Pauna et al., J Otol Rhinol 2017, 6:4
http://dx.doi.org/10.4172/2324-8785.1000321

Journal of Otology & Rhinology

Research Article A SCITECHNOL JOURNAL

Multidisciplinary Approach to the Patient with Obstructive Sleep Apnea

Pauna HF*, Serrano TLI, Moreira APSM, Cabrini MAM, Cunha MO, Bartarini GCS, Bussi MT, Valerio CC, Costa IOM, Faria AC and Zancanella E

Department of Otolaryngology, Speech and Language Pathology, University of Campinas, Brazil

***Corresponding author:** Henrique Furlan Pauna, MD, Otolaryngologist, University of Campinas, Brazil, E-mail: h_pauna@hotmail.com

Rec date: May 31, 2017 **Acc date:** Jun 06, 2017 **Pub date:** Jun 13, 2017

Abstract

Obstructive sleep apnea syndrome is characterized by episodes of upper airway obstruction with respiratory effort, during sleep. It is one of the most frequent diagnosed sleep disorder, it is frequently identified among men and women, and it has many symptoms and morbidities.

Beyond the multifactorial origin, obstructive sleep disorders patients have low rates of adherence. Multidisciplinary and multi-professional approaches are a good alternative to be offered, independently of the chosen method. Here we describe the multidisciplinary approach offered to obstructive sleep apnea patients in a teaching hospital, in Southeastern Brazil.

The best choice for therapeutic option has not yet been clarified, but multidisciplinary and multi-professional involvement seems to be a good alternative to improve patient's adherence.

Keywords OSAS; Multidisciplinary approach; CPAP; Orofacial disorders; Nutrition; Psychology

Introduction

The obstructive sleep apnea syndrome (OSAS) is characterized by repeated episodes of pharyngeal obstruction during a respiratory effort while sleeping, and affects 2–4% of the adult population [1,2]. Its daily consequences (excessive daytime drowsiness, reduced quality of life, increased risk of accidents at work/traffic), repercussions on functional systems (cognitive problems, obesity, type 2 diabetes, hypertension, besides being considered an independent risk factor for cardiovascular and cerebrovascular diseases), and poor prognosis, determine the general interest regarding this pathology [3,4].

In addition to the multifactorial origin of obstructive sleep-disordered breathing, most patients have difficulty to follow appropriate treatment [5]. Different approaches can involve many professionals from different areas, and should be adapted to individual characteristics and the nature of the obstruction [4,5]. The choice for the most effective unique therapeutic option remains to be elucidated, but multidisciplinary and multi-professional involvement seems be the best alternative to be offered [4].

This study aims to describe the methodology applied at the Multidisciplinary Outpatient Sleep Disorder Clinic of a tertiary level hospital, inserted in the Brazilian Health System.

Materials and Methods

ENT evaluation

Medical evaluation is based on a clinical anamnesis and directed physical examination. Specific questions about sleeping, work schedule (whether daytime or night time), sleeping environment (if silent or noisy, dark or clear, or whether the patient sleeps alone or accompanied), as well as the usual bedtime, sleeping duration, and wake up time are made. Questions regarding night time activities (feeding, smoking and urination), the presence of dreams and nightmares, the parasomnias, and the presence of insomnia are made. Finally, daytime complains (headache upon waking, daytime drowsiness, and reduced cognitive performance) are questioned [6]. Snoring and sleep apnea are graded into mild, moderate and intense, according to the patient's and companion's perception, when Epworth Sleepiness Scale (ESS) and the Functional Outcomes of Sleep Questionnaire (FOSQ-10) are applied.

The physical examination consists of biometry, biotype and facial profile evaluation, cervical and abdominal circumferences, anterior rhinoscopy and oroscopy, with special evaluation of the palatine tonsils, palate, uvula and modified Mallampati classification. Complementarily, flexible nasofibrolaryngoscopy is performed to evaluate the possible upper airway narrows, with Muller maneuver, and associations with laryngeal pathologies. Finally, the polysomnography, previously performed, is evaluated, since it is a referred tertiary outpatient clinic.

Dental evaluation

Dental evaluation is performed by correlating the maxillofacial characteristics of patients with obstructive sleep disorders. The occlusal pattern (using Angle classification in classes I, II, or III), dental elements, the presence of prostheses, and the gingival characteristics of the buccal mucosa are evaluated. A facial analysis is performed, comparing the proportions of the thirds and fifths of the face, as well as the anteroposterior, vertical and transverse relationships, classifying the patients as standard I, II or III; long face or short face; and with or without transverse maxillary atresia.

