1. Introduction

As altitude increases, there is a decrease in barometric pressure and partial pressure of oxygen, resulting in hypobaric hypoxia. Plateau sickness is caused by hypobaric hypoxia at high altitudes (usually over 2000 meters or 6562 feet). Plateau disease covers a spectrum of disorders categorized by endorgan effects (mostly cerebral and pulmonary) and duration of exposure (acute and long-term). Acute high-altitude illnesses are acute hypoxia, acute mountain sickness (AMS), high altitude cerebral edema (HACE), and high altitude pulmonary edema (HAPE).1-3

Acclimatization occurs as a physiological response to increasing altitude and increasing hypobaric hypoxia. Altitude sickness occurs when hypoxic stress is greater than the individual's ability to adapt. Risk factors for high altitude sickness include increased physical activity with inadequate acclimatization, inadequate education and preparation, individual susceptibility, and previous high altitude sickness. This review aims to describe the clinical aspects of high-altitude disease. There is a spectrum of neurological conditions caused by altitude, ranging from acute mountain sickness (AMS) to more serious forms, such as high-altitude cerebral edema (HACE). HACE includes symptoms of severe AMS and results from cerebral vasogenic edema and cerebral cellular hypoxia. This situation usually occurs at altitudes above 2500 meters (8202 feet) but can occur at lower altitudes. The main signs that occur are changes in mental status, ataxia, severe fatigue, and encephalopathy. HAPE is the leading cause of death from plateau disease. The characteristic feature is an increase in pulmonary artery pressure followed by pulmonary edema. Initial symptoms may appear within 6–36 hours after arriving in highland areas. In conclusion, the clinical severity of disease or death due to plateau disease is influenced by the speed and altitude of climbing as well as individual susceptibility.
Neurological conditions associated with high altitudes

There is a spectrum of neurological conditions caused by altitude, ranging from acute mountain sickness (AMS) to more serious forms, such as high-altitude cerebral edema (HACE). AMS includes symptoms such as headache (the most severe and persistent symptom), lethargy, drowsiness, dizziness, chills, nausea and vomiting, and difficulty sleeping. Later symptoms include irritability, difficulty concentrating, anorexia, insomnia, and increased headaches.\(^7\)\(^-\)\(^9\)

HACE includes symptoms of severe AMS and results from cerebral vasogenic edema and cerebral cellular hypoxia. This situation usually occurs at altitudes above 2500 meters (8202 feet) but can occur at lower altitudes. The main signs that occur are changes in mental status, ataxia, severe fatigue, and encephalopathy. Examination findings may include confusion, ataxia, urinary retention or incontinence, focal neurologic deficits, papilledema, and seizures. Symptoms may progress to obtundation, coma, and death. It is important that doctors also assess other conditions that may resemble or coexist with AMS and HACE.\(^10\)\(^-\)\(^13\)

High altitude pulmonary edema acute

HAPE is the leading cause of death from plateau disease. The characteristic feature is an increase in pulmonary artery pressure followed by pulmonary edema. Initial symptoms may appear within 6–36 hours after arriving in highland areas. These include a persistent dry cough, shortness of breath disproportionate to activity, headaches, decreased exercise performance, fatigue, dyspnea at rest, and chest tightness. Recognition of early symptoms allows patients to come down before disabling pulmonary edema develops. Heavy exertion should be avoided. As pulmonary edema worsens, wheezing, orthopnea, and hemoptysis may occur.\(^14\)\(^,\)\(^15\)

Prevention of altitude-induced disorders

Pre-travel precautions include providing education for participants, evaluating medical preparations, pre-travel planning, optimal physical conditioning before the trip, and adequate rest and sleep the day before the trip and during the trip. Preventive measures during climbing include reducing food intake, avoiding alcohol and tobacco, and limiting unnecessary physical activity during the trip. Gradual ascent is the most effective way to allow acclimatization. Low-risk ascension rates are 2 days or more to reach 2500–3000 meters. The height reached when waking up is not as important as the height at which the climber sleeps. Groups of mountain climbers at altitudes of 3000 meters or more must carry sufficient oxygen supplies and medical equipment for several days.\(^10\),\(^12\)

2. Conclusion

The clinical severity of illness or death from high altitude sickness is influenced by the speed and altitude of ascent as well as individual susceptibility.

3. References


