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Evaluating the underestimated risk factors associated with carotid artery stenosis

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Stroke is the third leading cause of premature deaths and one of the most prevalent causes of disability-adjusted life-years [1]. Risk factors and their motor and cognitive impairment induced mechanisms have been frequently investigated. Ischaemic strokes can be a result of cardiovascular emboli or local artery stenosis. Carotid artery diseases are responsible for 10% to 20% of strokes [2].

The study performed by Everts et al. [3] is very interesting. The authors performed a prospective exploratory study with symptomatic patients aged between 51.3 and 85.3 years with extracranial carotid artery stenosis of $\geq 70\%$. The main finding of the present study was the correlation between the carotid artery stenosis and impairments in various cognitive and emotional domains, including verbal fluency and anxiety. These results suggest that carotid artery stenosis may induce neuropsychological impairments even in patients without a previous stroke history. Thus, controlling the risk factors of atherosclerotic lesions seems to be essential to prevent prior cerebrovascular impairments.

Several studies have demonstrated the association between sleep-disordered breathing, such as obstructive sleep apnoea, and cardiovascular outcomes [4, 5]. However, primary snoring is still an underestimated respiratory condition. Recently, a study discussed the possible relationship between primary snoring and carotid artery intima-media thickness [6]. The results of this study showed that the intima-media thickness of patients who snored was greater, when considering eight different points of the carotid artery, compared with those of nonsnorers. Therefore, primary snoring could be a possible mechanism for the aggravation of the carotid stenosis, leading to greater hypoperfusion and embolisation, eventually resulting in a cognitive and executive function deficit.

In general, studies show that prevention is still the best and most cost-effective way to avoid cardiovascular events. Primary snoring is underestimated and understudied among sleep disorders, but it seems to be related to stroke. Therefore, we emphasise that primary snoring and cardiovascular outcomes must be studied. A higher prevalence of snoring and cultural tolerance of this symptom is a problem. It is import-

ant to study more extensively the outcomes, causes and comorbidities of primary snoring, such as neurovascular diseases that are the major causes of health expenditures and disabling sequelae.

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