diving medical. If the client would like a baseline that would be an acceptable reason.

Chest X-Rays have been shown to be of little value in asymptomatic healthy preoperative patients and pregnant women.[11,12]

6 Get rid of the paternalistic attitude towards divers. If risk factors are present, explain what they are and why. We should offer further testing as required, and suggest a course of action. Most choices should be up to the diver e.g. if there is a vague history of asthma as a child, the diver should not "bear the burden of proving that he does not have asthma". Rather the doctor should explain that there is *some* increased risk while diving, and that more information could be obtained by other tests e.g. histamine challenge test. If he wishes to dive a note can be given, stating that there might be some increased risk, specifically while ascending, that the maximum ascent rate should be below 6 m/minute and that out of air situations are likely to have dire consequences. A person who has some understanding of his or her risk factors is a far safer diver than one who does not.

In some cases it is necessary to declare a person Unfit to Dive. Then spending time explaining to that person exactly why they are at risk, and the likely consequences if they do dive, is essential. If this is not done the person often goes to another doctor and develops selective amnesia.

Changes over the years

In conclusion I would like to note changes that have occurred since I took up scuba diving in the mid 70's.

Then we did not have octopus regulators, buoyancy compensators and contents gauges were a rarity as were dive medicals. Neither portable recompression chambers.nor the DES network was available.

As part of the training we had to do free ascents from 40, 60 and 100 feet.

Theoretically this should be a recipe for disaster, but the accident rate did not seem any higher. In fact air embolism seemed less common. Is the increase due to the use of buoyancy compensators ?

I am not recommending a return to the bad good old days, but it is important to realize that here are a lot of divers, and dive instructors, who trained in that era. Many of them have medical conditions that would not be acceptable in today's diving medical. These people are highly sceptical and may advise friends not to mention certain conditions, e.g. asthma, when going for a medical. This is a real recipe for disaster. Articles by people who are sick of over-regulation, and not convinced of the benefits of it, are appearing in the diving press, and even in the SPUMS Journal.

The other change has been in the doctors practicing diving medicine. Then it was the Navy, and some doctors who were scuba divers. Now many doctors are being trained to do dive medicals who have little or no experience in diving. While I think it is wonderful that more people are being trained in diving medicine, I do not think it is necessary to instil the "pass and fail" mentality. There are so many grey areas in diving medicine, that to rigidly enforce opinions on these doctors cannot be right.

I have mentioned diver dishonesty a few times, and I believe it is on the increase, certainly in Cairns and I would imagine elsewhere. The cause is, I believe, the paternalistic attitude encouraged by the pass or fail approach to dive medicals. There really is seldom need to fail people, if risks are adequately explained, and problems emphasized they will make the decision not to dive anyway. This does not cover the grey areas, but there the decision should be left to the diver after a full explanation by the doctor.

If we adopt this attitude it will lead to increased confidence in the medical profession, and those people with some increased risk will at least have insight into their problem and how to minimize risks. This must be better than people "forgetting" to mention that they are epileptic, or being scared to take a puff of Ventolin before diving, which is sadly what we are seeing now.

The argument that this attitude will lead to people suing their doctors does not seem logical. How can one be sued if one informs the client of the risks and the client makes the decision to dive? I would have thought that someone would be more likely to sue if he had been passed fit to dive and then developed a dive-related problem. This group would include the 100,000 odd divers with a patent foramen-ovale. Alternatively what if an overseas person is failed, and then sues for the cost of the trip plus psychological damage, quoting the BMJ article on asthma?[10]

A major benefit of my suggested approach is that some valid studies could be done. At present some people considered unfit to dive are by-passing the system (by changing their history) and diving. We do not know how many. By and large these are the same people who would dive even after the risks are pointed out. Yet in these cases we could attempt to document figures, and have some follow up. Valid studies would no doubt prove the correctness of the stricter medical attitudes. These would then be based on studies done on sport divers, and be of far more relevance to sport diving than studies on military divers or submariners.

Conclusion

As with other hazardous pastimes the decision to participate in diving should be left to the diver.

References

1 Knight J. What should be the standards for sport medical divers. *SPUMS J* 1982: 18-24.

2 *The Queensland Recreational Scuba Diving Industry Study Report* 1988.

3 Moon RE,Camporesi EM and Kisslo J.A. Patent foramen-ovale and decompression sickness in divers. *Lancet* 1989; 8637: 513-514.

4 Wilmshurst PT,Byrne JC and Webb-Peploe MM. Neurological decompression sickness. *Lancet* 1989; 8640: 731.

5 Editorial *SPUMS J* 1989; 19: (4) 149.

6 Gorman DF and Helps SC. Foramen-Ovale, decompression sickness and posture for arterial gas embolism. *SPUMS J* 1989; 19: (4) 150-151.

7 Davies D. Patent Foramen-Ovale. *SPUMS J* 1989; 19: (4) 151-153.

8 Daugherty C.G. The diving candidate with a history of asthma. *SPUMS J* 1983; 3: 35-36.

9 Betts J. Wheezy diver. *SPUMS J* 1983; 3: 36.

10 Farrell PJS and Glanville P. Diving Practice of Scuba divers with asthma. *BMJ* 1990; 300: 166.

11 Robbins JA and Mushlin AI. Preoperative evaluation of the healthy patient. *The Medical Clinics of North America*. 1979; 63: (6) 1145-1156.

12 Bonebrake CR,Noller KM and Loehnen CP. Routine chest roentgraphy in pregnancy. *JAMA* 1978: 240.

Dr Martin Sher's address is 32 Maree Street, Freshwater, Queensland 4871, Australia.