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Title: Visceral fat in non-to-moderate and severe obstructive sleep apnoea

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Body: Introduction: Visceral obesity and obstructive sleep apnoea (OSA), especially apnoea-hypopnoea index (AHI) ≥ 30 , are said to induce cardiovascular diseases (CVD) and mortality. Aims and objectives: We hypothesized that there were significant differences in visceral fat area (VFA) and other factors between severe and non-to-moderate OSA and findings could provide information leading to reduce CVD in OSA. Methods: We compared age and body mass index (BMI) matched non-to-moderate and severe OSA in the 239 male subjects hospitalized for examination of OSA. We analyzed the relationships between fat areas by computed tomography, comorbidity, polysomnographic data, arterial and venous blood data. Results: Of the 239, 52, 67 and 94 had mild, moderate and severe OSA. We compared all the 94 severe OSA with 85 of the 145 non-to-moderate OSA matched with age and BMI. While waist circumference was the same, severe OSA had a significantly larger VFA. Between the 2 groups, arterial oxygen partial pressure (PaO₂), HbA1c and fibrinogen differed significantly. Multivariate modeling of those determinants revealed that both VFA and AHI independently determined PaO₂ (contribution rate (R²)=6.5% and 6.7%) and fibrinogen (R²=7.5% and 4.4%), while HbA1c associated independently with AHI (R²=3.7%), not VFA. Conclusions: Severe OSA had a significantly larger VFA, lower PaO₂, higher HbA1c and fibrinogen than non-to-moderate OSA. Larger VFA in severe OSA suspect that VFA increase would be a key factor related to body composition in OSA becoming severe. PaO₂, HbA1c and fibrinogen were independently predicted by VFA and AHI. Thus, control of OSA would decrease VFA, and in turn, a decrease in VFA and OSA might improve HbA1c and fibrinogen.