

### 3. CASE REPORT - DECOMPRESSION SICKNESS

#### Presenting Symptoms

A Queensland diver, aged 29, presented to his local hospital with severe pains in the left arm and forearm, abdomen and chest, of five hours duration. He had also noticed an area of parasthesia over the left maxillary and frontal region. He desired to urinate, but could not succeed in this.

#### Past History

This included an anterior spinal fusion in 1969, and a previous diving accident resulting in severe epigastric pain lasting four to five hours, during 1966.

#### Diving Details

As far as can be ascertained the dives performed that day were as follows:

At 0730 he dived for about 40 minutes to a depth of 14 fathoms, for salvage.

At 0900 for 35-40 minutes at 14 fathoms (salvage). An attempt at staging at the 10 feet mark for 20 minutes was not carried out, as the emergency or reserve supply failed.

The third dive was performed at approximately 1000 for 25-30 minutes at 14 fathoms. This dive had to be terminated when the diver was compelled to do a free ascent, as he ran out of air. A new tank was used each time for the dives, and he was diving with companions who had no symptoms. The gas supply came from the same source.

At approximately 1030 he performed a series of "staging dives" in which he descended to 14 fathoms, slowly, stayed on the bottom for an undisclosed time, but used half a tank of air in a gradual ascent. He then went down a few more times to undisclosed depth for undisclosed times. Five aqualung tanks were used. This group of dives was used as an attempted recompression therapy.

#### Symptoms

Following the third dive he arrived on the surface "almost unconscious", with severe chest pain and dyspnoea. Pains in the left wrist and elbow commenced 2-3 minutes later, and it was these symptoms that prompted the attempts at water recompression. The descent produced mild relief, however this was changed to extreme pain as

he surfaced in each case. On examination at the District Hospital there were no gross physical signs, apart from the patient's general state of apprehension and confusion and discomfort. It was thought that there was no bladder able to be percussed, and that the left arm reflexes appeared hypertonic. The left arm was difficult and painful to bend. An area of numbness to sensation was noted over the left maxillary area. IV Valium was given, and repeated without symptomatic relief.

#### Examination Prior to RCC Treatment

The patient was conscious, co-operative, but drowsy. He was in considerable pain and distress.

Respiration There appeared no abnormality in the respiratory tract. The FEV<sub>1.0</sub>/VC was 5.0/5.7L.

Locomotor Pain was related to the left shoulder, elbow and wrist, with less severe pain involving the right arm (between shoulder and elbow). Difficulty in movement was encountered, but the range was full.

Alimentary There was considerable pain in the abdomen, mainly suprapubic. The patient had managed to pass urine once, with considerable difficulty. He also noted increased borborygmi, verified with auscultation.

Neurological The patient had a frontal headache, with numbness over the left maxillary and frontal regions. The only abnormalities on CNS examination were a past pointing with the left hand, missing the nose by about two inches, increased reflexes especially in the right knee, gross weakness of the left hand, Romberg's sign present (falling consistently and rapidly backwards to his left side), and (?) nystagmus.

Others There were no skin manifestation, areas of ischaemia, lymphatic obstruction or signs of shock. Application of pressure to the pain sensitive areas, via a sphygmomanometer cuff pressurised to 250 mm Hg, produced no change in pain sensitivity.

#### Treatment

The patient was placed on an oxygen enriched mixture, and the transfer via a pressurised aircraft was arranged for the 600 mile trip to a large recompression chamber. With the minimum of movement by the individual, this transfer was carried out and he arrived at the PCC at approximately 0200 on the following day, viz, 15 hours after the start of symptoms. An initial attempt was made to obtain relief using

the shorter oxygen table, designed by Workman. The patient did not obtain significant relief of symptoms after 10 minutes at 60 feet depth on O<sub>2</sub>, and thus he was continued on the longer O<sub>2</sub> table (285 minutes). Complete relief was obtained with this therapy, and the patient was taken from the chamber, asymptomatic, approximately 24 hours after the first dive commenced. In the subsequent 24 hours the patient had to be constantly monitored to maintain his relief from symptoms, by the use of different O<sub>2</sub> mixtures. This was achieved without difficulty.

### Investigations

Unfortunately few investigations could be carried out in this particular case, but there were no abnormalities noted in the serum enzymes (LDH, CPK, SGOT, SGPT).

### Further Treatment

The patient was sent back to his home, with the provision that he must not travel in commercial aircraft, that he must remain at rest for some days and that there must be no further diving or flying for a minimum of one month.

### Provisional Diagnosis

This patient, according to the signs listed just prior to his being recompressed, had decompression sickness involving the upper limbs, the abdomen and the cerebellum.

### Comments

1. It is about time that divers stopped relying on their emergency supply for decompression staging.
2. The duration and depth of the dives far exceeded that expected to produce decompression sickness.
3. The diver's attempts at decompression staging were grossly inadequate. Water recompression usually leaves the patient worse than it finds him and especially if one attempts it with an inadequate gas supply and a demand valve system.
4. The possibility of a high cervical spine bend, of worry to his local and receiving medical officers, necessitated the constant supervision of the patient during transport, with the ability to

7.

intubate and take over respiration needed at all stages.

5. The necessity to use aircraft pressurised to ground level is re-emphasised, if air transport is used.
6. The post RCC treatment is considered at least as important as the recompression in achieving a satisfactory final result.