

- interference stimulation applied to the peripheral skin in humans: pain-related brain potentials following CO₂ laser stimulations. *J Peripher Nerv Syst* 1996; 1: 189-198
- 6 Taylor G. Are some jellyfish toxins heat labile? *SPUMS J* 2000; 30: 74-75
 - 7 Mann JW 3rd, Werntz JR. Catfish stings to the hand. *J Hand Surg [Am]* 1991; 16: 318-321
 - 8 Shiomi K, Takamiya M, Yamanaka H, et al. Hemolytic, lethal and edema-forming activities of the skin secretion from the oriental catfish (*Plotosus lineatus*). *Toxicon* 1986; 24: 1015-1018
 - 9 Scoggin CH. Catfish stings. *JAMA* 1975; 231: 176-177
 - 10 Burnett JW, Calton GJ, Morgan RJ. Catfish poisoning. *Cutis* 1985; 35: 208
 - 11 Birkhead WS. The comparative toxicity of stings of the ictalurid catfish genera *Ictalurus* and *Schilbeodes*. *Comp Biochem Physiol* 1967; 22: 101-111
 - 12 Pacy H. Australian catfish injuries with report of a typical case. *Med J Aust* 1966; 2: 63-65
 - 13 Russel FE, Fairchild DM, Michaelson J. Some properties of the venom of the stingray. *Med Arts Sci* 1958; 12: 78 (Quoted in Pacy)
 - 14 Halstead BW. *Dangerous marine animals*. Cambridge, Maryland: Cornell Maritime Press: 1959. (Quoted in Pacy)
 - 15 Isbister GK. Venomous fish stings in tropical northern Australia. *Am J Emerg Med* 2001; 19: 561-565
 - 16 Williamson JA, Fenner PJ, Burnett JW, Rifkin JF. *Venomous and poisonous marine animals: a medical and biological handbook*. Sydney: University Of New South Wales Press; 1966.
 - 17 Klasco RK (Ed): POISINDEX™ System. MICROMEDEX, Greenwood Village, Colorado (Healthcare Series Vol 110 expires 12/2001).
 - 18 Sutherland SK, Tibballs J. *Australian animal toxins*. 2nd ed. Melbourne: Oxford University Press; 2001.

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On being a patient in a hyperbaric chamber

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I remember as a medical student hearing a consultant say soon after the patient, a nurse, was asleep, "We will have to take extra care. Unexpected things go wrong with nurses and doctors, especially if they have red hair." As far as I know there are no statistics to confirm or deny this edict.

Just before I turned 65, I had my osteoarthritic left hip replaced. Some of my acquaintances suggested, tongue in cheek, that I should make a claim against the Royal Australian Navy on the grounds that dysbaric osteonecrosis had occurred as a result of my naval diving (four dives, one using an oxygen rebreather, none over 6 m). Unfortunately, there was a strong family history of osteonecrosis of the hip, so I could not consider indulging in creative litigation.

My post-operative course was smooth for five months. Then I developed acute pain in the left hip. To shorten a long story, four months later infection was diagnosed and I started on flucloxacillin. Within three days I no longer needed analgesics.

A year later, three weeks after stopping flucloxacillin, the pain came back. Back to flucloxacillin and the pain went

but my mobility was quite impaired. I was advised strongly to undergo hyperbaric oxygen therapy (HBOT). So off I went to the Alfred Hospital Hyperbaric Medicine Unit, via an assessment panel of two orthopaedic surgeons, and an infectious diseases and a hyperbaric physician. The prescription was 40 sessions of an hour at 2.5 bar (absolute) (15 msw). With the HBOT went three antibiotics, flucloxacillin, sodium fucidate and rifampicin.

I joined a group of patients – the number varying depending on whether or not anyone was a stretcher case – none of whom were still being treated when I finished. The diagnoses included diabetic and other chronic ulcers resistant to all treatment, decompression sickness, radiation necrosis and osteonecrosis. The maximum number for the chamber was six patients and one hyperbaric nurse. Before we were allowed to climb into the chamber, we had to change out of everyday clothes into cotton theatre garb, to avoid static sparks. Getting into the chamber was awkward as the circular door of the chamber was 900 mm in diameter. For many the only option was to crawl through. There was a special hoist for stretchers, which reached into the chamber and deposited the stretcher and patient onto a bunk. The other patients sat on the opposite bunk.

