

Letter to Editor

Circadian variation in onset of stroke in a university Hospital in Babol, North of Iran

Sir

Stroke is known as the third most common cause of death. Studies revealed circadian variation in the onset of stroke. There has been great debate and different hypotheses among researchers about the reason for the more frequent occurrence of strokes in the early hours of the morning which may due to major pathophysiological implications (1, 2). The hypotheses are mostly related to rhythmic changes in blood pressure, intravenous tonicity, platelets function, fibrinolysis, cerebral vasomotor, and blood coagulation factor concentration changes. These alterations are with regard to Circadian Rhythm settings which are frequently repeated during day and night and the prevalent onset time of strokes in early morning may possibly be due to these daily physiologic changes (3).

On the other hand, a group of researchers believe that cerebral neurons may have different Ischemic sensitivity during different times of day and night (4). We prospectively studied all the patients with stroke during a period of six months in 2010 in Babol, North of Iran. Stroke was diagnosed according to WHO criteria as a syndrome beginning with an acute neurologic disorder continued for at least 24 hours which is known to be a result of a disorder in blood circulation in a part of the brain. The onset was classified into one of the 6-hourly periods and the findings were registered in the checklist.

A total of 88 stroke patients (47 males, 41 females) were registered during the study period. Seventy six (86.4%) cases were ischemic strokes and 12 (13.6%) cases were hemorrhagic types. The incidence rate of stroke was highest early in the morning (midnight until 6 a.m.). Although thrombotic strokes had more frequency between midnight until 6 am (45.5%), no significant difference was observed between the types and occurrence time of strokes ($P=0.99$). In this study, most of the stroke onsets (42%) occurred early in the morning and most of them (36%) were diagnosed as ischemic types. Raymond et al. previously revealed that the most cases of ischemic stroke onset were between 6 a.m. till noon and the most cerebral hemorrhages have taken place from noon till 6 pm (5). Generally, in most studies, the onset

of ischemic strokes were more frequent in the morning and these included the most mortality rate as well (6). According to some opinions, sunlight changes during day and night are the main causes for circadian rhythm changes, of course, they believe that the changes related to sleep and rouse are important for setting the circadian rhythm (7).

Although high percentage of stroke occurrence in the morning is confirmed in most researches, our study showed a rather higher rate. The actual reason for this is unknown and should be determined by other studies. Similar to other studies, the peak of stroke onset occurred in the morning, with a second peak in the evening. The major etiology for the high incidence of stroke in early hours in the morning is little known and needed to be assessed a in larger populations.

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