DCI Recognition and Diver Denial

Foreword

In recent years, I have acted as an expert diving witness for a number of divers who have been hurt as a result of a DCI accident. Over that time, I've noticed an alarming number of these divers have been damaged by *late* DCI treatment. To be frank, divers suffering from DCI are not always in an ideal position to comment on their own physical/medical condition, so it often falls to others to take appropriate action for them, particularly when stricken divers announce their symptoms. However, it seems that denial is alive and well in some of those in charge of diving groups. This problem ranges across all diving agencies and all seem to suffer in equal measure.

Most of the cases, of this nature, that I've been involved with would/could not have been acted upon by the legal profession had prompt DCI first aid been applied and the emergency services contacted whilst first aid was being delivered. Furthermore, it is very likely that these DCI casualties would have emerged fit and well without residual problems had basic the DCI response been promptly applied. Diver denial is a genuine real threat that needs the recognition of a much wider audience. I hope this short article is of some help.

Introduction

The risk of getting decompression illness (DCI) is very remote. This can be gauged from the intelligence gathered for a government agency detailing that the number of dives (exposures to pressure) completed annually by UK divers is between 2 and 2.5 million, while the number of reported treated cases of DCI is around 200pa. Taking the lower of the two numbers; the risk of getting decompression illness (DCI), if true, it is around one in 10,000 give or take a few. However, it is impossible to be precise because the number of dives or so-called exposure to pressure is only an estimate taken from that survey. The risk of DCI is ever present and intrinsic in every dive. Given that this is a fact of life it is wise to train and plan to deal with it.

There is no doubt that a stricken diver's best chance of surviving a DCI hit without residual problems (eg brain damage, paralysis, sexual dysfunction, death etc) is prompt recognition, first aid and treatment. This makes it imperative that dive teams are well trained and appropriately equipped to deal with this and other types of emergencies.

The Magic Bullet

Decompression illness is caused by inert free-gas (bubbles), usually nitrogen, within the blood and tissues disrupting the body's normal functions. The key to resolving the problem is to encourage this gas to diffuse out of the bubbles and dissolve into the blood so that it can exit the body in the normal way, by breathing.

In the first instance, first aid must be given to the stricken diver. The magic bullet or wonder gas that does this trick is pure oxygen, which is given to the casualty to breathe.

Since oxygen contains no nitrogen (N_2), the N_2 pressure gradient increases forcing the free-gas to exit the bubbles into the blood so that it can leave the body via the lungs.

Sounds simple. Well it is, but that's not the complete story. To achieve a satisfactory outcome, all suspected DCI casualties must be taken to a recompression facility to receive professional medical treatment from a qualified hyperbaric doctor.

Decompression illness is a multi-faceted problem that has a considerable number of manifestations. The following is a list of common symptoms and signs, but this is not an exhaustive list:

Symptoms (what the diver tells you)

Pain in limbs joint or joints	Dizziness
Skin itching	Numbness
Unusual or extreme fatigue	Pins and needles
Mental confusion	Loss of sensation
Visual disturbance (tunnel vision)	Paralysis or weakness
Chest pains	Shortness of breath
Staggering	Nausea
Collapse	Unconsciousness
Loss of bladder and/or bowel functions	

Signs (what you can see)

Blotchy red or blue skin rash	Staggering
Choking	Loss of sensation
Loss of strength	Paralysis
Collapse	Unconsciousness

In some situations, symptoms and signs can merge because it comes down to who recognises them first or they may be seen by both parties; casualty and the first-aider. In truth, it really doesn't matter where the recognition comes from as long as it comes quickly.

Diver Denial

A major obstacle to prompt DCI recognition, first aid and evacuation is "diver denial". Denial is not just a diving issue, it occurs all the time. I'm sure you've either seen or heard of a pensioner, or someone, tripping on a kerbstone, outside a supermarket, falling and cutting his head. When asked "Are you all right? by a well meaning shopper trying to assist, the man says "Yes, I'm fine." With blood flowing down his face patently he is not fine. That's denial at work!

