PROFILE OF WOMEN WITH HIGH RISK FOR OBSTRUCTIVE SLEEP APNEA SYNDROME

Perfil de mulheres com alto risco para síndrome da apneia obstrutiva do sono

Perfil de mujeres con alto riesgo para síndrome de la apnea obstructiva del sueño

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ABSTRACT: Introduction: Obstructive apnea syndrome is considered to be highly prevalent in the population, primarily related to males and with little information on clinical signs and epidemiological profile in women. **Objective:** To analyze the clinical profile and to verify the association of the variables with the high risk of women developing obstructive sleep apnea syndrome. **Method:** This is an analytical and quantitative study, with a retrospective method of collecting data from outpatient clinics performed from June 2014 to June 2016 at the Ambulatory of Perioperative Assessment of a regional hospital in the Federal District. **Results:** The existence of a dependence association between obstructive apnea syndrome and the following variables: age range, body mass index, venous thromboembolism, presence of systemic arterial hypertension and diabetes mellitus were verified. There was no significant association with smoking or the presence of a difficult airway predictor. **Conclusion:** Obese, hypertensive women with a risk of thrombosis and those over 40 years of age are at increased risk for obstructive apnea syndrome.

Keywords: Perioperative care. Sleep apnea, obstructive. Patient care team. Women.

RESUMO: Introdução: A síndrome da apneia obstrutiva é considerada de alta prevalência na população, primariamente relacionada ao sexo masculino e com pouca informação sobre os sinais clínicos e o perfil epidemiológico em mulheres. **Objetivo:** Analisar o perfil clínico e verificar a associação das variáveis com o alto risco de mulheres desenvolverem síndrome da apneia obstrutiva do sono. **Método:** Trata-se de um estudo analítico e quantitativo, com método retrospectivo de coleta de dados das consultas ambulatoriais realizadas no período de junho de 2014 a junho de 2016 no Ambulatório de Avaliação Perioperatória de um hospital regional do Distrito Federal. **Resultados:** Verificou-se a existência de uma associação de dependência entre a síndrome da apneia obstrutiva e as seguintes variáveis: faixa etária, índice de massa corporal, tromboembolismo venoso, presença de hipertensão arterial sistêmica e diabetes mellitus. Não houve associação significativa com o tabagismo ou com a presença de algum preditor de via aérea difícil. **Conclusão:** Mulheres obesas, hipertensas, com risco de trombose e maiores de 40 anos possuem maior risco de síndrome da apneia obstrutiva.

Palavras-chave: Assistência perioperatória. Apneia obstrutiva do sono. Equipe de assistência ao paciente. Mulheres.

RESUMEN: Introducción: El síndrome de la apnea obstructiva es considerada de alta prevalencia en la población, primariamente relacionada al sexo masculino y con poca información sobre las señales clínicas y el perfil epidemiológico en mujeres. **Objetivo:** Analizar el perfil clínico y verificar la asociación de las variables con el alto riesgo de mujeres de desarrollar síndrome de la apnea obstructiva del sueño. **Método:** Se trata de un estudio analítico y cuantitativo, con método retrospectivo de colecta de datos de las consultas ambulatorias realizadas en el período de junio de 2014 a junio de 2016 en el

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Ambulatorio de Evaluación Perioperatoria de un hospital regional del Distrito Federal. **Resultados:** Se verifico la existencia de una asociación de dependencia entre el síndrome de la apnea obstructiva y las siguientes variables: rango de edad, índice de masa corporal, tromboembolismo venoso, presencia de hipertensión arterial sistémica y diabetes mellitus. No hubo asociación significativa con el tabaquismo o con la presencia de algún predictor de vía aérea difícil. **Conclusión:** Mujeres obesas, hipertensas, con riesgo de trombosis y mayores de 40 años poseen mayor riesgo de síndrome de la apnea obstructiva.
Palabras-clave: Atención perioperativa. Apnea obstructiva del sueño. Grupo de atención al paciente. Mujeres.

INTRODUCTION

Obstructive sleep apnea syndrome (OSAS) is a respiratory disorder characterized by episodes of obstruction leading to hypopnea and apnea during sleep. It is estimated that 11.4% of men and 4.7% of women have moderate and severe OSAS, so it is considered of high prevalence in the population[1]. In surgical patients, estimates can reach 22%[2,3].

