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Sex differences in the effects of the moon on ischemic stroke incidence: new findings from Beijing, China

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Abstract

Stroke is a major cause of death and disability in China, and no therapies have proven effective to prevent it. Popular belief holds that the lunar cycle affects human physiology, behavior, and health. The aim of our study is to determine whether the lunar cycle impacts the incidence of stroke subtypes [intracerebral hemorrhage (ICH), transient ischemic attack (TIA) and ischemic stroke (IS)]. We retrospectively extracted the discharge registry data of all patients with first-ever acute stroke hospitalized in the affiliated hospital of Beijing University of Traditional Chinese Medicine during 2002-2015. The onset times of stroke were assigned to four primary lunar phases based on NASA definitions. Chi-square tests and multiple logistic regression analyses were used to estimate the association between the lunar cycle and stroke incidence with adjustment for age, sex and season. A total of 5,965 patients with stroke (4,909 admissions for ischemic stroke IS, 754 admissions for ICH, and 302 admissions for TIA) were evaluated in our study. Subgroup analysis indicated that the admission rates of different sexes for IS tended to have opposite variation during the four moon phases. More female patients were admitted during the new moon than in the first and third quarters, while fewer male patients were admitted during the new moon than in the first and third quarters ($\chi^2 = 15.589$, $P = .001$). Multiple logistic regression analyses revealed that men were more likely to be admitted for IS in the first quarter than during the new moon (odds ratio [OR] = 1.252, 95% confidence interval [CI] = 1.076-1.456) ($P = .004$), and a corresponding trend was also identified for the third quarter (OR = 1.235, 95% CI = 1.062-1.437) ($P = .006$). No significant gender differences were shown in ICH or TIA. No sex difference is obvious during the full moon. Moon phases seem to affect both genders, but in very different ways. It seems that the new moon is a protective factor for male ischemic stroke patients and a risk factor for female ones. Woman tends to be more vulnerable than ever at the new moon, so deserves more attention and care. The mechanisms underlying this observation are worth studying further.

Keywords: Sex differences; ischemic stroke; lunar cycle; new moon.

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