Sentinel Consulting

Disease Information Sheets

Altitude Illness

Introduction

Altitude illness is a term used to encompass three altitude-related medical conditions: Acute Mountain Sickness (AMS), High Altitude Cerebral Oedema (HACE) and High Altitude Pulmonary Oedema (HAPE). At high altitude the atmosphere is under lower pressure than at sea level, and less oxygen enters the blood stream. The body responds in the short term by stimulating more deep and rapid breathing. Over a number of weeks more red blood cells are produced to increase oxygen-carrying capacity - the process of acclimatisation.

How common is it?

A study of the general tourist population arriving at resorts in Colorado at altitudes of 1900m to 2940m found that 25% were suffering from altitude illness. It is most common in those who ascend rapidly and remain at altitude overnight. AMS is more common than the more life-threatening conditions of HACE and HAPE.

Are travellers and/or expat workers at risk?

Yes. Travellers and expat workers are at risk. The effects of altitude are rarely concerning below 2500m (8,200ft). However rapid height gain (for example, by flying directly from sea level) can produce adverse effects at altitudes as low as 2000m. Early signs of altitude illness may progress rapidly to severe life-threatening illness. Often it is those who ignore or deny their symptoms who end up with life-threatening or even fatal problems.

What is the illness?

AMS

AMS is the most common altitude illness. It will normally pass after one night at your new altitude. AMS is thought to be a mild manifestation of HACE. Common signs and symptoms include headache, nausea and vomiting, loss of appetite, dizziness or light-headedness, fatigue and/or disturbed sleep.

HACE

HACE is the accumulation of fluid in and around the brain that causes the brain to be squeezed within the skull, severely impairing brain function. People can rapidly die of HACE. It is usually preceded by AMS. Signs of AMS progress into confusion and/or disorientation, behaviour change (for example, becoming aggressive), hallucinations, loss of balance and coordination (this often resembles being drunk), loss of consciousness, coma, convulsions and death. In the context of a recent gain in altitude, anyone who has loss of balance/coordination and/or a change in mental status should be assumed to have HACE, whether or not they have reported signs of symptoms of AMS.

HAPE

HAPE is the accumulation of fluid in the lungs. It results in serious breathing difficulties, which can be fatal. HAPE is often, but not always, preceded by AMS. Signs and symptoms are breathing difficulties, shortness of breath at rest, coughing, bloody phlegm (a late sign), blue tinge to the mucous membranes or skin, raised pulse and/or breathing rate, coma, convulsions and death.

Can it be treated?

Yes. Descent as far and as fast as possible is the best treatment - for HACE and HAPE aim for a descent of more than 1000m. While descending or awaiting descent, oxygen, drug and hyperbaric therapy can be life-saving.

Prevention

The best prevention is appropriate acclimatisation. This can be achieved by a slow rate of ascent (once above 3000m increase your sleeping height by no more 300m per day with every 4th day a rest day); working high during the day, sleeping low at night; having a flexible schedule to allow for more rest days if required.

Every individual acclimatises at a different rate. The vast majority of people are capable of acclimatising eventually given enough time. Past acclimatisation performance does not predict future acclimatisation rate, and acclimatisation is not related to physical fitness.

Acetazolamide (Diamox) is a diuretic drug that is used by some people to guard against altitude illness. Routine prophylactic use of acetazolamide is generally *not* recommended because its use may result in risky behaviour such as rapid ascent, a significant proportion of people are allergic to it, and it has common side effects.

Gingko biloba is a plant extract. Studies of its effectiveness in preventing altitude illness have shown very mixed results, with four studies reporting a benefit and three studies reporting no benefit. It is very safe and inexpensive.

Never leave someone with altitude illness - including AMS - alone. Never ascend with symptoms of altitude illness, however mild. If signs and symptoms are worsening or severe, descend as far and as fast as possible.