

## **Risk factors of Sleep disturbance in Subacute Stroke patients**

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**Objective:** To evaluate the prevalence, type and risk factors of sleep disturbance in stroke patients at subacute stage.

**Methods:** From August 2016 to January 2017, we prospectively recruited fourteen patients with stroke at subacute stage (from 2 weeks to 2 months after the index stroke) with modified Rankin Scale (mRS)  $\leq 4$ . We excluded patients who had unstable neurological signs, active medical complications, underlying brain diseases (such as Parkinson's disease, Alzheimer's disease, traumatic brain injury, etc.), severe mood disorders under longterm antidepressant or antipsychotics use, severe hearing impairment, and severe speech disturbance or aphasia. All patients were evaluated with Pittsburgh sleep quality assessment (PSQI), Insomnia severity index (ISI), Hospital anxiety depression scale (HADS) and a questionnaire about their premorbid sleep conditions. The patient's clinical characteristics, stroke types and imaging results were collected. The white matter lesions were evaluated by Fazekas scale on brain magnetic resonance imaging.

**Results:** The average age was  $66.3 \pm 16.6$  years and 12 (85.7%) were male. The median NIHSS at admission was 5.5. Thirteen (92.9%) patients had ischemic strokes. Seven (50%) patients had stroke on left side and 12 (85.7%) had stroke at anterior circulation. Nine (64.3%) patients had lacunar type stroke. Nine (64.3%) patients had pre-morbid sleep symptoms, mostly were snoring, and followed by shallow sleep, sleep onset difficulties and circadian rhythm disturbance. At subacute stroke stage, three (21.4%) patients had insomnia (defined by  $ISI \geq 15$ ) and six (42.9%) patients had poor sleep quality (defined by  $PSQI \geq 5$ ). Poor sleep quality was related to older age ( $p = 0.013$ ), more white matter lesions ( $p = 0.026$ ), anxiety ( $p = 0.019$ ) and insomnia ( $p = 0.034$ ).

**Conclusion:** Sleep disturbance happened in nearly half of the stroke patients at subacute stage. It seemed not relating to stroke location, type or severity, but relating to patient's age, white matter lesions and anxiety. Further study is warranted to evaluate the clinical significance of sleep disturbance in stroke patients on their motor recovery, cognition and life quality.

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