

Chapter: 13

PEDIATRIC SLEEP DISORDERS

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Pediatric sleep disorders are classified according to the type of disruption of sleep architecture. The parasomnias are abnormal behavioral or physiologic events that occur in association with sleep stages or the transition between sleeping and wake states. Pediatric sleep disorders range from self-limited and benign diseases to rare conditions.

Sudden infant death syndrome (SIDS) is a disorder of infancy. It affects infants between 4 weeks and 12 months of age with a peak incidence at 2 to 3 months of age. The risk factors include prematurity, complicated pregnancy or delivery, maternal drug addiction, smoking, maternal chronic disease, neonatal intensive care admission, multiple pregnancies, young age of mother, family history of SIDS, developmental defects, and respiratory syncytial virus infection.

Apparent life-threatening event syndrome affects children younger than one year. This syndrome is characterized by apnea, change in color, loss of muscle tone, and gagging. Approximately 50 percent of these children are diagnosed with an underlying condition. Remaining events are idiopathic. Inpatient evaluation and monitoring are recommended. Although consensus statements by the National Institutes of Health and the American Academy of Pediatrics support home monitoring, the relationship of apparent life-threatening event syndrome to sudden infant death syndrome is controversial.

Central Hypoventilation syndrome is due to neural crest cell abnormality that may be clinically asymptomatic while awake, but rather the loss of carbon dioxide sensitivity and the associated central drive to trigger ventilation while asleep. Respiratory failure occurs within hours after birth and requires ventilatory support.

The most common sleep disorders encountered from infancy through the school-age years involve the wake-to-sleep transition. Parental calming behaviors and sleep time rituals may result in a Sleep-onset association disorder. The infant may fall asleep only in the presence of certain conditions like bed-time rocking, singing, holding ECT. Similar ritual is needed for each night time awakening in the night. A gradual extinction behavior may improve the situation by encouraging infant independence such that gradually becomes able to fall asleep without the sleep time ritual.

Stalling behaviors like not going to bed and sleep is typical of Limit-setting sleep disorder. The child keeps finding excuses and keeps parents engaged to avoid going to sleep. The peak incidence of Limit setting disorder is about 18 months of age.

Parents are responsible more than the child for this disorder by not reinforcing the bed-time rules.

The childhood parasomnias are divided into those occurring in NREM sleep and REM sleep. The NREM parasomnias consist of partial arousals, disorientation, and motor disturbances. NREM parasomnias occur during the transition from delta (stage N3) sleep. Child does not recall the event in the morning. The child is difficult to arouse and motor movements do occur, including sleepwalking and sleep terrors. These parasomnias tend to occur in the first two thirds of the night, when delta sleep (stage N3) predominates. Parasomnias may run in families and occur in children around the age of 3 years. The common predisposing factors are irregular sleep-wake schedules and sleep deprivation. Drugs that increase the percentage of delta (stage N3) sleep may trigger the events. Treatment includes Benzodiazepines like Clonazepam and occasionally antidepressants. The body injuries may be prevented by supervision and removal of the environmental hazards

The REM parasomnias occur in the last one third of the night and include Nightmares, Sleep paralysis, and REM sleep behavior disorder. The child is able to recall the nightmare in the morning. Sleep paralysis in general, is associated with Narcolepsy. REM sleep behavior disorder is rare in children.

Rhythmic movement disorders include body rocking and head banging. Behavioral interventions are generally most effective in treating these disorders.

Primary Nocturnal enuresis is more common and characteristically persists without a period of continence. Secondary Nocturnal enuresis occurs after 6 months of continence. Underlying physiologic, psychological, congenital disorders and urinary tract infections should be ruled out in secondary enuresis. The management of nocturnal enuresis is based on Behavioral modification. Medical therapy with Imipramine or Desmopressin can be used in cases of behavioral treatment failure.

Primary medical disorders like Gastroesophageal reflux, milk allergy, ear infection, and asthma frequently disrupt sleep in childhood. Many neurologic conditions and certain medications cause disturbed sleep. Epilepsy is generally associated with sleep.

Obstructive sleep apnea (OSA) is recognized as a common condition in children. The predisposing factors like obesity, craniofacial abnormalities, and reactive airways disease increase the probability of OSA. Factors contributing to Hypotonia like cerebral palsy, tracheomalacia, neuromuscular weakness, cervical cord problems, and hydrocephalus. In children Developmental delay, pulmonary hypertension, cor pulmonale, cognitive disability, and cardiac arrhythmias are known complications of OSA. Complete polysomnography is required to establish the diagnosis. Removal of the adenoids and tonsillectomy remains the mainstay of

the treatment. However, continuous positive airway pressure (CPAP) and occasionally uvulopalatopharyngoplasty or tracheostomy may be needed.

Pediatric sleep disorders represent a unique set of problems related to different stages of development. These disorders have significant impact on the child's health both physical and psychological, academic performance and social interactions. Many of these can be diagnosed with good history and interviews of the parents. Recognition and management of the childhood sleep disorders can reduce the burden on the family.

Recommended reading:

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7. Marcus C.L., Ward S.L., Mallory G.B., Use of nasal continuous positive airway pressure as treatment of childhood obstructive sleep apnea. *J Pediatr* (1995) 127: pp 88-94.