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DIVING MEDICAL DILEMMAS

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with audience participation

Key Words

Asthma, cardiac problems, drugs, ENT, injuries, investigations, medical conditions and problems, treatment.

Introduction

We offer some examples of common diving medical problems seen by us in our diving medical practices. We hope that members of the audience who have opinions will state them.

Ventricular septal defect

A medical practitioner came to see me last year for a diving medical. She had a small ventricular septal defect (VSD) that had been proven on echocardiogram many years ago. She was otherwise completely well. When I saw her I understood that the standard practice in diving medicine in Australia was that candidates with atrial (ASDs) and ventricular septal defects were both classed as being unfit for diving. She is quite interested in the results of this discussion. The cardiologist, who performed her echocardiogram last week, suggested that he would advise her to have her VSD repaired to reduce the risk of endocarditis.

I would like to have opinions on this matter from anyone.

Andy Veale

If you move away from the concept of fitness or unfitness this person is at low medical risk and may well choose to dive.

Bove

The important thing about a VSD is whether it is haemodynamically significant. The pulmonary artery pressure is stated as being normal in the cardiologist's report. The only chamber that gets volume overloaded in a VSD is the left atrium, the flow just squeaks across the septum and out up the pulmonary artery so it does not load the right ventricle. The left ventricle is not affected unless the VSD is very large. She has a small VSD that makes noise. The general practice has been to leave them alone and warn the patient about antibiotic prophylaxis for endocarditis. A VSD does not reverse to right to left so the shunt is not a risk for bubbles to reach the left circulation. She is fit for diving.

Chest injury

Williams

Two or 3 years ago a 29 year old came in for a diving medical. In the past he had had a motor vehicle accident, sustained some fractured ribs and had, from his description, a haemopneumothorax that required a chest tube. He did not know much more than that. His chest X-ray was normal, his lung function tests were normal. I tried to obtain details of his medical history from the treating hospital, but they still have not arrived. The candidate never contacted me again, so he either lost interest in diving or went somewhere else. I would be interested in the audience's comments on somebody diving after they have had a penetrating chest injury of this sort.

Veale

On the data provided his potential medical risk is areas of varying lung compliance within the area of lung damaged beneath the rib fracture. Whether you believe Colebatch's data or not this individual may have a small increased risk over the risk that he would have had had he not been injured. You could help quantitate that a little better by doing a high speed helical CT scan in inspiration and in expiration to see if there were areas of air trapping within that area of lung. If there were not I would say that he was at low medical risk and that he may well choose to dive.

Bove

I do not worry about pneumothoraces in someone who had a traumatic pneumothorax. He is not in the category of someone who had a spontaneous pneumothorax. The main concern is the possibility of regional differences in lung expansion. There are many people diving who have had traumatic pneumothoraces. I had a pneumothorax from chest compression in a near drowning accident a long time ago and I have had no trouble yet I know many people who have had traumatic pneumothoraces who have not had any problems diving. I think the shear force problem would occur with over expansion, which might make the lung more sensitive to

injury than if it were not stuck down by adhesions. Most people have good chest dynamics long after the injury has healed and do not have a problem.

Two cases of epilepsy

Williams

Case 1

This man, a 44 year old ex-commercial diver, is now a keen sports diver. Twenty six years ago he was diagnosed as having idiopathic epilepsy. He has been on anti-convulsant therapy ever since. He has not had a fit for 25 years. He has an absolute obsession with medication compliance and will not stop his medication. He has quite extensive commercial, mostly overseas, and sports diving experience. He did not admit to being an epileptic whenever he had a diving medical. He is aware of the risks. He has been advised by his neurologist that he should not be scuba-diving. I told him that I thought that conventional wisdom would fail him on a diving medical. He has never been to me for a diving medical. He attends my practice for other matters medical but he goes to other doctors for diving medicals and he deliberately does not tell them that he is an epileptic.