The case is then discussed with the entire multidisciplinary team. Opinions from all members on the diagnostic hypothesis and the treatment to be made are obtained, as well as the necessary complementary examinations. From this point, the patient is referred to the specialties (physiotherapy, speech therapy, nutrition and psychology) in order to continue the proposed singular therapeutic project.

Physiotherapy evaluation

The physiotherapy evaluation aims to provide adherence to the Continuous Positive Airway Pressure (CPAP) apparatus, when indicated, and to provide follow-up treatment. Initially, the patient is desensitized, leaving him/her familiar with what will happen in the titration exam and allows the physiotherapist to draw a brief profile to choose the appropriate mask – since this is one of the main complaints

of discomfort, leakage, intolerance, and impairment of therapy efficacy [7-9].

During the follow-up, adjustments are made to the device, related to the hygiene of the device and the accessories (trachea and mask), as well as guidelines on sleep hygiene [10]. The patient is monitored for the efficiency of the method in the control of OSAS and associated symptoms. If the patient presents any difficulty, such as: poor adherence, nasal symptoms, depressive signs, reports of insomnia, low self-esteem before therapy, among other complaints, he/she is referred to re-discuss treatment and thus propose a new therapy.

Speech therapy evaluation

Speech therapy aims oral musculature and consists of a MBGR Protocol adapted to sleep respiratory disorders by Bussi & Tessitore, evaluating the orofacial and oropharyngeal muscular structures (lips, tongue, cheeks, face, palate) in addition to their mobility and tonus [11,12]. Stomatognathic functions, including breathing, are also evaluated. The extrinsic and intrinsic musculature of the tongue and the musculature of the oropharynx are worked out to strengthen the muscles of the soft palate [11-13].

The myofunctional treatment involves stretching and relaxation of the cervical region, orientation of nasal hygiene with saline solution, muscle strengthening of buccinators and orbicularis of the mouth to facilitate labial closure and maintenance of nasal breathing. There are contraindications to speech-language therapy: patients with retrognathia and maxillary atresia, absence of two or more molar teeth from the same arch and the same side and patients with morbid obesity. After treatment, which varies between 12 and 24 sessions, depending on the need of each patient, it is reassessed and referred to the otolaryngology team (Figure 1).

Figure 1: Example of the evolution of a male patient, after performing the myofunctional treatment involving stretching and relaxation of the cervical region, muscular strengthening of buccinators and orbicularis of the mouth. Observe the greater range of mouth opening as well as change in the classification of Mallampati IV (0) to I (24 sessions).

Nutritional evaluation

The nutrition team carries out anamnesis and anthropometric evaluation to elaborate dietary management. A qualitative individual food plan and/or supplementation are delivered, when necessary. Patients will return within 30 days for reassessment, and comparison of the preliminary results. Any adjustments or changes are made to the food plan, if necessary. Overweight or obese patients (body mass index between 25 and 35 kg/m^2) are monitored by our team, but some cases may be referred for bariatric surgery (performed by different staff in the same tertiary hospital).

Psychological evaluation

The patients evaluated by the psychology team are those who present some mood disorders related to OSAS (anxiety or depression), memory disorders, and inadequate sleep hygiene. Treatment strategies vary according to the patients' problem, since it should be individualized through cognitive behavioral therapy, helping them to identify their beliefs and improving quality of life. Patients are exposed to the importance of this intervention to achieve significant results with few sessions, thus leading to a better adhesion to the proposed therapies.

Hospitalization is performed without a pre-established number of visits; however, the first three are limited to eliciting information about the intensity and recurrence of the symptoms presented, investigating personal history, family dynamics, and beliefs about sleep and life. At this early stage it is possible to provide a therapeutic environment, to investigate the quality of the sleep, to evaluate possible changes in the routine, to appropriate sleep hygiene; to "calibrate" the best choices by knowing its consequences, to redirect the individual into his own existence, and to promote quality of sleep and life.

Discussion

The etiology of OSAS is multifactorial and the otolaryngologist is usually the first professional to treat patients with this pathology, since upper airway obstruction often occurs [14-16]. During apnea episodes, patients may present decreased oxygen saturation and consecutive arousals, and may cause many vascular diseases [17-19]. Among the therapies proposed by the ENT doctor, we may include CPAP; BiPAP (Bi-level Positive Airway Pressure); Auto-PAP (Autotitrating Continuous Positive Airway Pressure); positional therapy; oral appliances; uvulopalatopharyngoplasty (UPPP) – or the laser assisted technique (LAPP); radiofrequency ablation of the palate (RFA); maxillomandibular advancement (MMA); and tracheotomy [16].

