

Namaste

Hamesha khush raho bitiya

Topic - Disease due to high altitude

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Physiological effect of high altitude

- In high altitude, the proportions of oxygen, nitrogen and carbon dioxide in air do not change but their partial pressure falls proportion to barometric (atmospheric) pressure.
- At high altitude, oxygen tension is reduced within the lung alveoli. This result in a fall in arterial oxygen saturation.

Illnesses at high Altitude (soroche)

Ascent to altitude up to 2500 m or travel in a Pressurized aircraft cabin is harmless to normal individuals. Above 2500 m high –altitude illness may develop in healthy individuals, and above 3500 m these commonly develop. Sudden ascent to altitudes above 6000 m (e.g. by aviators, balloonists and astronauts), may cause decompression sickness with the clinical features similar to in divers, or even loss of consciousness. However, most high altitude illness develops in travellers and mountaineers.

Acute mountain sickness (AMS)

Acute mountain sickness is a syndrome characterized by headache, fatigue, anorexia, nausea and vomiting insomnia or dizziness. Ataxia and peripheral edema may be present. Symptoms develop within 6-12 hours of an ascent and vary in severity from trivial to completely incapacitating.

Etiology – Not known. probably hypoxemia increases cerebral blood flow and intracranial pressure.

Treatment

Mild cases require rest and simple analgesics. symptoms usually resolve after 1-3 days at a stable altitude, but may recur with further ascent. Occasionally it may progress to cerebral edema. If the symptoms persist, it indicates the need to descend but may respond to acetazolamide (carbonic anhydrase inhibitor) that produce a metabolic acidosis and stimulates ventilation. Acetazolamide is used as a prophylaxis, if a rapid ascent is planned

High altitude cerebral edema (HACE)

Symptoms- ataxia and altered consciousness. in addition to features of AMS, the patients also develops confusion, disorientation, visual disturbance, lethargy and can lead to loss of consciousness.

Signs- papilledema and retinal hemorrhages are common. focal neurological signs may be detected.

Treatment

- Improve oxygenation
- Descent is needed and if descent is not possible, oxygen therapy in a portable pressurized bag is useful.
- Dexamethasone 8 mg immediately and 4 mg 4 times daily.

