

CIRCADIAN VARIATION OF STROKE ONSET

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Abstract

Introduction: Circadian cycle affects a wide range of physiological and physio-pathological processes. A circadian pattern of stroke occurrence variation has been described but with certain differences between different reports. The underlying reasons may be connected to exogenous factors (sleep–awake cycles including cyclic physical activity and assuming the up-right posture) and endogenous factors, with their diurnal variation (blood pressure, hemostatic balance, autonomic system activity). The aims of the present study are to investigate the existence of a circadian variation of stroke and possible differences between stroke types in the Cluj Napoca area.

Materials and method: The stroke event data were acquired from the Patient Records of a consecutive series of 1083 patients admitted through the Emergency Room at Neurology Departments I and II of the District Hospital of Cluj Napoca, between 1 January 2012 and 31 December 2012. The classifiable onset time was assigned to one of four six-hour intervals: 00.01-06.00 (night), 06.01-12.00 (morning), 12.01-18.00 (afternoon) and 18.01-24.00 (evening). Demographic data and vascular risk factors were recorded.

Results: All three types of strokes (ischemic stroke, hemorrhagic stroke and subarachnoid hemorrhage) have shown a circadian variation concerning their occurrence, with the peak of incidence in the morning and the lowest value during night time. This pattern is independent by demographic factors and vascular risk factors.

Conclusion: The results of our study confirmed the most often reported circadian pattern of onset occurrence for all stroke types, with the higher incidence in the morning. This acknowledgement may lead to a chrono-therapeutic and chrono-preventive approach, targeting the period of the highest vulnerability after awaking.

Keywords: stroke onset, circadian variation, stroke types