

LETTERS TO THE EDITOR

Author response

Response to Gupta MA, Gupta AK. An elevated leg movement index during sleep in atopic dermatitis and periodic leg movement disorder may be an indication of sympathetic activation common to both. *J Clin Sleep Med.* 2020;16(3):463. doi:10.5664/jcsm.8234

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We appreciate the thoughtful commentary of Drs. Gupta¹. Indeed, the autonomic system underlies skin physiology and sleep physiology. Specific to sleep physiology, overnight awakenings result in sympathetic surge.² Particularly in chronic conditions, sleep disruption overnight can actually result in increased sympathetic tone during wake.³

We agree with Drs. Gupta, that more severe atopic dermatitis (AD) and periodic limb movement during sleep (PLMD) both have increased sympathetic tone as compared to more mild forms of the conditions. Given the tight bidirectional relationship linking sleep and the autonomic nervous system, establishing a cause-effect directionality between increase sympathetic activation and increased limb movement index in AD is difficult. However, increased overnight awakenings are likely a key mechanism to the increased sympathetic tone observed in more severe disease. As such, rather than attempting complex measurement or treatment of sympathetic activation, future approaches might consider testing whether treating the underlying disease in AD or improving sleep, results in the reduction in nocturnal awakenings and ultimately in decreased sympathetic tone.

Certainly, there are several primary cutaneous factors which drive the pathogenesis of sleep disturbance in AD. One such mechanism is the increased nocturnal inflammatory signal in response to cortisol nadir.⁴ Also in AD, the vicious itch/scratch cycle worsens at night. This nocturnal worsening could in part be due to awakenings and increased sympathetic tone.

Given the breadth of human physiology which is influenced by the autonomic nervous system, it is likely that the sleep disturbances/increases in sympathetic tone from AD have widespread detrimental effects. In fact, AD seems to be associated with significant cardiovascular risk, such as peripheral vascular disease and heart attacks.⁵ This could be due to inflammatory upregulation or simply poor sleep. Further work to uncover the nocturnal mechanisms regulating skin and inflammatory physiology are needed.⁴

CITATION

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DISCLOSURE STATEMENT

All authors have seen and approved the manuscript. The authors report no conflicts of interest.