Case 2

A 23 year old was certified for sports diving in 1986. He had 3 convulsions in 1990 following some fairly heavy partying. It was thought that these were probably brought on by his life style at the time but he did have an abnormal electroencephalogram (EEG). He was placed on medication and advised by myself and his neurologist to cease scuba diving. He was otherwise quite well. He was on a fishing boat on the Torres Strait for a couple of years until early 1995, when he came back to holiday in my area. He had stopped his medication in 1994. He had taken no medication since and had no fits. He asked me if he could scuba dive. I suggested we would really have to refer him back to his neurologist and perhaps have another EEG. He said "Thanks doc. I'm going up to Cairns for a holiday. I'll be back in 2 weeks and we'll do that". While he was in Cairns he enrolled himself on a dive master course.

Now my question is given these two people's histories, would anyone here be happy to pass the first man?

Veale

The first man has had a provocative test probably 500 times from the time of his onset of his epilepsy. He has had no seizures for 24 years and many people would say that he no longer had epilepsy and should not be on medication. He has stood the test of time so to speak. The second chap is at higher medical risk and should be advised not to dive.

Williams

I used to go diving regularly with the first man who

has not been diving for a couple of years because he developed an illness that was incompatible with diving and until he recovers from that he does not feel like diving.

I last saw the second man in January 1995, in February, while he was in Cairns, he was swimming, disappeared from the surface and drowned. The results of the Coroner's Inquest are not yet available (May 1995).

Unidentified speaker

My understanding is that if one takes a PADI Dive Master course one needs a repeat medical, is that correct?

Richardson

Yes.

Meehan

He had started a dive master course without a medical and was working with one of the dive companies on a boat as the deck hand and helper while he was doing his dive master course. A lot of the dive master medicals are not done before the course, but during it. They are done before the paper work goes off to PADI. He had not yet had the medical.

Unidentified speaker

I think this raises an issue which I come across time and time again, and it relates to all the organisations, not only PADI, that very often divers present for medicals well into their dive courses, sometimes even after they have completed the open water training.

They will not be given their ticket by the dive school until they have got their medical. The best example I have of that was a young women who had quite severe symptomatic asthma, which she ticked on her box, but they had allowed her to complete the course. She also had a severe psychotic illness and had had three admissions for attempted suicide within the previous twelve months. This lass is an extreme example, but I am constantly worried by the fact that dive schools and diving instructors are very casual about where, in the framework of training a recruit diver, the medical is completed and the documentation completed to their satisfaction. Now obviously training organisations must have a standard of practice. It seems to me that the reality does not quite fit with their intentions.

Williams

I am quite confident that if he had had a medical in Queensland that he would not have informed the doctor of his fits.

Bove

In the United States a large number of diving accidents are related to alcohol. My question is, did he stop the seizure medications and the anti-seizure medications or just the anti-seizure medications? I have a feeling that this young man was fond of some ingested seizuregenic

medications which may have contributed to his drowning accident.

Williams

I believe he mellowed his ways but he was still a wildish chap.

Chairman (Davis)

Just before we leave the epilepsy question it is important to remember that hyperventilation, sleep deprivation, alcohol and alcohol withdrawal are very powerful epileptogenic stimuli and that people have different seizure thresholds. I think that even those who had a childhood febrile seizure may well have a lower fit threshold. Even if they have not had seizures for a long time I tell them about sleep deprivation, alcohol etc.

Davies

A comment on the oxygen tolerance test. I know that various navies used to do it but why, I do not know because Kenneth Donald in 1940s showed that it did no practical good at all. One cannot predict when somebody is going to fit on oxygen. I know from our experience in Fremantle that a patient might have quite a few treatments in the chamber, and then suddenly, out of the blue they have a fit. It is totally and utterly unpredictable.

Chairman (Davis)

It is also governed by things other than oxygenation, particularly pH which is due to ventilation, temperature and a whole range of factors which modify the test.

Unidentified speaker

If you had known this man was going to do a Dive Master's course next weekend, would you ring up the dive training organisation and say this man is epileptic and must not do the course?

Williams

I think he had not consented to something like that, so I would not have rung.