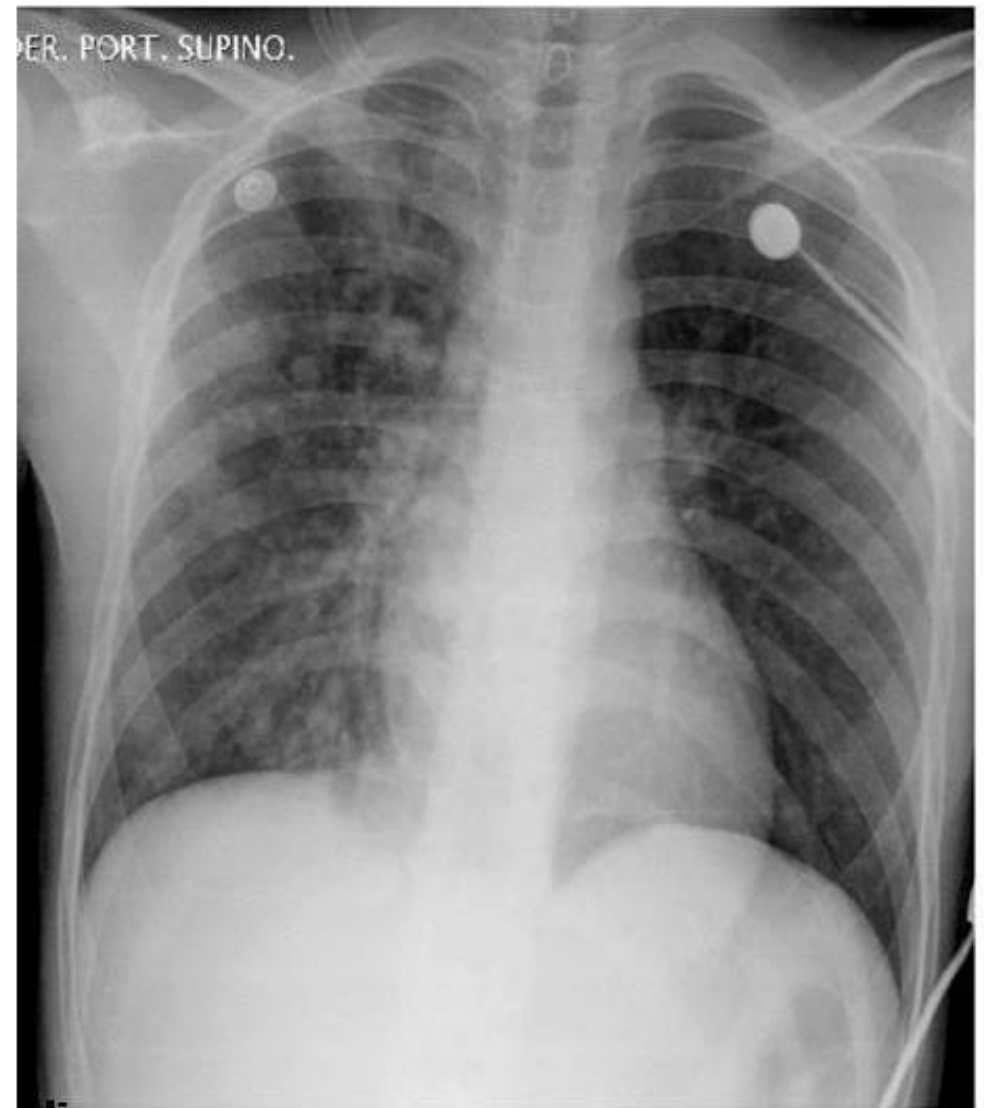
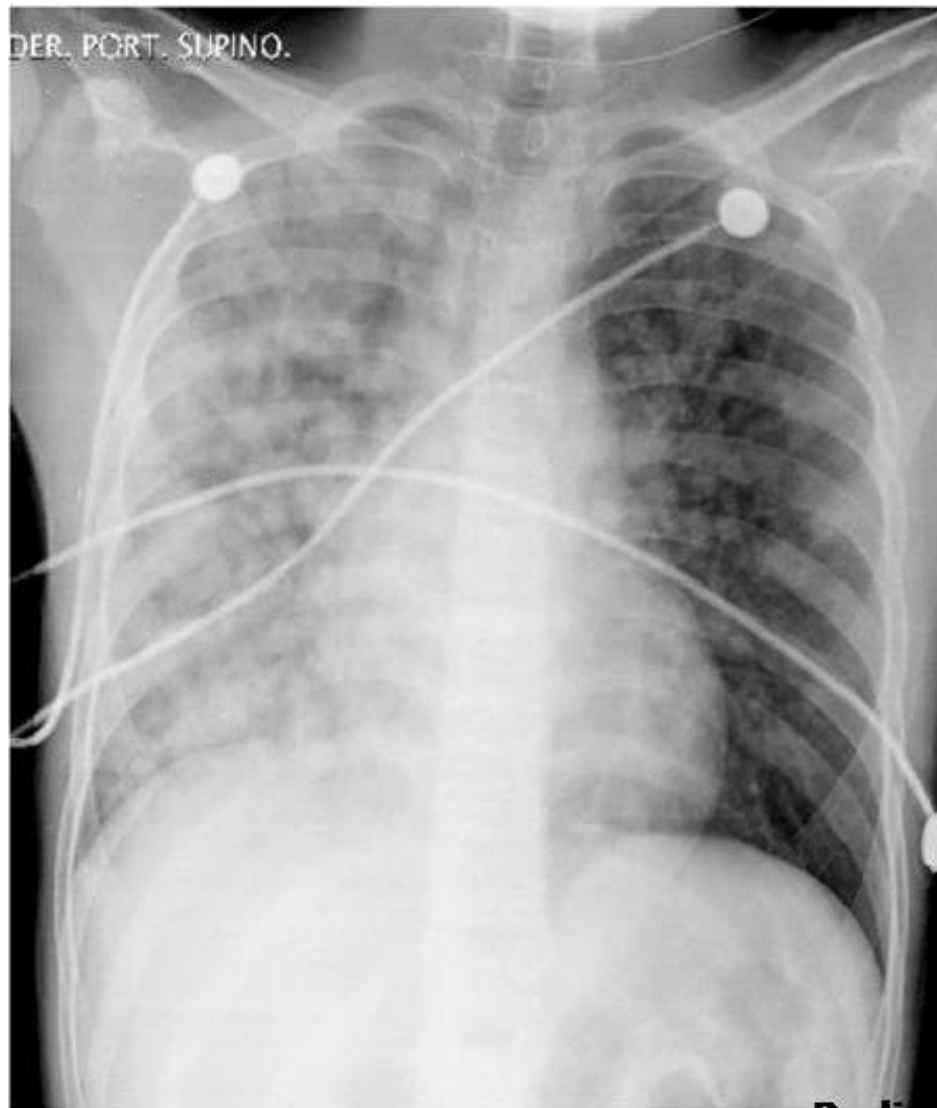
High altitude pulmonary edema(HAPE)

High altitude pulmonary edema is a life threatening condition.

