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Title: Association between plasma haemoglobin A1c (HbA1c) concentration and overnight desaturation in obstructive sleep apnoea (OSA) patients without diabetes

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Body: OSA is recognized as an risk factor for insulin resistance and diabetes. Plasma HbA1c concentration is an indicator of mean glycaemia over 2-3 month period (increased HbA1c may precede diabetes). We aimed to assess relationships between plasma HbA1c and OSA severity and complications in subjects without diabetes. We studied 455 OSA pts, mean age=56.3±11 years with moderate to severe OSA (AHI=40.5±21.4) and obesity (BMI=33.2±5.9 kg/m^2). Normal HbA1c was found in 240 pts (52.75%), increased HbA1c (≥ 6%) was found in 215 pts (47.25%). Comparison of these groups is shown in the table.

Variable	HbA1c < 6%	HbA1c ≥ 6%	p
Age (years)	55.5±10.9	57.2±10.9	NS
AHI (n/h)	40.2±20.9	40.9±22.1	NS
mean SaO2 (%)	92.2±4.1	91.4±4.5	p=0.046
T90 (%)	16.6±22.2	23.2±28.3	p=0.007
PaO2 (mmHg)	76±8.7	73.1±9.4	p=0.001
BMI (kg/m2)	33±6	33.5±5.9	NS
ESS score (points)	10.4±5.7	11±6	NS
Coronary artery disease (n/% of pts)	35 (14.6%)	41 (19.1%)	NS
Heart failure (n/% of pts)	10 (4.2%)	19 (8.8%)	p=0.04
Arterial hypertension (n/% of pts)	167 (69.6%)	153 (71.2%)	NS
Stroke (n/% of pts)	6 (2.5%)	6 (2.8%)	NS

Multiple linear regression analysis confirmed significant correlation between plasma HbA1c and T90

(β=0.25; p=0.03) and Epworth score (β=0.12; p=0.01). Elevated plasma concentration of HbA1c in OSA pts without diabetes was related to some markers of body oxygenation: significantly lower mean overnight saturation, higher T90 and lower daytime PaO_2. Conclusions: Increased plasma HbA1c concentration was very frequent (in about 50%) in a group of moderate to severe OSA pts without diabetes. Overnight desaturation time (T90) was mainly responsible for HbA1c elevation in this group.