Treatment in a multiplace recompression chamber is dull. The only excitement happens during compression, when

some people have difficulty clearing their ears. At this point, the nurse tells the technician driving the chamber to stop the descent. You watch your fellows struggle to clear. It is interesting that patients still have so much trouble, when it is possible to teach almost all budding divers how to autoinflate in a few minutes.

After reaching 'bottom' (the technicians who run the chambers are all ex-commercial divers!), on go the oxygen hoods, which have a latex seal around the neck. It has to be tight or chamber air might be entrained, reducing the efficiency of oxygen therapy. I found that the fresh oxygen flow needed to be above the 15 l.min⁻¹ that the rotameters were set at and the inlet close to my mouth to prevent CO₂ build up in the large volume of the clear plastic hood. The hoods and the noise of the oxygen flow and ventilation of the chamber interfere with conversation for most of the treatment. Then, off with the hood for an air break and a cuppa! Now you can scratch your nose at last. The hood goes back on for the second period and then you're into a half-hour decompression. During this, the attendant also breathes oxygen from a mask. The hoods and masks have overboard dumps; the expired oxygen goes through the pressure hull to prevent oxygen build up in the chamber.

On the way down, thin theatre clothes are quite adequate as pressurising warms the chamber. While at treatment pressure one can cool off if the chamber is vented often. Coming up is chilly, as the temperature drops considerably. One cannot put a sweater on as the hood with its pipes covers your head. Draping a blanket round your shoulders is comforting but not really adequate for warmth. Oddly enough, having a treatment six days a week soon brings on acclimatisation, and by the third or fourth week of treatments one hardly notices the cooling.

At the Alfred there are various card games for people to amuse themselves. Most people read their way through the treatment, including myself, except for the time I left my specs outside the chamber!

We all benefitted. I lost much of my stiffness and my mobility improved during the first week and I continued to improve for the rest of the time, although it was not so dramatic. A man who had had an ulcer on his leg for 25 years was overjoyed that it was healing well at the end of 14 treatments. Another patient, whose irradiated bladder bled almost continuously, bled only occasionally after three weeks of treatments. His life had been transformed.

There are drawbacks to HBOT. One is shut, closely packed, in a small space. One is hooded so you cannot touch your face. Coughs and colds interrupt treatment. HBOT also affects the lenses in our eyes. After a number of treatments, the near point comes closer and the far point also moves in. You become myopic, especially if you are over 60. Having a Scots mother, I could be classed as "careful", so I used public transport to and from home.

After a couple of months of treatment I collected the family car from the garage after a service. With my bi-focals on I could not read the number plate of the car in front. Taking them off, everything came into focus. I still needed glasses to read, but not to watch the television. My eyes had dropped 30 years of ageing! Unfortunately, they aged again when I stopped HBOT, and three months later I was back to using my usual glasses.

The final drawback to HBOT is that results are not guaranteed for osteomyelitis. Pain recurred eight months later and four months after I stopped antibiotics. Despite long-term triple antibiotic therapy, bone scans continued to show evidence of infection. Relief from ongoing discomfort came from indomethacin in large doses. This led to osteolytic side effects and collapse of my opposite hip, requiring an emergency right total hip replacement. Bone scans at the time showed no evidence of infection in the left hip. Three months later I underwent revision arthroplasty of my left hip, seven years after my original surgery. There were no signs of infection at surgery but plenty of osteolysis.

There are a number of morals to this story. The first is that when a doctor becomes a patient he or she cannot afford to stop thinking about the whys and wherefores of treatment problems. No one, surgeons especially, likes to admit that something has gone wrong. Obvious answers like infection can be disregarded as "unlikely", especially if the X-rays show no evidence of loosening around the prosthesis.

Another is that HBOT can change your life dramatically if you have the right ailments. However, prosthetic joint infections are notoriously difficult to cure. Antibiotic failure is common and from my experience dosage is often not raised at retreatment. My final dosage of flucloxacillin was 1 g five times a day, which worked despite my physician's worries about my liver function.

A third is that self treatment can lead to trouble, especially if the product description in the packet does not mention unusual side effects. Although I had seen several orthopaedic surgeons, none mentioned the osteoporotic effects of non-steroidal anti-inflammatory drugs, nor did my GP or the pharmacists who liberally dispensed hundreds of indomethacin suppositories over the years. This side effect was not in my pharmacist's reference books in 2001. The final moral is that all doctors have gaps in their pharmacological knowledge.

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Dr John Knight is a retired anaesthetist and until June 2002 was the Editor of the SPUMS Journal.