The dentist is able to discuss the use of intraoral appliances for primary snoring, mild apnea, and Upper Airway Resistance Syndrome [20-21], and the secondary indication for moderate or severe apnea in patients, refractory to CPAP use [22]. However, numerous studies in the literature have pointed to maxilo-mandibular advancement as the most effective surgical treatment for OSAS [21,23-28], with success rates of 96 to 100% [27]. This surgery, however, can be performed by both the ENT doctor and the dentist together.

The physiotherapist conducts the role of adaptation and adherence to non-invasive mechanical ventilation treatment after medical prescription, and contributes to the regular use of therapy, making it more effective [29-33]. Additionally, the physiotherapist works face-to-face to guide patients prior to the polysomnography exam for CPAP titration, informing them through illustrations and videos about the disease, the associated symptoms and the advantages of therapy in the treatment of OSAS, and desensitization [34-38]. After CPAP titration polysomnography and device acquisition, it is provided the support throughout the treatment, contributing to the use of CPAP over a period of more than 4 hours per night, properly adjustment of the mask to the face (avoiding leakage), as well as assessment of the need for humidification and maintenance of adequate therapeutic pressure. Therefore, physical therapy follow-up is necessary for the acceptance

and maintenance of CPAP treatment, always maintaining the necessary adjustments.

Myotherapic exercises have been shown to be effective in the treatment with the objective of muscular strengthening, tonus, and functional adequacy of breathing [11,39]. Randomized trials in patients with mild or moderate OSAS, show that muscle training performed while the subject is awake reduces airway collapse during sleep. Tongue and palate exercises performed for 20 minutes twice daily for eight weeks significantly reduced snoring [40]. The oropharyngeal exercises are effective in reducing excessive daytime sleepiness, decreasing the score on the Epworth sleepiness scale, increasing oxygen saturation, and reducing symptoms and comorbidities associated with OSAS [18,41,42].

Effective treatment and disease prevention have been associated with major improvements in quality of life, which can reduce risks of morbidity and mortality, with adequate diet and regular exercise [18,19]. Several studies have already proven the efficiency of nutritional monitoring for effective treatment in all comorbidities mentioned above. A complete nutritional assessment can detect important nutrient deficiencies as well as avoid misconceptions about healthy eating [43]. However, OSAS can lead to metabolic changes per se, and can preclude weight loss. Therefore, surgery is offered when conservative treatments fail [16].

The nutritionist emphasizes the importance of a healthy diet and not specific isolated nutrients. It is known that the union of several foods has more than one beneficial factor to cardiovascular health, diabetes mellitus prevention, and weight loss [19], so the nutritionist guides the amounts of nutrients and calories for each individual, since each has a different need [44].

Studies point out that an individual deprived of sleep has their cognitive abilities impaired leading the brain to lose its maximum efficiency and the homeostasis of the affected body resulting in metabolic changes. The causes of sleep deprivation are diverse, but the main one is of external origin, not only because of the lack of proper rhythm in life, but also because of the break in the biological rhythm due to social disturbances [45].

The literature shows that in view of the need for an integral evaluation, psychological intervention has been shown to be increasingly effective in the management of patients with sleep disorders. By studying more and more how cognition influences our emotions and behaviors, and how our behaviors are closely related to our emotions and thoughts, the psychologist helps the individual to harmonize this 'trilogy' (body, mind, and behavior). Non-pharmacological therapy tends to be more durable by acting in the treatment of the causes, and this action requires an accurate diagnosis. It is designed to improve quality of life by addressing feelings, expectations and desires of a healthy life through the reduction of stress, anxiety, depression and fatigue [46]. This is the scenario that the psychologist has been acting, modeling new behaviors to promote health among patients with sleep disorders [45].

The specific and multidisciplinary treatment of OSAS is fundamental. The natural evolution of the disease, with the appearance of serious comorbidities related to it, need to be emphasized to the patient, since adherence to therapy must be persistently stimulated [47].

Conclusion

The choice for the best unique therapeutic option has not yet been elucidated. The various existing methods presuppose an individualized evaluation, and multi-professional approach seems to be the best alternative to be offered due to the many facets of multifactorial origin that make up the etiology of OSAS.