Times of occurrence; it usually occurs in the first 4 days after ascent above 2500 metre. unlike HACE,HAPE may develop de novo(new) without the preceding signs of AMS

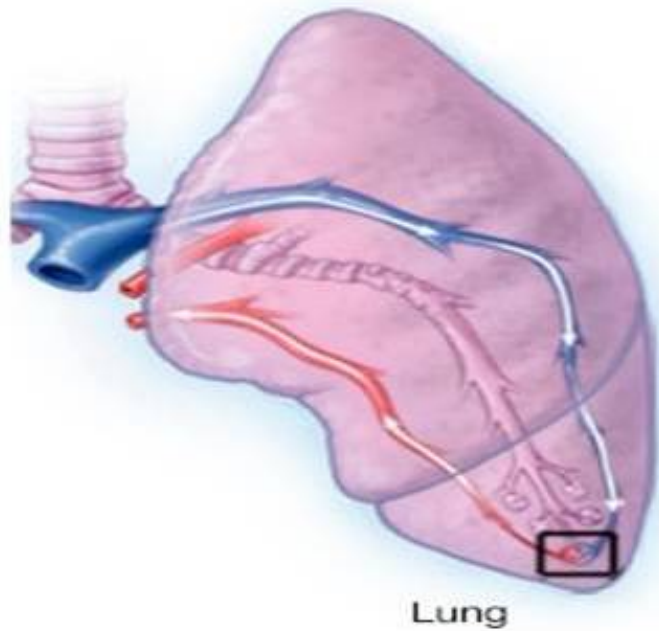
Symptoms- Initially, dry cough, exertional dyspnea and extreme fatigue. Later, the cough becomes wet and may be with blood stained sputum. Tachycardia and tachypnea develop at rest. Crepitations may be heard in both lung fields. It may lead to severe hypoxemia, pulmonary hypertention.

Investigations; Radiologically show diffuse alveolar edema. Decreased arterial oxygen saturation.



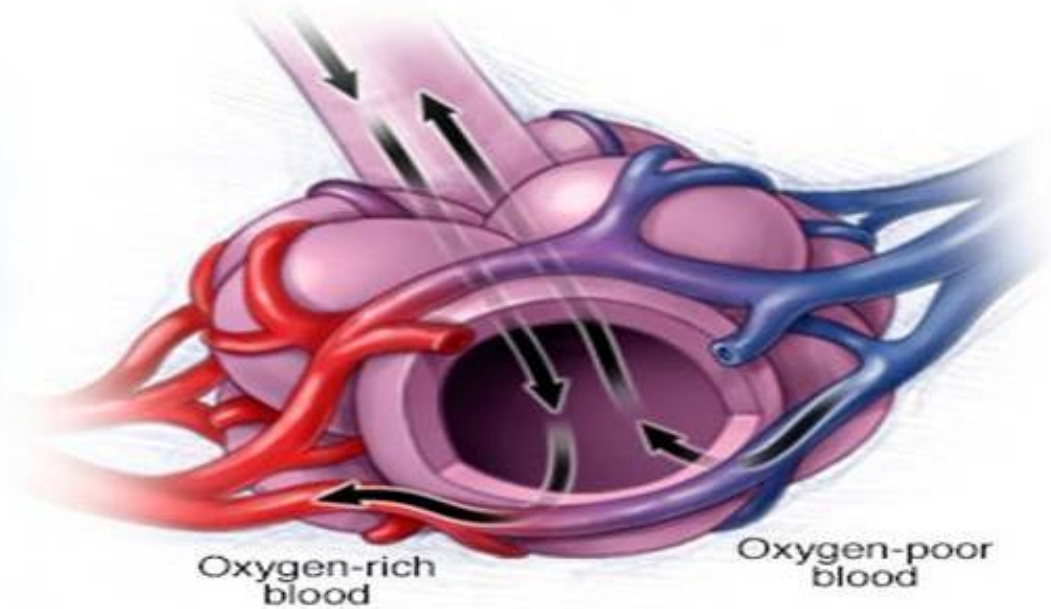
Radiopaedia.org

Right greater than left indistinct airspace opacity. Marked improvement in airspace opacity.



Lung

Normal air sacs
Normal oxygenation takes place
in air sacs (alveoli) in the lungs



Oxygen-rich
blood

Oxygen-poor
blood

High altitude pulmonary edema (HAPE)

It is theorized that blood
vessels constrict causing
increased blood
pressure in the lungs



As a result, fluid
leaks from vessels
into air sacs (alveoli)

Treatment

Reversal of hypoxia with immediate descent and oxygen administration.

Nifedipine (20 mg 4 times daily) is given to reduce pulmonary arterial pressure. if there is delay in descent , oxygen therapy In a portable pressurized bag should be given.

Thank You

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