Standard overnight PSG in the pediatric sleep laboratory

Chest and abdominal wall movement were monitored by respiratory impedance or inductance plethysmography, and heart rate was monitored by electrocardiography. Air flow was measured by end-tidal capnography, which also provided breath-by-breath assessment of end-tidal carbon dioxide levels (BCI SC-300, Menomonee Falls, WI), nasal pressure transducer and oronasal thermistor. Arterial oxygen saturation (SaO₂) was assessed by pulse oximetry (Nellcor N 100; Nellcor Inc., Hayward, CA), with simultaneous recording of the pulse waveform. The bilateral electrooculogram, 8 channels of electroencephalogram, and chin and anterior tibial electromyograms were also monitored. All measures were digitized using a commercially available PSG system (EMBLA, MedCare diagnostics, Amsterdam, The Netherlands). Digital time-synchronized video recording was performed. Sleep architecture was assessed by standard techniques.¹

The proportion of time spent in each sleep stage was expressed as percentage of total sleep time (TST). Central, obstructive, and mixed apneic events were counted. Obstructive apnea was defined as the absence of airflow with continued chest wall and abdominal movement for duration of at least 2 breaths. Hypopneas were defined as a decrease in oronasal flow of at least 50% on either the thermistor or nasal pressure transducer signal with a corresponding decrease in SaO₂ of at least 3% and/or arousal.² The obstructive apnea-hypopnea index (OAHI) was defined as the number of obstructive apnea and hypopneas per hour of TST. Mild obstructive sleep apnea (OSA) was defined as OAHI greater than 2/per 1 hour TST. Moderate-severe OSA was defined as OAHI greater than 5/per 1 hour TST. Arousals were defined as recommended by the American Sleep Disorders Association Task Force report using the 3-second rule.³

References