Unidentified speaker

Because the man is going to be a Dive Master, he is going to be putting other lives at risk. And from a legal point of view, it has been tested that, when the public good outweighs the individual's good, the issue of privacy is not legally valid.

Williams

I do not think I would have informed the dive training organisation. I had not seen him since the 1986 dive medical. On my dive medical form I have a section that I ask candidates to sign which states that they consent to the results to the examinations being forwarded to the teaching organisation. I have never had to do it. This man came to see me for something completely unrelated to diving. He just happened to mention that he wanted to get

back into diving at some time. It is all an unfortunate disaster for him and his family.

Chairman (Davis)

You do raise an important issue though, and certainly in New Zealand, the need to notify in that situation would be an acceptable breach of patient confidentiality within the law.

Nine asthmatic cases

Williams

Case 1

A forty six year, old self employed builder, came bustling into my surgery saying that he was big and strong and fit, that he had done everything and now wanted to do diving. He was otherwise quite healthy, a non-smoker, admitted to a past history of wheezing with hay fever which was basically seasonal. His lung function were not normal. He stated that he was otherwise completely healthy, never had a problem in his life. I thought from his story, and the fact that he was fairly vague and evasive about his history of wheezing with hay fever, that he probably had a history of asthma and just was not declaring it to me.

I referred him to have a challenge test. Shortly after that at a school barbecue I happened to meet his dentist, whose son goes to school with our son. He asked me if I had seen "Joe Bloggs" for his diving medical and whether I had passed him.? I said "No, I have organised some further tests". The dentist said "I do not know whether I should tell you this, but my conscious dictates that I do, as I know this man. He has been in intensive care with life threatening asthma attacks on three occasions". I immediately became not at all keen to subject him to a challenge test. I rang the laboratory, but the builder had already cancelled it himself. Optimistically I thought, this is nice, he has seen the light, he has decided to do the right thing and not to take up diving. A month later I met the dentist at another school barbecue and he asked me again "Did you pass "Joe Bloggs" for his diving medical?" I said, "Well no, we never actually completed it. He never came back." And the dentist said, "I thought you would like to know that at this moment he is diving on the ninety foot sub doing an advanced diving course". He had obviously gone off and sought medical opinions until he could find a doctor who would pass him.

Case 2

Most of the medical representatives in our area know that I have an interest in diving medicine because I have solicited every one of them for sponsorship for SPUMS. One asked me about whether she would be able to dive. She was on chronic medication for asthma and occasionally used a Ventolin puffer but was otherwise quite fit and well. I do not really know much more about her medical history. I had just bought a new spirometer and wanted to test it so I tested her lung function. Her lung

function tests were pretty reasonable for somebody who was alleged to be an asthmatic, being normal. The point is that, if this young woman had not ticked asthma in her box, there is no way I would ever have picked it.

Veal

Quite true.

Williams

Case 3

A nineteen year old student, non-smoker, past history of hay fever, who occasionally wheezes when he gets hay fever, uses Ventolin, otherwise normal, lung function tests reasonably normal, hypertonic saline challenge test, no response.

Case 4

A man and his wife, both teachers, both wanting to take up diving, came in recently. He gave a past history of asthma, hay fever, uses Ventolin occasionally, gets exertional asthma and had abnormal lung function tests. I had a discussion with him on the risks of asthma and diving, and gave him a copy of an article that Carl Edmonds wrote, on asthma and diving, which frightens most people. He read the article and simply said "I did not realise there was any risk. I have lost all interest in diving. My wife will dive. I will snorkel. Thank you."

Case 5

A school teacher, who had some previous diving experience in the Solomons. This may have just been some resort dives. He admitted to getting short of breath with hay fever and to being a very atopic person. Occasional smoker. Poor lung function tests and he failed his methacholine challenge test quite miserably. The point here is that he had already tried diving in the Solomons and not had any problems. I failed him on the basis of the methacholine challenge.

