Whither the Upper Airway Resistance Syndrome?

Noel T. Johnson, DO

Pacific Sleep Center, Edmonds, WA

THE REPORT OF FINDINGS BY GUILLEMINAULT ET AL. ON UPPER AIRWAY RESISTANCE SYNDROME (UARS) BROUGHT TO MIND THE INTRIGUING HISTORY OF this nosologic hopeful. I recall discussions with colleagues in the late '80s and early '90s regarding therapeutic options for patients who were symptomatic for obstructive sleep apnea (OSA) but whose sleep study numbers did not rise to the level of a conventional morbidity cut point (CMCP), such as an apnea-hypopnea index of 5. We had a sense that, for whatever reason, we were missing a fair amount of OSA using traditional methods. It came as a relief when Guilleminault et al., using esophageal manometry, identified obstructive breathing events we had been missing by using conventional temperature-based flow sensors and effort-sensing strain gauges. Even better, they reported that the events and symptoms had a salutary response to nasal CPAP. I soon became an enthused follower of UARS and even presented the case for UARS at a regional sleep meeting. I studied the esophageal manometry methodology and worked at applying it to clinical practice.

Unfortunately, incorporating esophageal manometry into the sleep lab setting was unpopular with patients and technicians and required a tedious learning curve. For whatever reason, most labs I was acquainted with either did not implement esophageal manometry or reserved it for a select few suspected OSA patients whose sleep study failed to meet the CMCP.

But technology and innovation again rose to the occasion a few years later. Norman et al. demonstrated that applying a nasal prongs oxygen cannula to sleeping patients and attaching it to a pressure transducer revealed airflow limited respiratory events undetected by a nasal thermister. The technology was simple, inexpensive and noninvasive. It was readily adopted and widely applied in sleep labs. In my experience, improved detection of respiratory events using the nasal pressure airflow sensor moved the vast majority of previously underdiagnosed OSA patients to the right of the CMCP. The necessity for me to invoke an additional syndrome (i.e., UARS) for more subtle cases had been effectively obviated. I began losing interest in UARS as a useful construct and in esophageal manometry as a worthy tool in managing patients with sleep disordered breathing. Before long, the status of UARS as a distinct clinical entity was being openly called into question. But personal experience and controversy notwithstanding, I continue to note reports of research on UARS.

I postulated that if UARS were indeed a worthy clinical entity, publication frequency should grow over time as grantors award money, investigators report research, and writers periodically summarize gains in understanding and treatment, fleshing out the existing skeleton of a novel entity. I would expect a significant, positive correlation between the year of publication and the number of publications. If on the other hand, UARS were a construct of temporary utility, useful in calling attention to prior sensitivity deficits in diagnostic methods, there would be no growth trend in publication frequency and no significant positive correlation between the year of publication and the number of publications.

I performed an online search in PaperChase using the terms “airway resistance” and “syndrome” and “upper.” The search returned 76 citations and I excluded fifteen. One was a duplicate, 2 were co-published commentaries, and 12 citations did not specifically mentioned UARS. The publication frequency distribution plot by year of publication is displayed in Figure 1 and includes a data smoothing line roughly approximating a Gaussian distribution. Such a plot has no statistical power but the ostensible trend is evident: the publication frequency has peaked and there are fewer publications recently. Simple linear regression analysis of the relationship between year of publications and number of publications yields an $r^2$ value of 0.029 and $P = 0.54$ indicating the absence of a significant linear relationship. A correlation Z test using the same variables yields $Z = 0.597$ with $P = 0.55$. This analysis fails to establish a significant relationship between year of publication and number of publications on UARS—no evidence of growth in publication frequency.

While the trend in publication frequency does not necessarily invalidate a new clinical entity, it is plausible that it reflects...
academic acceptance, an indirect measure of validity. Because grantors, investigators, and writers must parsimoniously decide where they can obtain a worthy return on investments of money, time, and talent they would be expected to vote with their grant money, research reports and word processors regarding issues of valid clinical/scientific merit, resulting in publications. I interpret these data to reflect that the academic community has not accepted UARS as a discrete nosologic entity. As such, we should carefully consider if continued parsing of sleep apnea nosology by use of the UARS terminology is more apt to confuse practicing clinicians than to advance understanding of sleep disordered breathing.

REFERENCES

1. Guilleminault C; Lopes C; Hagen CC et al. The cyclic alternating pattern demonstrates increased sleep instability and correlates with fatigue and sleepiness in adults with upper airway resistance syndrome. Sleep 2007;30:641-7