It's also a survival thing and may also be a defence against perceived embarrassment. A survival issue, because it's no good stopping to deal with a minor injury when being chased by a dinosaur - it really does goes that far back. An embarrassment thing: because no one likes to look or feel a fool. Furthermore, it is not confined to the inflicted diver, often dive buddies and officials suffer "denial" and to avoid facing up to the facts of life. Diver Denial is a very powerful syndrome. Sometimes, DCI recognition is brushed away by trying to find other reasons for the symptoms displayed. You can often hear: "I must have pulled a muscle." or "I banged my elbow" etc. Buddies and official sometimes try to avoid the issue by saying that the dive was within the Tables of PDCs so it can't be DCI. Well, it can and sometimes it is DCI even if you've not earned it.

It's a Sports Injury

A simpler truth needs to be adopted: DCI is not a foolish thing. It's a sports injury and we need to deal with it as such - there must be no stigma. Furthermore, it is, in fact, a survival thing of a different kind: early recognition and treatment avoids permanent disability or worse.

Keep in mind that if the diver comes up from a dive with an ailment not taken into the water; it could be DCI. Treat all such situations as DCI, apply DCI First Aid and call for advice from a hyperbaric doctor.

It is always worth remembering that it is unwise to assume that a diver with a problem is in any fit mental state to make a reasoned judgement regarding their own condition. The very nature of the disease can disturb reasoning. Equally, it's not a good idea to ask: "Are you all right?" The answer will, in general, be yes. It's better to ask: "What's

wrong with you, how can I help?" You should get a more appropriate response.

Be Prepared

Be like a Boy Scout: "Be Prepared". Prepare to deal with DCI if it occurs and prepare to deal with diver denial. Positive pro-active management will help. Since DCI is no respecter of experience or status: it can happen to diving officers and novices alike. In view of this, preparing an Emergency DCI Action Plan will help. The following elements should be included: Determine a "Base Health-line" for each diver in the team, ie log all existing aches and pains, medication and the colour of urine etc, see example form in Fig 10.1. This form tells the Diving Officer of any special issues and divers will be aware that these important questions will be asked, thus it will also act as an aide-memoire about dehydration etc.

Fig 10.1

The SAA Health Base-line

Diver's name, contact and contact phone number	Brief description of your current health. eg aches and pains, headaches, feeling off colour, medication etc	Colour of urine, eg: D = dark yellow M = med yellow L = light yellow	I have read the Risk Assessment for today's dives. ✓ or ✖
1. Fred Blogg. Wife Mary 01234 56789	None	M	✓
2. Mike Browne Mother 0979654 4321	*Damaged left knee*	*D*	✓
3. Jean Smith Husband – Harry 07986 798765	*Simvastatin*	*L*	✓
4. Mark Hopper Wife Sheila - 0997788 887722	*Thumping head ache!*	*D*	✓
5.			
6.			

DCI/Accident Management Team and a Backup Team

Setting up a DCI/Accident Management Team and a Backup Team is essential to cover the event that leading divers become unwell, and when linked to the SAA Health Base-line will help reduce the effects of denial.

- Diving Officer (DO) + Backup DO.
- DCI Observers (DCI-O) + Backup DCI-O.
- O_2 Administrator + Backup O_2 Administrator.
- CPR team + Backup CPR team.

Since DCI can hit the Diving Officer as well as others; it is important to appoint a backup DO. DCI observers are members of the dive team appointed to take the time to monitor the group for signs of potential problems and report to the DO. The aim is to protect divers. This should be open and above board, not a secret service.

The appointment of an oxygen administrator and a CPR team should be normal practice, as should the appointment of their backup teams. In addition to the Emergency DCI Action Plan there is a need for an evacuation plan and an evacuation back-up plan (ie air, boat, road and even rail etc to match your situation), first aid oxygen, still drinking fluid and general first aid equipment.

Oxygen Administration Training

We all owe a duty of care to our buddies, diving mates, families and ourselves. To help fulfil this duty you should attend an SAA Oxygen Administration Course to learn about DCI recognition, first aid and the important safety aspects associated with using pure oxygen.

It's not Rocket Science

Keep in mind that a diver exiting the water from a dive with symptoms not taken into the water should be treated for DCI until a doctor says otherwise. Keep it simple, don't waste time with a pseudo medical examination. Promptly apply basic DCI first aid by giving:

- *pure oxygen*
- *non-alcoholic fluid, and at the same time get someone to contact the emergency services.*

IMPORTANT

It is important to remember that divers are NOT qualified to say that symptoms are not DCI, only hyperbaric doctors can do that.

Kind regards and safe diving

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