relationship of HbA1c levels with OSA severity in both diabetic and non-diabetic patients.

Results In a cohort of predominantly male (63.5%) and severely obese (mean BMI 40.3 kg/m²) individuals, 32.2% had T2DM. Although the likelihood of T2DM was significantly greater in the highest AHI quartile than the lowest (unadjusted OR 1.78; 95% CI: 1.29–2.47), this relationship lost significance following adjustment for anthropometric, demographic, and clinical factors (adjusted OR 1.21; 95% CI: 0.83–1.76; *p* = 0.33). However, severity of nocturnal hypoxaemia remained a predictor of T2DM prevalence despite adjustment for confounding factors (adjusted OR for most severe mean nocturnal SpO₂ quartile 2.23; 95% CI: 1.50–2.20; *p* < 0.001), as well as predicting the likelihood of poor diabetic control (adjusted OR 1.87; 95% CI: 1.06–3.30; *p* = 0.03). In further analyses, HbA1c levels were independently predicted by OSA severity indices and nocturnal hypoxaemia in both non-diabetic and diabetic subjects, while adjusted mean HbA1c levels were significantly higher in patients with more severe sleep disordered breathing.

Conclusion Metabolic health in severely obese sleep patients appears to be significantly worse in those subjects with more severe sleep disordered breathing, with a particularly strong relationship with the degree of nocturnal hypoxaemia.

S23 NEURAL RESPIRATORY DRIVE DURING SLEEP AT HIGH ALTITUDE

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Introduction Ventilation at altitude changes due to altered levels of pO₂, pCO₂ and the effect on blood pH. Nocturnal ventilation is particularly exposed to these changes. We hypothesised that increasing neural respiratory drive is associated with the severity of sleep-disordered breathing at altitude.

Subjects and methods British mountaineers were studied at sea level (London, UK), and at altitude at the Aconcagua (Andes, Argentina). Neural respiratory drive (NRD) was measured as electromyogram of the diaphragm (EMGdi) overnight by a transoesophageal multi-electrode catheter (Yinghui Medical Ltd, Guangzhou, China). Following initial assessment with a

polysomnography (London, UK), pulse oximetry measured oxygen concentration and oxygen desaturation indices (4%ODI) at altitude.

Results Four healthy subjects (3male, age 31 (3) years, body-mass-index 23.6 (0.9) kg/m², neck circumference 37.0 (2.7) cm, FEV₁ 111.8 (5.1)% predicted, FVC 115.5 (6.3)% predicted) were studied. Inspiratory and expiratory muscle strength were normal (P_{Imax} 130.7 (29.8) cm H₂O, P_E_{max} (153.3 (38.4) cm H₂O). No subject had significant sleep abnormalities at sea level (Total Sleep Time 344.4 (30.5) mins, Sleep Efficiency 86.6 (6.4)%, Respiratory Disturbance Index 0.8 (0.4)/hour, mean SpO₂ 97.5 (1.3)%). The oxygen desaturation index increased with the development of periodic breathing at altitude (4% ODI 22.0 (7.2)/hour at 3,380m, 61.4 (26.9)/hour at 4,370m). Average nocturnal SpO₂ (84.8 (0.5)%) at 3,380m; 81.0 (4.1%) at 4,370m) and nadir oxygenation (68.1 (8.6)% at 3,380m; 67.4 (7.6)% at 4,370m) dropped with altitude. The average EMGdi was 5.2 (19.1)% max at sea level and increased to 14.1 (3.4)% at altitude when falling asleep at 4,370m, and correlated well with the 4% ODI (*r* = 0.968, *p* = 0.032). EMGdi during the last inspiratory effort prior to central apnoea was 5.1 (1.5)% max, while the first inspiratory effort following central apnoea was 10.5 (3.2)% max at 4,370m.

Conclusion The severity of periodic breathing when asleep deteriorates with an increase in altitude, induced by an elevated neural respiratory drive as a response to hypobaric environmental conditions.

S24 A COMPARISON OF PULSE TRANSIT TIME BETWEEN SUBJECTS WITH OBSTRUCTIVE SLEEP APNOEA SYNDROME, NOCTURNAL INSPIRATORY FLOW LIMITATION AND THE ABSENCE OF SIGNIFICANT SLEEP DISORDERED BREATHING

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Introduction Pulse Transit Time (PTT) represents a non-invasive indirect marker of sleep fragmentation in OSAS. Little is known regarding PTT indices in persons presenting with sleepiness where sleep studies exhibit “flow limited” breaths in the absence

Abstract S24 Table 1 Key demographics in the IFL, OSAS and NFL “Control” cohorts

	Inspiratory flow limitation (IFL) cohort (n = 20; female = 13)	Obstructive sleep apnoea syndrome (OSAS) Cohort (n = 20; female = 13)	“NFL” Control group(n = 20; female = 13)	f Value	P value
Age (years)	47 (8.39)	45 (8.30)	47 (8.79)	F = 0.28	P = 0.76
BMI (kg/m ²)	34.25 (6.63)	36.31 (5.62)	28.90 (6.81)	F = 7.21	P = 0.002
AHI (per hour)	3.84 (1.16)	48.93 (16.77)	1.01 (1.05)	F = 152.78	P < 0.001
RDI (per hour)	17.71 (5.34)	57.22 (16.33)	2.63 (1.34)	F = 159.72	P < 0.001
Oxygen Saturation	95.05 (1.85)	93.75 (1.55)	95.90 (1.48)	F = 10.14	P < 0.001
Epworth Sleepiness Score (ESS) at presentation	16.35 (3.65)	14.45 (5.52)	7.90 (6.21)	F = 12.49	P < 0.001
Presence of Hypertension	5/20	5/20	0/20	F = 3.16	P = 0.05
Presence of Cardiac Disease	1/20	1/20	0/20	F = 0.5	P = 0.61