Case 6

A man with a history of hay fever and becoming wheezy with his hay fever. He had a 20% drop with hypertonic saline. That happened within a couple of minutes and he was becoming quite distressed, in spite of the fact that he sat there saying "I feel alright. I am not wheezy. I am OK." But he was looking quite ill by the end of it and the drop reversed quite quickly with some Ventolin.

Case 7

A man with a history of hay fever, exertional shortness of breath and the occasional wheeze, with a strongly positive histamine challenge test.

Case 8

A fifteen year old gave a history of asthma as a child, but nothing recently. His lung function tests were below normal and I thought he probably had asthma. I referred him to a respiratory physician who did some more lung

function tests, and diagnosed him as having moderately severe asthma. He also stated that this particular boy had no perception of air flow obstruction. He did not recognise when his lung function was extremely poor. He obviously failed.

Case 9

A man, with a history of hay fever, had wheezed as a child, but otherwise quite well since and he had no response to hypertonic saline.

The reason for presenting all these patients with a respiratory history is to try to get some guidelines, not necessarily today, but certainly as the rest of this week progresses, so that those of us who do diving medical examinations can give people more reasonable responses. At the moment I do hypertonic saline challenge tests on all people with a history of asthma, wheezes and hay fever, who have reasonable lung function. Those that fail the challenge I fail, and those that pass I allow to dive. Asthma and wheezes make up 90% of the problems in assessing diving medical fitness.

Chairman (Davis)

At the New Zealand Chapter meeting a few weeks ago we had a very similar session where a number of so called "asthmatic cases" was presented which provided a very similar spectrum to this one. Andy Veale was meant to lead the discussion, but he could not make it because of clinical commitments. Andy Veale is a specialist in respiratory medicine at Green Lane Hospital in Auckland, so I am going to get Andy to comment first on that series of cases.

Veale

I will just make two comments. First, 25% of the people that I see with a previous diagnosis of asthma, do not have it. Exercise induced asthma is often an inspiratory noise associated with laryngeal inco-ordination, and these people have no hyper-responsiveness at all. The second comment is that 10-15% of you in this room, if I grabbed you now, would have non-specific bronchial hyper-responsiveness. And, under the current suggestions, would not be diving tomorrow.

Bove

What is the perceived risk for most of these folks who have normal pulmonary function tests and seasonal wheezing. The DAN data from the United States, on many thousands of divers, suggests that there is either no risk or minimal risk for these individuals from diving. As far as I can see there is no problem with these people, and at least 10% of the divers in the United States are these kind of people. The only people who had problems in the DAN data are people who were actively wheezing asthmatics.

Chairman (Davis)

I do not want this session to develop into a general

discussion of asthma. Now that Fred and Andy have commented and provided the basis upon which to consider the workshop on asthma later in the week, I will ask Cathy Meehan to present her cases.

Abnormal lung function tests

Meehan

This is respiratory problem which we often get. Most people I see in Cairns are fit healthy backpackers. This was a 25 year old Swiss male was visiting Cairns specifically to scuba dive. He had no significant history, was a non-smoker, had done several resort dives and was very active in Karate. He was 182 cm tall. FVC was 97% of predicted value. FEV₁ was 79% of predicted value. His FEV₁/FVC ratio was 67% and his FEF 25 to 75 was 52%. Examination was completely normal. His lung function tests were below the standard for diving. He did not accept this, so was referred to a respiratory physician who examined him, could not find anything at all wrong with him nor any reason for his poor lung function. He was assessed with a hypertonic saline challenge test which was completely normal. He was challenged with a bronchodilator and showed no response. Has anyone any comments on whether this young man is fit to dive or not, or any further investigation.

Chairman (Davis)

My FEV₁/FVC ratio is 64 % of predicted normal. That is caused by an inappropriately large FVC. My FEV₁ is normal. However, I have no air trapping and my FEF 25-75 is near normal. We do not know whether it is the limitation of flow which places people at risk, or indeed if there is any risk. The standard error for FEF 25-75 is plus or minus 35%. It is meaningless data really. The scatter, once you get away from the standard measures of FEV₁, FVC and the FEV₁/FVC ratio becomes very broad, and if you look at FEF 25 it is even plus or minus about 55%. I would do a chest X ray and a test of gas trapping in this man to help quantify his risk a little better, because it is conceivable that he may have had sarcoidosis in his early youth and have bronchostenosis. But that is really the only thing that would concern me, and without that additional data I would have to advise him that on this it is possible he could be at trivial increase of risk. If he asked me whether I would dive with those lung functions I tell him I do.

