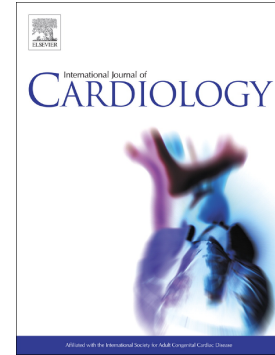


Gravitational ischemia in the brain — may be exacerbated by high altitude and reduced partial pressure of oxygen, inducing lung changes mimicking neurogenic pulmonary edema

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Letter to the Editor

Gravitational ischemia in the brain – may be exacerbated by high altitude and reduced partial pressure of oxygen, inducing lung changes mimicking neurogenic pulmonary edema

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Dear Editor,

High-Altitude Respiratory Physiology Investigators studied elevated systolic pulmonary artery pressure and increased extravascular lung water (EVLW) in 21 healthy young adults exposed to 5050 meters of altitude. They recently reported in the *Journal* [1] that B-lines rose during prolonged repeated exposures to 5050 meters, despite a gradual decrease in sPAP, indicating that excessive hydrostatic pressure might not be solely responsible for EVLW-development.

Encased in the skull, the brain is one of the least mobile organs in the body. 'Gravitational ischemia in the brain', results from the mass effect of one part of the brain upon another in a gravitational field [2-5]. In any given head position, the 'top' half of the brain (farthest from the center of the earth) is sitting on the 'bottom' half as a weight-burden. Pancaking layers of progressively increasing weight from the overlying brain tissue compress blood vessels and reduce blood flow in the bottom layers, possibly resulting in regional ischemia. In healthy individuals, head and body positions are roughly vertical for 16 hours a day, and then roughly horizontal for 8 hours at night during sleep [2-5]. Ischemia, which may develop in the bottom layers, is reversible in its early stages.

Often the down-side brainstem autonomic nuclei (with vital centers) incur gravitational ischemia. The brainstem nuclei are capable of initiating cardiac arrhythmias, and pulmonary vascular changes, mostly as discharges from the dorsal

motor nucleus of the vagus nerve, as they react to ischemic conditions [2-5].

Gravitational ischemia in the brain may contribute to EVLW-development.

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