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Abstract

In the last years OSAS in children is becoming object of large scientific interest. Indeed, in the last 10 years, more than 1000 articles have been written about pediatric OSAS. The role of this article is to describe the disease and show why the orthodontist has a special role in recognizing the affected patients.

Discussion

The Pediatric sleep disorder breathing (PSD) is a wide group of diseases including snoring and Obstructive Sleep Apnea Syndrome (OSAS).OSAS is a sleep breathing disease with chronic evolution, characterized by complete or partial obstruction of upper airways repeating during the sleep. It can afflict adults and children too. In pediatric population the frequency is between 1,2-5,7%. This percentage could be underestimated as it is not always diagnosed. Indeed, the signs and symptoms arenâ€™t the same in adults and in children and in pediatric patients they are less visible. The risk is higher in obese children, as the frequency increases at 36% in patients with weight problems.auses in childhood are different too: the most frequent is the obstruction of the upper airway caused by adenoids and tonsils. Between 3 and 6 years of age tonsil and adenoids are bigger compared to upper airways size and itâ€™s the age when OSAS is more frequent. Children with OSAS show bigger tonsil, adenoids and soft palate on Magnetic Resonance, rather normal one. Indeed, adenotonsillectomy is the first chose of treatment in OSAS children, showing a decrease of Apnea Hypopnea Index (AHI).

Some craniofacial diseases are highly related to OSAS. Tight and high palate, retrognathia and midface hypoplasia show a strong correlation with OSAS; patients with congenital syndromes like Pierre Robin (characterized by these skeletal features) are often affected by severe form of OSAS. The mandibular retroposition can predispose patients to OSAS by displacing the tongue base that then narrows the upper airways. If mild craniofacial diseases are present, it is possible to treat the patient with orthodontic appliances like rapid maxillary expansion and/or mandibular advancement devices(MADs). In syndromic patients the orthodontic approach could not be enough. In adult patients those results are achievable only by surgery.

Neuromotor factors are related to OSASâ€™ pathology in some children. The Upper airways collability value (Prict) is positive in OSAS patients and in some of them doesnâ€™t reach the normal value after the adenotonsillectomy. As a result of that itâ€™s conceivable that in this patients there might be a central deficit on the control of upper airway dilator muscles, that doesnâ€™t allow them to have a proper muscle tone during pressure changes. Obesity has a role on genesis and worsening of OSAS in fact adenotonsilectomy is less effective in obese children. Diagnosis and treatment of OSAS during childhood have a multidisciplinary approach demanding the cooperation of sleep specialists, ENTs, maxilla-surgeons and orthodontists. The orthodontist has a special role in diagnosis because, by visiting the patients during the growing period, he can recognize some facial features typical of OSAS. Anyway, for the official diagnosis it is necessary a polysomnography test (PSG) whose main result is the apnea hypopnea index (AHI). Values of AHI are different from children to adults: to diagnose OSAS, AHI must be higher than 5/h in adults and higher than 1,5/h in children. The orthodontist has a role in recognizing signs and symptoms of OSAS and therefore directing the patient to an ENT for the final diagnosis.

During the consultation, the orthodontist can ask some question about the patientâ€™s sleep and, in particular, if he snores and/or sleeps with his mouth opened, if he goes frequently to the bathroom and if he has nightmares. There are also some questionnaires (as Gozal and Epworth Sleepiness Scale) that the parents can fill in before the visit. During the extra-oral examination the orthodontist can often observe convex profiles and long face phenotypes and some sign of mouth breathing such as small nostrils, open mouth, dark circles around the eyes. The intraoral examination has to be focused on the palate (that is often tight with a mono or bilateral crossbite), on the tongue (that can be bigger than normal, macroglossia) and on lingual tonsils.

The most frequent signs of OSAS on the teleradiography are:

â€¢Hypertrophy of tonsils and adenoids;

â€¢Hyoid bone position lower than normal, at the level of C3-C4:

â€¢Hyperdivergent growing pattern, with increased goniac and mandibular angles:

â€¢Mandibular or maxillary retrognathism.

When there is an OSAS diagnosis it is necessary to start a complex therapy that involves different specialists simultaneously. The benefits of an early treatment are both on short and long term: patients affected by OSAS show neurological, cardiac and behavioral problems that have to be solved as soon as possible.Â In addiction, childhood is a very active learning phase, so a daily sleepiness caused by bad rest could give attention and language deficits hardly solvable.
tic field, OSAS predispose to some malocclusion like long face syndrome, II class malocclusion and open bite. If a patient is treated early is it possible to guide his facial growing in the right direction.Â Furthermore, OSAS and attention deficit hyperactivity disorders (ADHS) are highly related. Wong et al. showed an increased risk of alcohol and drugs addiction in patients with untreated sleep disorders. Also, a growing deficit can occur in OSAS patients. More than 50% of GH (Growing Hormone) is secreted during the third and fourth stage of non-REM sleep. A sleep disorder, by changing the sleep architecture, can cause a stop in growing completely reversible if the GH secretion is normalized. Regarding the orthodontic field, OSAS predispose to some malocclusion like long face syndrome, II class malocclusion and open bite. If a patient is treated early is it possible to guide his facial growing in the right direction.

Conclusion(s)

The orthodontic can be part of OSASâ€™ diagnosis and treatment. More studies must be done regarding the use of oral appliance in children, that donâ€™t respond to adonotonsillectomy and arenâ€™t comfortable with use of C-Pap. Anyhow the orthodontist have to recognize the sing and symptoms of an affected by OSAS to allow a proper treatment.Â

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