GW23-e1098 | **EVALUATION OF STRUCTURE AND ELASTICITY OF THE COMMON CAROTID ARTERY IN PATIENTS WITH OBSTRUCTIVE SLEEP APNOEA SYNDROME BY ULTRASOUND RADIOFREQUENCY-DATA TECHNOLOGY**

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Objectives To evaluate the structure and elasticity of the common carotid artery (CCA) in patients with obstructive sleep apnoea syndrome (OSAS) by ultrasound RF-data technology with Quality Intima Media Thickness (QIMT) and Quality Arterial Stiffness (QAS) and analyse the relationships between the parameters of CCA and cardiovascular risk factors.

Methods 124 participants with habitual snoring underwent the standard overnight polysomnography (PSG) and Ambulatory Blood Pressure Monitoring (ABPM). Blood pressure parameters included SBP, DBP, MAP, PP of daytime and nighttime and percentage of nocturnal BP decreased at same time. Neck circumference, waist circumference, hip circumference, glucose, cholesterol, and urea nitrogen, creatinine and Carotid ultrasound RF-data technology were collected next morning. Exclusion criteria were metabolic syndrome, myocardial infarction, severe valvular disease, severe renal failure and unstable cardiac or chronic respiratory diseases and those who were night-shift workers. 11 participants were excluded for poor quality images. 113 participants (mean age 46.3 ±11.4 years) enrolled in the study and were divided into control group, mild, moderate and severe OSAS groups according to the apnoea-hypopnoea index (AHI) <5, 5–20, 20–40,>40 (event/h) respectively. Carotid parameters included intima-media thickness (IMT), diameter (D), distension (Dis), distensibility coefficient (DC), compliance coefficient (CC), pulse wave velocity (PWV), stiffness index α and β were collected using a high-definition echo-tracking device equipped with QIMT and QAS by two experienced observers who blinded to the clinical characteristics of participants. Multivariate linear regression analysis was applied to ananlyse the relationships between CCA parameters and cardiovascular risk factors.

Results

1. The clinical characteristics: (a) Compared with control group, dMAP and nMAP were significantly increased in mild, moderate and severe OSAS (p<0.05). Neckline was higher in moderate group (p<0.05) and neckline, waistline, hip circumference, prevalence of smoking, TG, dSBP, nSBP, dDBP, nDBP were higher in severe OSAS group (p<0.05). (b) Compared with mild OSAS group, Smoking, TG, dSBP, nSBP, dDBP, nDBP, dMAP, nMAP were increased in severe group (p<0.05). (c) Compared with moderate OSAS group, smoking, dSBP, nSBP, dDBP, nDBP, dMAP and nMAP were significantly increased in severe group (p<0.05).

2. The parameters of structure of CCA: IMT, D and plaques were no statistical differences between four OSAS groups (p>0.05).

3. The parameters of elasticity of CCA: (a) Compared with control group, Dis was significantly increased (p<0.05). PWV, α, β were significantly increased (p<0.05). (b) Compared with mild OSAS group, PWV, α, β were significantly increased (p<0.05). (c) Compared with moderate OSAS group, α, β were significantly increased (p<0.05).

4. By multivariate linear regression analysis, age was independently predictor of IMT, Dis, D, CC, PWV, α, β (t=4.516, −3.014, −3.491, −2.164, 3.550, 3.380, 3.376, p<0.05). A blunted nocturnal fall was independently predictor of D, DC, CC, PWV (t=−2.128, −2.668, −2.385, 2.481, p<0.05), Daytime and nighttime SBP and MAP had an important effect on D (t=2.077, −2.150, −2.128, −3.480, p<0.05). SaO_2 was independently correlated with PWV (t=−2.052, p<0.05). PP was an independent predictor of PWV, α, β (t=−2.860, −2.116, −2.118, p<0.05). Smoking was an independent predictor of plaque (t=−2.047, p<0.05).

Conclusions

1. Elasticity was damaged earlier than the morphological changes of CCA.

2. PP, a blunted nocturnal fall and SaO_2 were significantly correlated with elasticity of CCA. It indicated that abnormal circadian blood pressure rhythm and hypoxia were associated with elasticity of CCA in patient with OSAS.