Meehan

Our chest physician suggested that maybe he should have an alpha 1 anti-trypsin level done. His chest x-ray was normal. He was not passed fit for diving.

Radiotherapy to the chest wall

Meehan

A 37 year old British female physiotherapist was in Cairns visiting friends, who were diving instructors at the

local dive school. She was a marathon runner and had recently had occasional coughing with extreme exercise. She had been given Ventolin to use prophylactically by a doctor friend and found that this did help. She had no past history of asthma or atrophy. Her spirometry was completely normal. Because she had ticked that she had wheezed, I spoke to her before we started the dive medical. At this stage I suggested that if she did want to dive she would have to have a hypertonic saline provocation test. Would anybody fail her on that history, or have any other comments as to what they would do next?

Unidentified speaker

I would pass her without further testing.

Meehan

She gave a history of breast cancer, a partial mastectomy and five weeks of radiotherapy, five years ago.

Veale

Well again we come back to the theoretical risks, shown by Colebatch, of areas of varying lung compliance. The area of the radiated lung behind the breast will have some scarring. If one assumes that Colebatch's data is worthy of precluding somebody from diving, then one would stop this person from diving. Looking back at his original data there were five times as many people that one would exclude from diving on the basis of variable lung compliance for every affected individual. I would do the same sort of work up that I would do with the lung trauma type patient, to see if there were areas of localised impaired emptying of the lung. The best tool is an inspiratory and expiratory high speed CT scan. Irrespective of the outcome of tests, I think that she is at relatively little increased risk.

Bove

I feel the same way. In many of these cases we do not have outcome data. We are making assumptions based on theoretical issues without any evidence that there is an alteration in outcome attributable the theoretical assumptions. I think it is quite dangerous to exclude people without good outcome data. I feel that a patient like this would be perfectly safe to dive, but should be advised that there may be a small increased risk. We do not know what it is. It might be interesting, some day in seeing all the patients that you see, to develop some sort of an informal randomisation scheme and let some of them go diving and ask them to come back a year later to see what happens. I do not like to practice medicine with no data. It is not a good way to deal with the patients.

Chairman

I think that the audience can see from this series of patients why Des Gorman presented his paper regarding the underlying principles and philosophy behind health surveillance and assessment, on the first day.¹ I want everyone to think about these cases in relationship to that structure, because what we are quite clearly seeing here is

that the vast majority of practitioners who are interested in diving medicine adopt a combined prescriptive and facilitatory approach to the assessment of diving health. There are certain levels below which we are not happy at all and then there is an area beyond that where we need data. In practically all these areas there simply is no adequate epidemiological data. We have to be the guiding physician and advise people of the risks that we believe may be involved, but we can only do that in very broad terms.

Multiple sclerosis ?

Meehan

A woman traveller had pins and needles down the left side of her body for one month, just before she left England, a year ago. She had a CT scan at that time which she said showed some small scars on the brain. She had been seen by a neurologist, who said the diagnosis was uncertain but that it could possibly be early signs of multiple sclerosis (MS). She had no symptoms and her examination was completely normal. Any comments on this person's fitness to dive?

Williams

She needs a proper diagnosis. In the UK they do not have enough magnetic resonance imaging (MRI) facilities to do scans on everyone who needs one. MRI is the diagnostic test which would be done in Australia. Without that one could not say anything about what it was. It might have been nothing. With CTs 5% of normal people show something which might be a small scar. MRI them and the vast majority have nothing at all wrong with them. If MRI was normal you would let her dive.

