Clinical Study

Association between plasma homocysteine levels and obstructive sleep apnoea in patients with ischaemic stroke

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1. Introduction

Ischemic stroke is a major cause of morbidity and mortality worldwide. The most promising strategy to reduce the disease burden is controlling the risk factors. Previously unrecognized risk factors for stroke may include elevated plasma homocysteine and obstructive apnoea syndrome (OSA). Many studies have demonstrated there is a strong, independent, dose-related association between homocysteine and stroke. But whether homocysteine is a causal risk factor for stroke is still unknown. Several recent prospective studies and meta-analyses failed to reveal a causal relationship, thereby suggesting that homocysteine may not be a cause, but a consequence of stroke or a marker that is associated with a particular causal risk factor, such as OSA. OSA may be another potential risk factor for stroke. Many case-control and cohort studies have identified a strong, independent association between OSA and atherosclerotic vascular disease, including stroke. Furthermore, treating OSA in patients with stroke can reduce the morbidity and mortality of stroke.

Whether the two important factors associated with stroke, homocysteine elevation and OSA, are correlated, are still unclear. Some studies have indicated that elevated homocysteine levels are related to OSA, and that treating OSA with continuous positive airway pressure (CPAP) can lower homocysteine levels. However, other studies have provided conflicting findings that plasma homocysteine levels are not elevated in patients with OSA and are not affected by treatment with CPAP. In addition, most of the studies on the OSA–homocysteine association have been performed in patients with ischaemic heart disease or OSA alone, but very few studies have involved patients with ischaemic stroke. Therefore, the aim of this study was to investigate the association between plasma homocysteine levels and OSA syndrome in patients with ischaemic stroke.

2. Patients and methods

We conducted a clinical cross-section study, which was approved by the local ethics committee. All participants were required to give informed consent before being enrolled in the study.
patients without stroke as controls and also did not conduct serial measurements of homocysteine, especially after CPAP treatment. In addition, excessively restricted inclusion criteria and the small sample size could have reduced the effect of some factors such as hypertension and diabetes on plasma homocysteine levels.

5. Conclusion

Elevated plasma homocysteine is significantly associated with the severity of OSA in patients with ischaemic stroke, and this association is independent of other factors that lead to homocysteine elevation. Larger and more effectively-designed clinical trials are still required to investigate the relationship among OSA, homocysteine and stroke.

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References