

LETTERS TO THE EDITOR

Is Autonomic Activation a Middleman Between Obstructive Sleep Apnea Syndrome and Psoriasis?

Response to Gupta and Gupta. Psoriasis is associated with a higher prevalence of obstructive sleep apnea and restless legs syndrome: a possible indication of autonomic activation in psoriasis. *J Clin Sleep Med.* 2018;14(6):1085.

Agata Gabryelska; Piotr Białasiewicz, MD, PhD

Department of Sleep Medicine and Metabolic Disorders, Medical University of Lodz, Lodz, Poland

Gupta et al.¹ have made an interesting point regarding the higher prevalence of restless leg syndrome (RLS) and obstructive sleep apnea (OSA) in patients suffering from psoriasis. This link may be explained by increased autonomic activity which is a consequence of disrupted sleep and intermittent hypoxemia; these two conditions characterize patients with OSA. Moreover, they suggest that increased autonomic activity may be a risk factor for OSA and periodic limb movement disorder (PLMD).

In cases of related (ie, clustering) comorbidities, it is usually difficult to indicate unequivocally a cause-effect direction. Typically, arousals ending an apnea or hypopnea event lead to a surge in autonomic activity. On the other hand, we hypothesized that low grade inflammation related to central obesity and OSA can be a risk factor for psoriasis, thus explaining the higher prevalence of OSA in those with psoriasis.² These two pathogenetical pathways are plausibly intertwined as IL-1 and TNF (macrophage derived cytokines of chronic inflammation) stimulate the hypothalamus leading to an increase in hypothalamic-pituitary-adrenal (HPA) axis activity (a negative feedback loop as cortisol mitigates production of inflammatory cytokines by macrophages) and stimulating the nucleus of the solitary tract resulting in high autonomic activity.³ Thus, a pathogenetic chain from OSA via high autonomic activity and inflammation leading to higher risk of psoriasis can be deduced. However, Gupta et al.¹ in their letter suggested the reverse, ie, the high autonomic activity in psoriasis being the risk factor for OSA and PLMD, which was based on the review by Hirotsu et al.⁴ We agree that PLMD can be related causally to increased autonomic activity as observed in psoriasis and OSA. Nevertheless, how it can increase the risk of OSA if it is itself a consequence of OSA, was not clarified. In our opinion, it is not feasible; therefore, we would like to suggest another plausible mechanism that directly links psoriasis to OSA. Arousals related to symptoms of psoriasis (eg, itching and pain) lead to sleep disruption and sleep shallowing (increased prevalence of stage N1 sleep). In stage N1 sleep that is interrupted by arousals respiratory center output is unstable, and as a result, desynchronization of stimulation of the

diaphragm and the muscles of the pharyngeal girdle mediated by the hypoglossal nerve can be observed. The lack of properly timed (ie, synchronized with diaphragm activity) stimulation of the pharyngeal girdle muscles can lead to pharyngeal collapse and apneas due to lowered pharyngeal pressure during inspiration. This phenomenon can be observed in the subgroup of patients with OSA who have numerous apneas occurring in stage N1 sleep which disappear abruptly if they fall into deeper sleep (stage N3).⁵

We agree with the authors that the relationship between OSA, PLMD and psoriasis may be bi-directional. However, the direction of OSA leading to a higher risk of psoriasis via inflammation is better documented and thus more probable.

CITATION

Gabryelska A, Białasiewicz P. Is autonomic activation a middleman between obstructive sleep apnea syndrome and psoriasis? *J Clin Sleep Med.* 2018;14(6):1087–1088.

REFERENCES

1. Gupta MA, Gupta AK. Psoriasis is associated with a higher prevalence of obstructive sleep apnea and restless legs syndrome: a possible indication of autonomic activation in psoriasis. *J Clin Sleep Med.* 2018;14(6):1085.
2. Gabryelska A, Sochal M, Wasik B, Białasiewicz P. Patients with obstructive sleep apnea are over four times more likely to suffer from psoriasis than the general population. *J Clin Sleep Med.* 2018;14(1):153.
3. Späth-Schwalbe E, Gofferje M, Kern W, Born J, Fehm HL. Sleep disruption alters nocturnal ACTH and cortisol secretory patterns. *Biol Psychiatry.* 1991;29(6):575–584.
4. Hirotsu C, Nogueira H, Albuquerque RG, Tomimori J, Tufik S, Andersen ML. The bidirectional interactions between psoriasis and obstructive sleep apnea. *Int J Dermatol.* 2015;54(12):1352–1358.
5. Ramirez J-M, Garcia AJ, Anderson TM, et al. Central and peripheral factors contributing to obstructive sleep apneas. *Respir Physiol Neurobiol.* 2013;189(2):344–353.

SUBMISSION & CORRESPONDENCE INFORMATION

Submitted for publication May 2, 2018

Submitted in final revised form May 2, 2018

Accepted for publication May 9, 2018

Address correspondence to: Agata Gabryelska, Department of Sleep Medicine and Metabolic Disorders, Medical University of Lodz, Mazowiecka 6/8, 92-215 Lodz, Poland; Tel: +48 660 796 004; Email: agata.gabryelska@gmail.com

DISCLOSURE STATEMENT

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