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Letter to the Editor

Utility of the Pediatric Sleep Questionnaire and Urocortin Level in Urine as Screening Tools in Pediatric Patients with Suspected Obstructive Sleep Apnea Syndrome

Esengul KELEŞ[1], Arzu GEBEŞÇE[1], Filiz Turan [2], Fatma Fidan [3], Hamza YAZGAN[1], Bülent BAŞTÜRK[1], Mehmet DEMİRDÖVEN[1], Alparslan TONBUL [1], Mahmut Kaya[1]

1. *Dept. of Pediatrics, Fatih University, Istanbul, Turkey*
2. *Dept. of Biochemistry, Fatih University, Istanbul, Turkey*
3. *Dept. of Chest Diseases, Fatih University, Istanbul, Turkey*

***Corresponding Author:** Email: ekeles@fatih.edu.tr

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Dear Editor-in-Chief

Seep-related breathing disorder (SRBD) constitutes a spectrum that ranges from habitual snoring (HS) to obstructive sleep apnea syndrome (OSAS). SRBD has a prevalence rate of 2% for OSAS and as high as 27.6% for HS (1). This approach is time-consuming, labor intensive, and onerous.

Currently, there is a critical need for a cheaper, quicker, and child-friendly tool for diagnosis of OSAS. The PSQ developed and validated is a 22-item questionnaire that has a sensitivity of 81% and a specificity of 87% for SRBD (2). In addition, various proteins are increased in the urine of patients with OSAS. One of these is urocortin. In humans, urocortin is encoded by the UCN gene (3). This gene is a member of the sauvagine/corticotropin-releasing factor/urotensin I family. "It is structurally related to the corticotropin-releasing factor (CRF) gene, and the encoded product is an endogenous ligand for CRF type 2 receptors. In the brain, this gene may be responsible for the effects of stress" (4). The CRF-related peptides bind to two types of receptors: CRF receptor 1 and 2. CRFR1 is activated by UCN1 and CRF but displays a 100-fold higher binding affinity for UCN1 than for CRF itself (5). By binding to CRF or UCN1, CRFR1 mediates adrenocorticotropic hormone (ACTH) response to stress. In summary, UCNs are associated with stress conditions in general. Intermittent hypoxia in night in OSAS is accompanied by sympathetic nervous system surges, and these processes may in turn trigger the release and expression of UCNs. The concentrations of UCNS in serum and/or urine should be higher in patients with OSAS, and may serve as a novel diagnostic tool. However, HS does not cause gas exchange abnormalities, and thus not recruit as extensively stress responses. Larger UCN concentrations may differentiate patients with OSAS from those with the same symptoms but without the disease, that is, habitual snoring.

The PSQ score and urine urocortin were evaluated separately (4, 6). We proposed that the PSQ score and urocortin levels in urine together are screening tools that may be used in the initial evaluation of Turkish children with symptoms suggestive of SRBD. Between december 2013, november 2014 in Fatih University Pediatric Department 27 children who had no symptoms of SRBD (Group 1), 27 children who had symtoms suggestive of SRBD (Group 2) between 6-8 years old age were enrolled. PSQ scale which was de-

veloped and validated by Chervin et al. was administered to all parents. First morning urine samples (20 ml) were collected and then assayed with ELISA.

No significant difference was found between both groups in demographic characteristics such as age, gender, body mass index (BMI), (P<0.05). Incidence of allergic rhinitis, adenoid/tonsil hypertrophy, body mass index, total (PSQ, snoring, mean sleepiness, inattention) score, urocortin value in the first morning urine were found to be significantly higher in the Group 2 (P<0.05). Risk for apnea was found to be higher by 35.2 folds in the patients having an urocortin level of 0.1 or higher (OR: 35.2, 95% CI: 7.51-164.82, p<0.01). For a cut off 0.1 value of urocortin; sensitivity was found as 88.89%, specificity as 81.48%, positive predictive value as 82.76 and negative predictive value as 88.00. Area under ROC curve was found as 94.1%, standard error as 2.9%.

We found that the total PSQ score, snoring score, mean sleepiness score, inattention score, and urocortin value in the first morning urine were significantly higher in Group 2 compared to Group 1 (P<0.05) but main limitations of this study was absence of PSG evaluations for all children.

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