Case Report

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Obesity and apnea: is it always the same?

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Abbreviations: OHS, obesity-hypoventilation syndrome; OSA, obstructive sleep apnea; BMI, body mass index; PAP, positive pressure therapy

Introduction

The Obesity-Hypoventilation Syndrome (OHS) is defined as the combined presence of hypercapnia (pCO2 > 45 mmHg) and obesity (BMI>= 30) in a patient with sleep respiratory disorder and in the absence of others causes of hypoventilation.[3–9] It is an important sleep disorder that can lead to hospitalization in acute cases.[8] The prevalence in general population is 1,1% and ranges from 10 to 20 % in obese patients and with obstructive sleep apnea (OSA).[4]

The sleep disorder which is present in 90% of the cases is OSA, and the other 10% are represented by sleep hypoventilation.[3]

Case report

A 40year-old-male driver, was referred to the Sleep Ambulatory of the Federal Hospital of Lagoa, in Rio de Janeiro - Brazil, with the following complaints: snoring since childhood, nasal blockage, hypersomnolence, memory loss, morning headache, sleep fragmentation with 5 to 6times going to the bathroom during the night of sleep and cognitive impairment. Presented with high blood pressure and chronic venous insufficiency in the use of Hydrochlorothiazide, Allopurinol and Acetylsalicylic Acid. The patient's had a 40kg weight gain in the past three years; with worsen of the snoring and sleep apnea episodes.

Physical exam revealed obesity (Body Mass Index-BMI: 45); Cervical circumference: 49cm (>40cm condidered to be most likely to have OSA); Oroscopy: Modified Mallampati IV, palatine tonsils II (Brodsky), soft palate web; Nasal endoscopy revealed signs of chronic rhinopaty with pale mucosa and inferior turbinates hypertrophy and non-obstructive septal deviation on the left side.

Daytime sleepiness according to the Epworth 5 sleppiness scale (24 pts - Normal Range <10) and high risk of sleep apnea, according to the prediction of the STOP-BANG10 scale (7 pts - High Risk >5).

Polisomnography resulted in severe sleep apnea with the following parameters: Apnea and Hypopnea Index (AHI)/h: 80,4 (<5: normal; 5-15: mild; 15-30: moderate; >30: severe); Apnea Index: 79,8; Hypopnea Index: 96; Sat O2 % med: 74% / Sat O2% min 61% / Sat O2 <90%: 74,2. Gasometry revealed hypercapnia (p CO2: 45,8 mmHg / pO2: 66,5 mmHg). Spirometry was normal and bronchodilator test showed negative to Salbutamol. We've had also performed a chest X-ray that showed no alterations. The thyroid-stimulating hormone and thyroxine (T4) were also normal.

Due to the high cost of BIPAP in our country, CPAP was recommended and follow-up to assess its effectiveness. Besides that, the patient was also referred to a nutritionist as well as to a physical education teacher, to start a cardiovascular and weight loss program. Information about bariatric surgery was also explained to the patient.

Discussion

OHS is an exclusion diagnosis and the patients must be evaluated if they have other pathologies as an interstitial or obstructive pulmonary disease; chest wall pathologies; severe hypothyroidism; neuromuscular disease and central hypoventilation 3. Therefore, the investigation must include arterial gasometry, spirometry, pulmonary image exams and thyroid hormones.[3,9]

The diagnosis may occur as one of the following: acute exacerbation with acute respiratory insufficiency, respiratory acidemia and the necessity of admission in an intensive unit care or during a routine examination, with a specialist.[3] The symptoms include snoring, choking attacks during sleep, hyper somnolence and morning headache.[3,9] Furthermore, the patients may develop dyspnea and present clinic signs of cor pulmonale.[1]

The detection of this pathology is important because of the high hospital cost due to exacerbations and serious complications such as pulmonary hypertension and right ventricular failure.[1,2]

Obesity causes an impact in ventilation in many ways. During sleep, chronic alveolar hypoventilation leads to hypercapnia and nocturnal hypoxemia and, consequently, a ventilatory drive alteration that becomes more tolerant to high levels of CO2,.[2,9] Furthermore, the overweight patient presents a leptin resistance, hormone responsible for satiety and for stimulate the ventilation process. At last, the fat accumulation may overload the respiratory system with the reduction of the lung volume, elasticity of the chest wall and increase of the airway pressure.[2,9]

The aims of the treatment are to correct the basic cause through the reversion of the respiratory disorder by positive pressure therapy (PAP) and weight loss.[7,8] There are two modalities of PAP: CPAP and BIPAP.[6–8] The latter, being the initial option of treatment since the bilevel device offers more comfort and efficacy in a scenery that requires higher levels of air pressure.[2,6–8]

During the use of BIPAP, the patient must present saturation higher or at least 90%, with the absence of snoring, apnea, paradoxical

breathing. The treatment efficacy can be measured by somnolence scales, clinical condition and arterial gasometry.[6–8] If the saturation of O2 does not reach 90%, O_2 can be added to the therapy. Other options include procedures for weight loss and, as a last resource, tracheostomy.[2,7,8]

In our country, due the financial restrictions on the public health system it's quite difficult to diagnose and treat those patients. Both the polisomnography exam and PAP therapy are expensive and rare in public hospitals.

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Conflicts of interest

Author declares there are no conflicts of interest.

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