

Journal search and commentary

Sleep apnea association with hypercoagulability and venous thromboembolism

Article reviewed: Obstructive sleep apnea and venous thromboembolism[☆]

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Objective

To evaluate the frequency of sleep apnea in patients with pulmonary embolism or deep venous thrombosis.

Study population

Sixty-eight subjects (34 inpatients and 34 outpatients) with pulmonary embolism (58 patients) or deep venous thrombosis (10 patients) were studied.

Methods

Patients who had a pulmonary embolism or a deep venous thrombosis during an 8-month period underwent a standard polysomnography. In addition, the authors collected the patients' demographical data, body mass index, and Epworth sleepiness scale and sleep history suggestive of sleep apnea prior to the venous thrombosis event.

Results

The PSGs showed that 43 patients (63%) had an apnea-hypopnea index greater than 15. The frequency was similar between patients with recent and not recent venous thromboembolism. Detected respiratory events were obstructive apneas; central apneas and Cheyne–Stokes respiration were not observed. Patients with obstructive sleep apnea were significantly older (66 versus 54 years), had arterial hypertension (49 versus 8%), and their bed-partners reported more frequently observed respiratory pauses during sleep before the clinical onset of venous thrombosis (26 versus 8%). Between patients with and without sleep apnea there

were no differences in the body mass index, the Epworth sleepiness scale score, gender, or frequency of previous use of hypnotics and history of snoring, morning fatigue, nycturia and cognitive impairment.

Conclusions

In patients with pulmonary embolism or deep venous thrombosis obstructive sleep apnea is frequent (63%), and is associated with hypertension, older age and previous history of witnessed apneas during sleep.

Comment

This is the first study that has evaluated the frequency and characteristics of sleep-disordered breathing in patients with pulmonary embolism or deep venous thrombosis. It shows that obstructive sleep apnea is frequent with these two disorders and is much higher than in healthy elderly subjects in the general population [1]. These data indicate that there is a strong association between obstructive sleep apnea and hypercoagulability in the deep venous circulation.

Most deep venous thrombi originate in the lower extremities and result from platelet aggregates and deposition of fibrin and leukocytes in the endothelium of the veins. These thrombi may be discharged into the pulmonary artery (pulmonary thromboembolism) causing an abrupt onset of dyspnea, acute respiratory alkalosis and hypoxemia, and increased pulmonary vascular resistance. The most important and frequent risk factors for venous thrombosis are the conditions associated with hypercoagulability such as use of oral contraceptives, cancer, antithrombin III deficiency, and several circumstances related to venous stasis, such as congestive heart failure and prolonged bed rest after surgery, trauma or stroke. Moreover, the treatment of choice in deep venous thrombosis and pulmonary embolism is

[☆] Arnulf I, Merino-Andreu M, Perrier A, Birolleau S, Similowsky T, Derenne JP. *J Am Med Assoc* 2002;287:2655–2656.

anticoagulation. Conversely, obstructive sleep apnea is associated with decreased cardiac output and fibrinolytic activity, and increased platelet aggregability due to high plasma levels of fibrinogen and intercellular adhesion of molecule I, factors that may promote the formation of thrombi in the deep venous and arterial circulation. On one hand, the observation in this paper by Arnulf et al. that the apneas detected were not central suggests that an impairment of ventilatory control secondary to pulmonary embolism-hypocapnia is not a contributing factor to the occurrence of sleep-disordered breathing in patients with pulmonary embolism. On the other hand, the prevalence of obstructive sleep apnea found in this study is similar to the high frequency detected in patients with transient ischemic attacks [2] and stroke [2,3]. Thus, this study and previous works indicate that obstructive sleep apnea is a condition associated with hypercoagulability that may lead to venous and arterial thrombosis and embolism.

Similar to stroke patients [2,3], sleep history before venous thrombosis onset was not highly suggestive of obstructive sleep apnea since observed apneas only occurred in 26% of the patients with venous thrombosis,

and snoring and somnolence did not differ between the two groups.

Since this article has been published as a Research Letter it is possible that the authors had to shorten their original manuscript, resulting in some missing data. However, a little bit of additional data from this study may be found in the abstract presented by Arnulf et al. at the APSS 16th annual meeting [4].

References

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