Decreased Renal Function and the Prevalence of Obstructive Sleep Apnea

More Data Are Needed

To the Editor:

I have read the study by Nicholl et al1 published in CHEST (June 2012) with a particular interest. The researchers have analyzed the home sleep monitoring data of 254 individuals with some degree of renal dysfunction (75 on hemodialysis). They have concluded that a decreased kidney function is associated with greater prevalence of obstructive sleep apnea (OSA) and nocturnal hypoxia. It is well known that kidney disease (as well as heart failure and resistant arterial hypertension) is related to volume overload, and in the supine position this extra fluid can shift toward the neck, causing increased upper airway resistance and collapsibility. However, this is only one potential explanation, with alternatives being possible.

Some study aspects merit a brief discussion. First, the patients with chronic kidney disease and end-stage renal disease were older, had a greater BMI, and had a greater prevalence of congestive heart failure (CHF), cerebrovascular disease, and COPD. Age and increased BMI are known risk factors of OSA. However, some degree of renal dysfunction (75 on hemodialysis). They have concluded that a decreased kidney function is associated with greater prevalence of obstructive sleep apnea (OSA) and nocturnal hypoxia. It is well known that kidney disease (as well as heart failure and resistant arterial hypertension) is related to volume overload, and in the supine position this extra fluid can shift toward the neck, causing increased upper airway resistance and collapsibility. Thus, this is only one potential explanation, with alternatives being possible.

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The underlying mechanisms responsible for the association between kidney failure and nocturnal hypoxia are not clear and require further investigation. Our study did not address this issue. A relationship between rostral displacement of fluid from the legs and the apnea-hypopnea time was recently described in patients with ESRD.2 This supports one of the potential mechanisms we discussed, namely that fluid overload may play a role independently of the other aforementioned risk factors. We have previously found in a longitudinal study that nocturnal hypoxia is associated with accelerated loss of kidney function. Consequently, the relationship between nocturnal hypoxia and CKD may be bidirectional, with one exacerbating the other. Regardless, the presence of nocturnal hypoxia in CKD represents a potential target for future interventional studies that may improve several important clinical outcomes.

Finally, portable monitoring was performed following the current American Academy of Sleep Medicine guidelines and was...