References

1. Flemons WW, Buysse D, Redline S, Oack A, Strohl K, et al. (1999) Sleep-related breathing disorders in adults: recommendations for syndrome definition and measurement techniques in clinical research. The Report of an American Academy of Sleep Medicine Task Force. Sleep 22: 667-689.
2. He J, Kryger MH, Zorick FJ, Conway W, Roth T (1988) Mortality and apnea index in obstructive sleep apnea. Experience in 385 male patients. Chest 94: 9-14.
3. Paiva T, Vasconcelos P, Leitao AN, Andrea M (1993) [Obstructive sleep apneas. A clinical and laboratory study]. Acta Med Port 6: 449-456.
4. Zancanella E, Haddad FM, Oliveira LAMP, Nakasato A, Duarte BB, et al. (2014) Diretriz: Apneia obstrutiva do sono e ronco primário: diagnóstico e tratamento. Braz J Otorhinolaryngol 80: S1-S16.
5. de Tarso Moura Borges P, Paschoal JR (2005) Initial indication of treatment in 60 patients with sleep obstructive ventilatory disturbance. Braz J Otorhinolaryngol 71: 740-746.
6. Maspero C, Giannini L, Galbiati G, Rosso G, Farronato G (2015) Obstructive sleep apnea syndrome: a literature review. Minerva Stomatol 64: 97-109.
7. Weaver TE, Grunstein RR (2008) Adherence to continuous positive airway pressure therapy: the challenge to effective treatment. Proc Am Thorac Soc 5: 173-178.
8. Chai CL, Pathinathan A, Smith B (2006) Continuous positive airway pressure delivery interfaces for obstructive sleep apnoea. Cochrane Database Syst Rev 18: CD005308.
9. Catcheside PG (2010) Predictors of continuous positive airway pressure adherence. F1000 Med Rep 2.
10. Telles SC, Paiva LB, Arrais T, Marzola IH, Zerbinatti CS, et al. (2013) Brazilian Consensus on Sleep Physiotherapy. Sleep Sci 6: 159-174.
11. Bussi M (2014) Ronco e Apneia Obstrutiva do Sono. In: Tessitore A, Marchesan IQ, Silva HJ, Barretin-Felix G. Práticas Clínicas em Motricidade Orofacial. São Paulo SP: 117-127.
12. Tessitore A (2004) Alterações oromiofuncionais em respiradores orais. São Paulo: Rocca 261-276.
13. Genaro KF, Berretin-Felix, Rehder MIBC, Marchesan IQ (2009) Avaliação Miofuncional Orofacial - Protocolo MBGR. Rev CEFAC 11: 237-255.
14. Orr WC, Moran WB (1985) Diagnosis and management of obstructive sleep apnea. A multidisciplinary approach. Arch Otolaryngol 111: 583-588.
15. Cvetnić V, Cvetnić S, Kujundzić I, Batistić B, Sanković F, et al. (1990) Pathophysiologic mechanisms of functional disorders of the cardiorespiratory system in snoring. Plucne Bolesti 42: 208-212.

