

# Sleep apnea

**Sleep apnea** syndrome is present in most patients with **acromegaly**; it is detected in up to 90% of patients with symptoms such as snoring.

see **Obstructive sleep apnea**.

Earlier studies have indicated an important role for cerebral blood flow in the pathophysiology of central sleep apnea (CSA) at high altitude, but were not decisive. To test the hypothesis that pharmacologically altering cerebral blood flow (CBF) without altering arterial blood gas (ABGs) values would alter the severity of CSA at high altitude, we studied 11 healthy volunteers. (8M, 3F; 31{plus minus}7 years) in a randomized placebo-controlled single-blind study at 5,050 metres in Nepal. CBF was increased by intravenous (iv) acetazolamide (Az; 10mg/kg) plus iv dobutamine (Dob) infusion (2-5 ug/kg/min) and reduced by oral indomethacin (Indo; 100mg). ABG samples were collected and ventilatory responses to hypercapnia (HCVR) and hypoxia (HVR) were measured by rebreathing and steady-state techniques before and after drug/placebo. Duplex ultrasound of blood flow in the internal carotid and vertebral arteries was used to measure global CBF. The initial 3-4 hours of sleep were recorded by full polysomnography. Iv Az+Dob increased global CBF by 37{plus minus}15% compared to placebo ( $P<0.001$ ), whereas it was reduced by 21{plus minus}8% by oral Indo ( $P<0.001$ ). ABGs and HVR were unchanged in both interventions. HCVR was reduced by 28%{plus minus}43% ( $P=0.1$ ) during iv Az{plus minus}Dob administration and was elevated by 23%{plus minus}30% ( $P=0.05$ ) by Indomethacin. During iv Az+Dob, the CSA index fell from 140{plus minus}45 (control night) to 48{plus minus}37 events/hour of sleep ( $P<0.001$ ). Oral Indo had no significant effect on CSA. We conclude that increasing cerebral blood flow reduced the severity of CSA at high altitude; the likely mechanism is via a reduction in the background stimulation of central chemoreceptors <sup>1)</sup>.

1)

Burgess KR, Lucas SJE, Burgess KM, Sprecher KE, Donnelly J, Basnet AS, Tymko MM, Day TA, Smith KJ, Lewis NCS, Ainslie P. Increasing cerebral blood flow reduces the severity of central sleep apnea at high altitude. *J Appl Physiol* (1985). 2018 Feb 1. doi: 10.1152/jappphysiol.00799.2017. [Epub ahead of print] PubMed PMID: 29389246.

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Last update: **2018/02/02 18:47**

