

Seasonality in vascular disorders and preliminary data in MS

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Chronobiology is a branch of biomedical sciences devoted to the study of biological rhythms. Rhythmic patterns exist in most, if not all, biological functions. Thus, a peak and trough (or maximum and minimum) are demonstrable for many bodily functions, especially in the cardiovascular system, e.g., for arterial blood pressure, heart rate, vascular tone, coagulation, fibrinolysis. Depending on cycle length, biological rhythms are classified into three main types: circadian (a period of approximately 24 hours), ultradian (a period shorter than 24 hours), and infradian (a period longer than 24 hours). Thus, the latter includes rhythms with periods of one or more months, such as seasonal and circannual variations. Many studies showed that the occurrence of cardiovascular and cerebrovascular events exhibits seasonal and monthly variations. On one hand, acute myocardial infarction, stroke, transient ischemic attack, rupture/dissection of aortic aneurysms exhibit their higher frequency peaks especially during winter months (1-6). On the other, venous thrombolism (VTE) seems to show a similar pattern (7-8). A recent systematic review and a meta-analysis of the literature focused to assess the presence of an infradian rhythm of VTE, conducted on 19 studies for a total of about 40,000 patients (Dentali F et al, submitted), showed a significantly increased incidence of VTE in winter (RR: 1.116) in comparison to the other seasons. Furthermore, there was a significantly increased incidence of VTE in January in comparison to the other months (RR: 1.194). Many factors, i.e., seasonal changes in ambient temperature, increases in arterial blood pressure, blood lipids, fibrinogen, coagulation markers, and exposure to ambient air pollutants, may play a role (9). Recently, venous vascular factors have been identified as plausible risk factors also for multiple sclerosis (MS)(10). Thus, a preliminary chronobiologic study was conducted in Bologna, Italy (11). This single-center, population-based, study revealed the existence of a biphasic pattern (peaks in spring and autumn) in severe MS relapses requiring medical consultation, apparently unrelated to meteorological variables. Further studies on larger population size and different geographic areas are needed to give further confirmations of these findings.

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