Bove

Over 50% of the underlying causes of total hemi-corporal paraesthesias are factitious or hysterical. There are very few neurological syndromes that would produce paraesthesia to the entire left half of the body. Many of these patients have psycho-somatic problems.

Unidentified speaker

A diagnosis is only worth making if it is going to change your management. A psychogenic disease in this woman was the thing that sprang immediately to mind, which to me would be a greater risk to her diving, perhaps than MS. MS, if it were present, does not cause sudden onset of vertigo, does not cause sudden onset of epilepsy or any of the other things that might cause a sudden catastrophic disaster in the water. One would need to advise her about the potential for these things developing. But I think it is her psychiatric risk which would be the flag that I would raise rather than her organic risk, and I would not do an MRI scan.

Myringoplasty

Meehan

A thirty one year old British male in retail sales. He had a history of a direct blow to the head in 1987 which resulted in a perforated ear drum on the right. He had myringoplasty done but this resulted in a dislocated incus, tinnitus and hearing loss in that ear. His left ear drum was perforated as a child and was repaired in 1984 at age 20 with some resulting minor hearing loss in that ear. On examination his Rinne for right ear bone conduction was greater than the left, as expected. Both ear drums were mobile and equalisation occurred easily with Valsalva. The tympanogram was relatively normal in the left ear and an unusual shape in the right ear. Audiometry was not done. Any comments on this gentleman's fitness to dive, or problems he could have with diving?

Molvaer

I come from Norway and I am an ENT specialist and I see most Norwegian divers with ear problems sooner or later. I never do tympanograms myself. I look into their ears through the microscope while they attempt to equalise. If the drum moves I would let him try to dive. I would ask if he had trouble while flying and even if the ear drums have scars, if he could equalise easily I would let him dive. Where I work I have ample access to pressure chambers, so I could follow the man to one or two metres in the pressure chamber and look at the ear drum to see what happened. That will not be available in most doctors' offices, but I would let him try diving if he can equalise.

Meehan

He did go diving. My main worry was that because the right tympanogram was a little unusual that he could have a pressure related problem in his right ear.

Cognitive problems

Meehan

Just to show the sort of people that we do get in Cairns who want to dive. A fifty three year old American male who was retired. Six years ago he had a head injury, with back, neck and right hip damage and had some subsequent cognitive problems. Because of this he was on an invalid pension. He had bilateral hearing defects. He had radial keratotomy three years ago and was told by the specialist that he could dive after six months. He had peptic ulcer fifteen years ago and now takes amitriptyline and intermittent cimetidine. Other problems were bilateral arthritis in both shoulders from recurrent dislocations and spastic colon, which produced chronic diarrhoea if he did not eat properly. He was very keen on being passed fit to dive.

My opinion was that if he was able to be on an invalid pension, on the basis of cognitive problems following his head injury, he probably was not fit to dive.

Bove

You are assuming that divers have a certain level of cognitive ability, (laughter) and I am not sure that is a really good reason to exclude divers. I know there are people like this diving and I do not think there is anything there that would complicate his diving, so one is still stuck with no data to make a decision on. There are a lot of people with shoulder arthritis who dive so I would not exclude him for that. In the United States probably every other person takes cimetidine so one cannot exclude him for that. So we are down to the hearing defects, radial keratotomy and the amitriptyline and why he was on it. I do not think there is anything else that would complicate his life as a diver. There are a lot of people with one or another of these disorders who dive and they seem to get along fine. I am not sure any of these things are issues that would complicate his diving. Being on amitriptyline suggests that he has a bad depression disorder which might be of some concern.

Spinal surgery

Meehan

A twenty seven year old Australian beauty therapist had a repair to a right thoracic left lumbar idiopathic scoliosis done in 1993. The specialist who performed the operation had given her a certificate to say that the operation was successful and that the bone had undergone consolidation. He wrote that there was no contraindication to diving. On examination she had a vertical scar at the back from the repair as well as a thoracotomy scar where one rib had been removed as part of the correction procedure, and that rib had been used as a bone graft.

