Abnormal Finding in an Overnight Sleep Study*

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The accompanying Figure 1 is a montage from an overnight sleep study in which each vertical dotted line represents a 30-s epoch. Which of the following is the most likely cause of the findings displayed with arrows in the right and left leg electromyograms (EMGs)?

A. Arousals from obstructive sleep apneas  
B. Periodic limb movements of sleep  
C. Nocturnal leg cramps  
D. Arousals from obstructive sleep hypopneas  
E. Artifact

Figure 1. Overnight polysomnogram results.

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Answer: D. Arousals from obstructive sleep hypopneas

This 3-min recording from an overnight polysomnogram shows repetitive obstructive sleep hypopneas causing arousals and oxygen desaturations. There is a reduction of nasal and oral airflow > 50% of baseline amplitude that is associated with continued thoracic respiratory effort. The increases in both left and right leg EMGs are at the termination of hypopneas. Hypopneas are characterized by a recognizable reduction, but not complete cessation, of airflow.

These events are not apneas, because there is no total cessation of airflow. Periodic limb movements of sleep are stereotypic periodic movements of the legs or arms. Usually these movements include dorsiflexions of the ankles and toes, which are slower than myoclonic jerks. Polysomnographic features of periodic limb movements of sleep include increased EMG activity lasting 0.5 to 5.0 s, at intervals between 20 s and 40 s, independent of other associated events. Nocturnal leg cramps produce increases in the EMG signal lasting much longer than those of periodic limb movements of sleep. Artifacts present on this recording include the ECG artifact in the electro-oculogram and ECG leads. However, the artifact is not responsible for the electromyographic findings.

Suggested Readings

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