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Authors

Gevorgyan, Rubine
Mojadidi, Mohammad K
Bokhoor, Pooya
et al.

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Assessment Of Sleep Apnea In Patients With And Without A Patent Foramen Ovale

Rubine Gevorgyan[1], Mohammad K. Mojadidi[1], Pooya Bokhoor[2], Jonathan Tobis[3]

[1]UCLA School of Medicine, Los Angeles, CA, [2]UCLA, Los Angeles, CA, [3]David Geffen School of Medicine, UCLA, Los Angeles, United States

Background: Obstructive sleep apnea (OSA) is a medical condition associated with increased risk of cardiovascular mortality. It is reported that the prevalence of patent foramen ovale (PFO) is increased in patients with OSA and may be involved in the pathophysiology of OSA in some patients. The aim of this study was to assess the presence of PFO in patients with OSA, and compare clinical characteristics and parameters of the sleep studies of patients with and without PFO.
Methods: Patients with an abnormal polysomnogram seen at UCLA-Santa Monica Sleep Medicine Clinic from January 2011 to September 2013 were enrolled in the study. PFO diagnosis was made using transcranial Doppler (TCD) with an agitated saline bubble study; a Spencer grade $\geq$ 3 was considered positive. Control subjects were drawn from the population of patients referred for cardiac catheterization at the UCLA Cardiac Catheterization Laboratory who underwent TCD. The frequency of right-to-left shunt (RLS) in patients with OSA and the control group was evaluated. The clinical characteristics and parameters of the polysomnogram were compared between OSA patients with and without RLS.
Results: A total of 100 subjects with sleep apnea and 200 control patients participated in the study. The prevalence of RLS was higher in patients with OSA than in the control group (42% vs. 19%; $p < 0.0001$). When comparing patients with OSA, those with PFO had a lower apnea hypopnea index (AHI) and fewer obstructive apnea and hypopnea episodes. However, the baseline and nadir SaO2 were similar in both groups and did not correlate with the level of RLS assessed by TCD.
Conclusions: PFO is found 2.2 times as frequently when patients have OSA compared to a control population that was not tested for OSA. The severity of the sleep apnea is not greater in the patients with OSA and PFO as evident by fewer apnea and hypopnea episodes. But people who have OSA and a PFO are more likely to become symptomatic earlier with an equivalent level of decrease in SaO2 which would explain the increased prevalence of PFO in the pool of patients with OSA.