Chapter 26

SALT WATER ASPIRATION SYNDROME

This condition was first described in Royal Australian Navy divers in the late 1960's. Some divers were repeatedly presenting for treatment with a brief condition characterised by shortness of breath, sometimes a pale or bluish (cyanosis) skin colour, mild fever accompanied by shivering, malaise, anorexia, and generalised aches and pains. Chest X-rays sometimes showed an appearance similar to a patchy pneumonia and blood gases consistently verified hypoxia.

Close questioning of the divers revealed that nearly all the cases had aspirated a fine mist of seawater from a leaking or flooded demand valve. "Volunteer" experiments confirmed the association between aspiration of sea water and the development of the syndrome.

CLINICAL FEATURES

There is often a delay of half an hour or more between aspiration of the water and the major symptoms. The onset in mild cases is often provoked by exercise, movement or cold exposure. Others may develop after movement, such as arising from bed the next morning.

The diver has some or all the following symptoms:

- initial coughing, sometimes with expectoration, after surfacing
- fever with shivering (induced by cold exposure),
- malaise with anorexia, nausea or vomiting,
- shortness of breath, coughing, cyanosis
- headache and generalised aches and pains.

TREATMENT

The condition is self limiting and resolves without treatment within 2-24 hours. **Rest** and the administration of **100% oxygen** by mask for several hours until the symptoms have abated, is of considerable value. The oxygen not only relieves the hypoxia but produces dramatic resolution of the symptoms of this syndrome.

Because of the nature of the symptoms, it is necessary to distinguish the salt water aspiration syndrome from other serious conditions such as decompression sickness (chokes), pulmonary barotrauma (burst lung), severe infection and pneumonia – which can all present with some or all of the features of this condition.

PREVENTION

The condition can be prevented by avoiding situations which will result in the aspiration of seawater. Buddy breathing from a single regulator can be a fruitful source of the syndrome if the shared demand valve is not adequately cleared of water. Others include a towed search, poor regulator performance, exhaustion of air supply and free ascent practice. Proper maintenance of the demand regulator and its exhaust valves, is important.

Other cases develop on the surface, after divers remove the demand valve to talk – as they are wont to do. Similar symptoms are observed in surfers and victims rescued from the sea (especially by helicopters, which produce a strong down draft causing a sea water spray).

Some divers are especially vulnerable based on hyperactive airways, with a history of hay fever or asthma. In respiratory laboratories, aerosol inhalations of hypertonic saline (sea water) are used to provoke these breathing difficulties and demonstrate susceptibility to the syndrome.