10.1.99 - Pathophysiology and Mechanisms, Other

Impact of sleep apnea on left atrial remodeling and stroke risk factors

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Funding Acknowledgements: Type of funding sources: None.

Introduction: Obstructive sleep apnea (OSA) is associated with left atrial (LA) remodeling, which increases the thromboembolic risk of atrial fibrillation (AF) and recurrence of atrial fibrillation after catheter ablation of AF. This study aimed to assess the association between severity of OSA and LA remodeling.

Method: In 126 patients with AF who underwent catheter ablation for AF (male 78.4% male, 58.0 ± 10 years old, persistent AF 27%), LA voltage distribution were analyzed during atrial pacing. All the subjects underwent polysomnography for screening of OSA. We categorized the subjects into 4 groups based on the severity of OSA which was determined by the respiratory disturbance index (RDI; RDI <5: normal, 5≤RDI<15: Mild, 15≤RDI<30: moderate, 30≤RDI: severe). The presence of stroke risk factors (left atrial appendage [LAA] pulse wave velocity < 20cm/sec, NT pro BNP >1,250 ng/l, presence of spontaneous echo contrast [SEC] and LA volume index >32 ml/m3) were evaluated.

Result: The LA low voltage area was significantly greater (p=0.007) and LA volume measured by cardiac magnetic resonance imaging (MRI) was significantly larger with the severity of OSA (p=0.004). The presence of SEC (3.2% vs. 13.6%; p=0.201) and LAA pulse wave velocity < 20cm/sec (3.2% vs. 9.6%; p=0.454) were higher in patients with moderate to severe OSA but it did not reach statistical significance. In the multivariate regression analysis, the total number of the stoke risk factors other than CHA2DS2-VASc was significantly associated with RDI (β=0.191; p=0.037).

Conclusion: The severity of OSA has significant relationship with stroke risk factors.