



Original Contribution

SLEEP APNEA – ENDOSCOPIC APPROACH

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ABSTRACT

Purpose: To assess the diagnostic value of Drug induced sleep endoscopy at the obstructive sleep apnea.

Material and methods: For a period of 3 years (01/01/2016 to 28/02/2019) we evaluated 36 patients (22 man and 14 women) with obstructive sleep apnea who underwent drug induced sleep endoscopy.

Results: According to the data we collected 11 patients out of 36 underwent surgery thanks to the sleep endoscopy they had. Other 14 patients who use CPAP have a better quality of life without snoring and episodes of apnea.

Conclusions: Drug induced sleep endoscopy is a good way to decide if the patient could undergo a definitive surgery or should be treated with alternative methods. The nasal continuous positive airway pressure (CPAP) is the first line treatment of adult OSA.

Key words: obstructive sleep apnea (OSA), drug induced sleep endoscopy, CPAP.

INTRODUCTION

Obstructive sleep apnea (OSA) is defined by five or more respiratory events (apneas, hypopneas or respiratory effort-related arousals (RERAs)). They are associated with loud snoring, waking with gasping, breath-holding or choking and excessive daytime somnolence (1, 2).

Each episode of apnea or hypopnea must last at least 10 seconds. It is commonly accompanied by reduction in blood oxygen saturation of 3% to 4% and is usually terminated by brief, unconscious arousals from sleep. The symptom that prompts patients to seek medical attention is the complaint of the bed partner about snoring between apneas. Excessive daytime somnolence is one of the common and difficult symptoms clinicians treat in patients with OSA. It is one of the most debilitating symptoms because it reduces the quality of

life, cause neurocognitive deficits and impairs daytime performance (3).

The obstruction that occurs in OSA results from collapse of the pharyngeal airway during sleep. Obesity, soft tissue hypertrophy and craniofacial characteristics such as retrognathia increase the extraluminal tissue pressures surrounding the upper airway. The three major areas of obstruction are the nose, the palate and the hypopharynx, although obstructive sleep apnea associated with laryngeal obstruction has also been reported (4). For a period of 3 years in our ENT department, University Hospital – Burgas we evaluated 36 patients with obstructive sleep apnea who underwent drug induced sleep endoscopy.

In historical aspect the idea of obesity being intimately associated with daytime somnolence seems to have been first written about by Charles Dickens in 1837. The 20th president of the USA, William Howard Taft, had a body mass index of 42kg/m² while in office and was reported to snore, to fall asleep during the day frequently, and to have hypertension. There is

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some data that suspects Napoleon I had OSA in the last decade of his life. He was obese and retrognathic, his neck was short and thick, he had nasal obstruction, he frequently slept during the day, he complained of declining energy and intellect, and he was quite tired looking and somewhat disheveled. The treatment of OSA was limited to tracheostomy or weight loss. This changed in the early 80s when uvulopalatopharyngoplasty was introduced. Not long after that Collin Sullivan developed the nasal continuous positive airway pressure (CPAP) which today is the first line treatment of adult OSA.

As a result of untreated OSA a lot of cardiovascular complications can be seen: hypertension, arrhythmias, myocardial infarctions, cerebral vascular accidents, pulmonary hypertension, congestive heart failure.

AIM OF THE STUDY

When evaluating patients for obstructive sleep apnea syndrome it is important to obtain a thorough medical history and physical examination. A general examination with particular emphasis on height, weight, body mass index, neck circumference should be included. The nose, nasopharynx, oral cavity, oropharynx, hypopharynx and larynx should all be examined to assess their patency and rule out any anatomical or pathologic obstructions. To evaluate different levels of obstruction a fiberoptic nasopharyngoscope should be used. Cephalometry involves the measurement of various landmarks and their angles seen on lateral facial x-ray. It provides information about soft tissues and skeletal relationships. Polysomnography is the simultaneous recording of multiple physiologic parameters during sleep and is essential in the diagnosis of sleep disorders.

Otolaryngologists use numerous modalities to locate the site of snore-sound generation and obstructive locations. These tools include a complete head-and-neck exam, the Muller maneuver, lateral radiographic cephalometry, computed tomography (CT) scanning and magnetic resonance imaging (MRI). The static nature of these exams, coupled with increased resting muscle tone while the patient is awake, makes pinpointing the source of true obstruction difficult. While each of these methods offers reasonable diagnostic efficacy, none offers direct and dynamic visualization of pharyngeal structures during sleep (5, 6). On

the other hand sleep endoscopy is a powerful tool for studying the dynamic airway in sleeping patients with obstructive sleep apnea (OSA). The surgeon can tailor the operative technique to the patients specific condition, using the knowledge gained from the sleep endoscopy (7).

MATERIALS AND METHODS

The procedure of the drug induced sleep endoscopy is usually done in an operation room setting. The patient is placed on the operating bed supine. Sleep is induced with a propofol drip (there is a guideline for the quantity of the medication so not to oversedate the patient but to reach a plane where the patient is sleeping but arousable – start with a 100mcg/kg/min and titrate to patient's snoring and OSA).

A flexible nasopharyngoscope is used to examine the nasopharynx, oropharynx and hypopharynx of a sleeping, snoring and obstructing patient. A video record can be made. The degree of obstruction from the lateral pharyngeal folds, retropalatal and retrolingual areas can be assessed too.

Drug induced sleep endoscopy is a good way to decide if the patient could undergo a definitive surgery or should be treated with alternative methods.

Treatment is generally approached in a stepwise manner and begins with conservative medical measures. Weight loss should be recommended to all overweight patients with OSA. Continuous positive airway pressure (CPAP) is considered the gold standard for moderate to severe OSA.

Factors important in making the decision to treat OSA with a surgical procedure include the patient's wishes, severity of symptoms and disease, patient comorbidities, CPAP tolerance, severity and site of upper airway collapse.

RESULTS AND DISCUSSION

For a period of 3 years (01/01/2016 to 28/02/2019) in our ENT department in UMBAL(University Hospital) Burgas we evaluated 36 patients with obstructive sleep apnea who underwent drug induced sleep endoscopy (Table 1).

Table 1. Distribution of patients

	Male	Female	Operated	CPAP	Refused treatment
2016	7	5	3	5	4
2017	6	1	3	2	2
2018	7	7	4	6	4
2019	2	1	1	1	1

According to the data we collected 11 patients out of 36 underwent surgery thanks to the sleep endoscopy they had. The quality of life for 30% of the patients with OSA is back to normal after the surgery.

In the table is shown that there is no difference in the gender of patients who suffer from OSA. All of the patients who underwent drug induced sleep endoscopy were first diagnosed with OSA by polysomnographic evaluation. Some of them refused to have any kind of treatment or were CPAP intolerant. Patients who use CPAP have a better quality of life without snoring and episodes of apnea(8).

CONCLUSIONS

1. Polysomnography is the simultaneous recording of multiple physiologic parameters during sleep and is essential in the diagnosis of sleep disorders.
2. Drug induced sleep endoscopy is a good way to decide if the patient could undergo a definitive surgery or should be treated with alternative methods.
3. The nasal continuous positive airway pressure (CPAP) is the first line treatment of adult OSA.

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