16. Spicuzza L, Caruso D, Di Maria G (2015) Obstructive sleep apnoea syndrome and its management. Ther Adv Chronic Dis 6: 273-285.
17. L'Estrange PR, Battagel JM, Nolan PJ, Harkness B, Jorgensen GI (1996) The importance of a multidisciplinar approach to the assessment of patients with obstructive sleep apnoea. J Oral Rehabil 23: 72-77.
18. McNicholas WT (2008) Diagnosis of obstructive sleep apnea in adults. Proc Am Thorac Soc 5: 154-160.
19. Rique ABR, Soares EA, Meirelles CM (2002) Nutrição e exercício na prevenção e controle das doenças cardiovasculares. Rev Bras Med Esporte 8: 244-254.
20. Lim J, Lasserson TJ, Fleetham J, Wright JJ (2009) Oral appliances for obstructive sleep apnoea. Cochrane Database Syst Rev 18: CD004435.
21. Johal A, Conaghan C (2004) Maxillary morphology in obstructive sleep apnea: a cephalometric and model study. Angle Orthod 74: 648-656.
22. Ramar K, Dort LC, Katz SG, Lettieri CJ, Harrod CG, et al. (2015) Clinical Practice Guideline for the Treatment of Obstructive Sleep Apnea and Snoring with Oral Appliance Therapy: An Update for 2015. J Dent Sleep Med 2: 71-125.
23. Li KK, Powell NB, Riley RW, Troell RJ, Guilleminault C (2000) Long-Term Results of Maxillomandibular Advancement Surgery. Sleep Breath 4: 137-140.
24. Prinsell JR (2002) Maxillomandibular advancement surgery for obstructive sleep apnea syndrome. J Am Dent Assoc 133: 1489-1497.
25. Mello-Filho FV, Faria AC, Ribeiro HT, Silva-Junior SN, Garcia LV, et al. (2006) Cirurgia de avanço maxilomandibular para tratamento da síndrome das apnéias/hipopnéias obstrutivas do sono (SAHOS). Medicina (Ribeirão Preto) 39: 227-234.
26. Barrera JE, Powell NB, Riley RW (2007) Facial skeletal surgery in the management of adult obstructive sleep apnea syndrome. Clin Plast Surg 34: 565-573.
27. Holty JE, Guilleminault C (2010) Surgical options for the treatment of obstructive sleep apnea. Med Clin North Am 94: 479-515.
28. Faria AC, Silva-Junior SN, Garcia LV, Santos AC, Fernandes RMF, Mello-Filho FV (2013) Volumetric analysis of the pharynx in patients with obstructive sleep apnea (OSA) treated with maxillomandibular advancement (MMA). Sleep Breath 17: 395-401.
29. Kushida CA, Littner MR, Hirshkowitz M, Morgenthaler TI, Alessi CA, et al. (2006) Practice parameters for the use of continuous and bilevel positive airway pressure devices to treat adult patients with sleep-related breathing disorders. Sleep 29: 375-380.
30. Budhiraja R, Parthasarathy S, Drake CL, Roth T, Sharief I, et al. (2007) Early CPAP use identifies subsequent adherence to CPAP therapy. Sleep 30: 320-324.
31. Damjanovic D, Fluck A, Bremer H, Muller-Quernheim J, Idzko M, et al. (2009) Compliance in sleep apnoea therapy: influence of home care support and pressure mode. Eur Respir J 33: 804-811.
32. Wosniak DR, Lasserson TJ, Smith I (2014) Eduacational, supportive and behavioural interventions to improve usage of continuous positive airway pressure machines in adults with obstructive sleep apnoea. Cochrane Database Syst Rev 1: CD007736.
33. American Academy of Sleep Medicine (2014) International classification of sleep disorders.
34. Martínez-García MA, Campos-Rodrigues F, Catalán-Serra P, et al. (2012) Cardiovascular mortality in obstructive sleep apnea in the elderly: role of long-term continuous positive airway pressure treatment: a prospective observational study. Am J Resp Crit Care Med 186: 909-916.
35. Antic NA, Catcheside P, Buchan C, Hensley M, Naughton MT, et al. (2011) The effect of CPAP in normalizing daytime sleepiness, quality of life, and neurocognitive function in patients with moderate to severe OSA. Sleep 34: 111-119.
36. Tomfohr LM, Ancoli-Israel S, Loredo JS, Dimsdale JE (2011) Effects of continuous positive airway pressure on fatigue and sleepiness in patients with obstructive sleep apnea: data from randomized controlled trial. Sleep 34: 121-126.
37. Lindberg E, Berne C, Elmasry A, Hedner J, Janson C (2006) CPAP treatment of a population-based sample--what are the benefits and the treatment compliance? Sleep Med 7: 553-560.
38. Aloia MS, Knoepke CE, Lee-Chiong T (2010) The new local coverage determination criteria for the adherence to positive airway pressure treatment. Chest 138: 875-879.
39. Tessitore A (2012) Terapia Fonoaudiológica em Ronco (Como eu trato). In: Marchesan IQ, Silva HJ, Berretin-Felix G. Terapia Fonoaudiológica em Motricidade Orofacial. São José dos Campos SP: 111-122.
40. Guimaraes KC, Drager LF, Genta PR, Marcondes BF, Lorenzi-Filho G (2009) Effects of oropharyngeal exercises on patients with moderate obstructive sleep apnea syndrome. Am J Respir Crit Care Med 179: 962-966.
41. Guimarães KCC (1999) Alterações no tecido mole de orofaringe em portadores de apneia do sono obstrutiva. J Bras Fonoaudiologia 1: 69-75.
42. Greco C, Spallone V (2015) Obstructive Sleep Apnoea Syndrome and Diabetes. Fortuitous Association or Interaction? Curr Diabetes Rev 12: 129-155.
43. Corkins KG (2015) Nutrition-focused physical examination in pediatric patients. Nutr Clin Pract 30: 203-209.
44. Esper DH (2015) Utilization of Nutrition-Focused Physical Assessment in Identifying Micronutrient Deficiencies. Nutr Clin Pract 30: 194-202.
45. Rios ALM, Peixoto MFT, Senra VLF (2008) Transtornos do Sono, Qualidade de Vida e Tratamento Psicológico. Núcleo de Estudos AC-PC. Universidade Vale do Rio Doce. Governador Valadares.
46. Silva NA, Melo HCS (2015) A Intervenção da Terapia Cognitivo-Comportamental no adoecimento decorrente da insônia. Psicologia e saúde em debate.
47. Diretrizes (2014) Apneia obstrutiva do sono e ronco primário: tratamento. Braz J Otorhinolaryngol 80: S17-S28.