PEDIATRIC OBSTRUCTIVE SLEEP APNEA

What is pediatric obstructive sleep apnea?

Obstructive sleep apnea (OSA) is a common condition effecting millions of people within the United States; however, it affects only 1 to 4% of the pediatric population. It is characterized by repetitive episodes of breathing cessation, known as apneas or recurring incidences of shallow breathing, known as hypopneas throughout the stages of sleep. In the pediatric population, it is associated with a reduction in blood oxygen. Carbon dioxide levels are often elevated as well. Sleep apnea affects both adults and children; however, there are different causes, consequences and treatments between the age groups. A child with obstructive sleep apnea will not necessarily have the condition as an adult.

What causes obstructive sleep apnea in children?

For many pediatric patients, the cause of the obstructive sleep apnea is enlargement of the tonsils and/or adenoids.

What are common signs and symptoms of obstructive sleep apnea in children?

Some children with OSA may appear excessively sleepy during the day and easily fall asleep in the car, on the bus or at school during class. Other children may be hyperactive, irritabile or aggressive towards others. In fact, studies have shown that children with obstructive sleep apnea exhibit similar symptoms to those with ADHD. Kids will typically snore or breathe loudly during sleep in the presence of underlying sleep apnea. Enuresis, or bedwetting, is also common. Children with obstructive sleep apnea may appear restless at night during sleep or may wake up frequently throughout the night as a result of nightmares, night terrors or anxiety. They may be known to sleep in odd positions or with their mouth open, causing dry mouth. Other possibilities include morning headaches, difficulty with concentration, depression or frequent respiratory tract infections. Failure to thrive, changes in personality or developmental delay may also be present.

What are risk factors of obstructive sleep apnea?

Evidence shows African American children are more likely to develop obstructive sleep apnea, compared to Caucasian or Hispanic children. The predominance of the condition does not differ by gender in preadolescent children. After puberty, there is a male predominance. The peak prevalence of OSA in children is in those aged 2-8 years, coinciding with adenotonsillar tissue growth. Obesity, acid reflux, allergies, frequent upper respiratory tract infections and secondhand cigarette smoke are all risk factors.

What is the physiologic response to untreated obstructive sleep apnea?

The stress of abnormal breathing during episodes of apneas and hypopneas leads to activation of the sympathetic nervous system and the “fight or flight response”. Heart rate and blood pressure will increase. Untreated OSA also results in increased levels of catecholamines and of cortisol, hormones that are released in response to stress. Prolonged exposure to elevated levels of cortisol leads to hyperglycemia, or elevated blood sugar levels. Children with untreated obstruction and disrupted sleep...
may have an interruption in release of growth hormone, which is usually released at night, resulting in slow rate of growth.

What are the long-term implications of undiagnosed obstructive sleep apnea?

Undiagnosed OSA in children can lead to developmental, behavioral and learning problems. Failure to thrive, hypertension and cardiovascular issues can also develop if the condition is left untreated.

How is obstructive sleep apnea treated?

Tonsillectomy and adenoidectomy is usually the first line of treatment of OSA in children with obstructive sleep apnea, as it will correct the problem in 80-90% of the cases. Positive-pressure ventilation (CPAP or BiPAP), however, has become a safe and alternative to further surgery or tracheotomy in children and infants with unresolved obstructive sleep apnea after tonsillectomy and adenoidectomy. Some recent studies suggest taking an oral leukotriene modifier and/or intranasal budesonide for 6 weeks may improve the severity of obstructive sleep apnea in children.