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LETTERS TO THE EDITOR

Non–24-hour sleep-wake rhythm disorder not driven by central circadian clock dysregulation: is it not "intrinsic"?

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Growing evidence has shown that a substantial portion of patients with circadian rhythm sleep-wake disorders may have "non-circadian" properties.[1] In this context, the article by Emens et al[2] is very important, reporting 3 sighted patients with non–24-hour sleep-wake rhythm disorder (N24SWD), who had no evidence of dysfunction in the central circadian regulation, including photic response. The authors underscored the contribution of self-selected light environment on the circadian pacemaker and proposed a subcategory named "Behaviorally and Environmentally Induced N24SWD." This report would be a milestone in the etiology of sighted N24SWD.

Interestingly, 2 of the cases in this report had a history of depressive mood or depression. A previous large case series has reported that N24SWD can precede depression,[3] suggesting it may have some vulnerability for mood regulation. As the authors noted, one of the possible etiologies of N24SWD might be the slowing of sleep homeostasis. The deficit of the homeostatic process was reported in delayed sleep-wake phase disorder (DSWPD),[4] and has also been supposed for depression.[5] This has not been directly shown in N24SWD. However, a larger phase angle (later sleep bout relative to circadian phase) was reported in both DSWPD[4] and sighted N24SWD,[6] suggesting a similar property. In the Emens et al report, participant 1 "chose" his non–24-hour sleep-wake cycle because it relieved his mood. The authors showed that the participant's homeostatic dissipation during sleep was not altered, but the accumulation during wake was still not confirmed. It may be plausible that a delayed homeostatic build-up, paralleled by mood regulation, may have impacted the participant's behavior.

Someone may misunderstand that "behaviorally" would be equal to "intentionally" and thus regard this type of N24SWD as "not a disorder." Rather, this disturbed sleep-wake behavior might also be "intrinsic," being potentially driven by altered biological mechanisms including a sleep-wake homeostatic process and monoaminergic system relating to mood regulation, further having a mutual interaction with the central circadian pacemaker. Given the growing evidence regarding the close association between circadian disturbances and mood disorders, "CRSWDs [circadian rhythm sleep-wake disorders] not driven by central circadian clock dysregulation" should also be more focused on in future studies.

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