Veale

There are two theoretical considerations here. One is the potential for osteonecrosis, both within the graft and the residual donor area, through scarring and reduced perfusion. I think that is theoretical and unlikely to kill her or harm her too much. The big problem with any chest wall disorder is the exercise capability. Before being able to offer her advice I would need to know what her lung function was and her exercise capability.

Meehan

Her spirometry was completely normal. Exercise was not assessed because she did not do the swim test. Any comments on the thoracotomy scar or the risk of plural scarring with the removing of the rib?

Veale

Many surgeons will try to do this extra-pleurally rather than opening the pleural space, but sometimes that is not possible. It comes back to the question, is there a real risk, and if the risk is indeed plural adhesions between the non-operated upon lung and the chest wall, I would imagine one third of the people here have had pleurisy in the past and perhaps should not dive.

Meehan

It is very difficult in Queensland because the Code of Practice does call up the Australian Standard and so we are compelled by law to follow that Australian standard. It says that any open chest surgery is an absolute contraindication to scuba diving.

Hearing loss and migraine

Meehan

A twenty seven year old British female management consultant, with bilateral congenital hearing defects. She had a hearing aid for her left ear which she did not use. She had a history of migraines, particularly with stress, but she had no focal neurological symptoms nor vomiting with these. She had a history of blackouts, which had been fully investigated in the past, which had been put down to psychological cause. She had had a chest infection seven years ago, and had been prescribed salbutamol for a persistent cough which she had after that and she also had a history of anorexia nervosa. Examination, her Rhinne was normal and her Weber was louder in the right. Any comments on how you would address her problems?

Molvær

I would have liked to see the audiogram, but apart from that, having to use a hearing aid does not mean the hearing has to be very poor because some doctors give hearing aids for rather small hearing defects. On the other hand, if the hearing in one ear is very poor I warn the patient or diver or student and explain that a barotrauma to the other ear may put him or her in a very difficult situation, but I leave it to them to choose. As far as commercial divers go, which I mostly do, I would fail.

Bove

I have seen patients who have had migraines associated with exercise who have actually been disabled. They have had clear cut onset of fairly severe neurological symptoms. Anybody who has that kind of a migraine should be prohibited from diving because diving will often be a trigger. The more interesting thing about this woman is the fact that she has migraines, she has a history of blackouts that were possibly psychologically related and a history of anorexia. This is not the kind of person who usually wants to go diving. Has she been driven to it by a companion, or is there some other reason for it? My guess is that this woman would have trouble with the whole environment of diving. I would be concerned about the migraine, particularly if it is triggered by stress or exercise because that can be pretty disabling.

Meehan

She actually had borderline hearing loss where she could cope quite well without using her hearing aid. After a discussion of the risks of middle ear barotrauma and the

fact that it is usually the most common barotrauma she decided that she did not want to dive.

Tricyclic antidepressants

Meehan

A 29 year old male Australian electrician was on prothiaden, which is a tricyclic antidepressant, 150 mg at night, to control excessive sweating. He was very conscious of his sweating and did not want to stop the prothiaden but did want to scuba dive. Any comments about scuba diving while taking antidepressants?

Gorman

Andy Veale told me about a lady, on monamine oxidase inhibitors, who was on a live-aboard dive charter, ate some cheese and became decerebrate!

Bove

Many people take tricyclic antidepressants for a variety of reasons and there is no particular interaction with the diving environment. More important is the underlying process that requires the use of the drug. I have never heard of them being used for excess sweating, but I do not think it would be a problem with diving. The tricyclics sometimes produce premature ventricular contractions. Occasionally I see a patient with extra beats that are not understood, they are induced by the tricyclics. The cure is to get them off the tricyclics or lower the dose.

Davies

I think he was on prothiaden not to stop his sweating, but to stop him worrying about his sweating.

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FITNESS AND THE OLDER DIVER

Sue Paton

with audience participation

Key Words

Air embolus, cardiac conditions, diving medicals, investigations, medical standards, pulmonary barotrauma.

Introduction

Paton

During this session we want to formulate some guidelines for assessing fitness to dive in the older diver.