These obstructions result in recurrent awakening, which can last for more than 10 seconds. This sleep fragmentation aids in the pathophysiology of OSAS, comprising specific signs and symptoms such as daytime sleepiness, snoring and cardiovascular diseases. The prevalence of OSAS is a risk factor for morbidity and mortality following surgical interventions, as it influences the length of hospitalization and the incidence of hypoxemia, elevations in blood pressure, heart rate, ventilation, and sympathetic tone. Therefore, it is extremely important to identify surgical patients who require greater risk-related care for OSAS[3-5].

The STOP-BANG questionnaire was developed in Canada to assess the risk of OSAS. It is an easy-to-apply questionnaire, consisting of eight questions with yes or no answers, based on risk factors and symptoms of OSAS risk, including sleep snoring, daytime tiredness, sleep apnea, diagnosis of hypertension, body mass index greater than 35 kg/m^2, age greater than 50 years, neck circumference greater than 40 cm and being male. For each affirmative answer, add 1 point; and for each negative one, 0 points are added, with a maximum score equal to 8. If the patient scores between 0 and 2, a low risk for OSAS will be considered, the presence of 3 or 4 affirmations indicates a moderate risk and when the score is greater than 5, there is a high risk for OSAS. The questionnaire has high sensitivity to detect OSAS, with 83, 92 and 100% sensitivity for mild, moderate and severe classification, respectively[6-9].

During the consultation at the Ambulatory of Perioperative Assessment (APA-HRG), the nurse performs anamnesis, physical examination (anthropometry, vital signs, cardiopulmonary auscultation, identification of difficult airway predictors) and applies the risk stratification for OSAS through the STOP-BANG score, functional capacity questionnaire (MET) and risk flow chart for venous thromboembolism (VTE) by the Safety-Zone algorithm in patients classified as high risk for performing the anesthetic act.

OSAS is primarily related to males. However, there is little information on clinical signs in women and few epidemiological studies addressing the female audience. Knowledge about snoring, daytime sleep, hypertension, age and obesity is limited in this public[7]. Thus, the question was raised whether women are being underdiagnosed due to some bias[7,10,11].

OBJECTIVE

To analyze the clinical profile of women at high risk for OSAS and to verify if there is dependence among the variables in this population.

METHOD

Analytical study that sought to associate variables of the profile of women with high risk for OSAS, quantitative, with a retrospective method of collecting data from the consultations conducted from June 2014 to June 2016 at the Ambulatory of Perioperative Assessment of a Federal District regional hospital (APA-HRG).

The population had a total of 230 medical records of women classified as high risk in the period from June 2014 to June 2016. According to the protocol of the service, those aged 65 years or younger than 65 years of age with a history of allergies, systemic diseases, use of medications in a continuous way and/or physical limitation and/or cognitive limitation and/or previous history of intercurrence in anesthesia-surgical procedure are considered high-risk patients.

Within the study population, we used as inclusion criteria the physical and electronic records of female patients who were consulted in the chosen period, over 18 years of age, who had a moderate- to high-risk stratification for OSAS according to the STOP-BANG questionnaire, totaling 49 medical records. All charts with absence of classification

or with low risk for OSAS, those that were outside the chosen period and the medical records of male patients were excluded from the analysis.

For data collection, a form containing the following variables was used: age, body mass index (BMI), surgical specialty, associated diseases, difficult airway predictor, smoking, alcoholism, and thrombosis risk classification.

These variables were analyzed using the statistical software R (R Development Core Team 2008 version 3.3 for Windows®), and are presented in descriptive percentiles. The χ^2 test was performed to analyze whether there is an association of existing dependence of the variables with the high risk of OSAS. We adopted p-value <0.05 for the calculation of the hypotheses.

Null hypothesis: there is no association of patients with high risk of OSAS with clinical variables. Alternative hypothesis: there is an association of patients with high risk of OSAS with clinical variables.

If the value of the χ^2 calculated is greater than the χ^2 in the table, it can be stated that there is an association between the variables, if the χ^2 calculated is smaller than the χ^2 in the table, there is no association between the variables. Therefore, the higher the value of χ^2, the more significant the relationship between the variables.

The research work was approved by the Research Ethics Committee of the Foundation for Teaching and Research in Health Sciences (FEPECS), under CAAE No. 60740916.8.0000.5553 (umbrella project), being carried out in accordance with the requirements of Resolution No. 466/2012 of the National Health Council.

RESULTS

The mean age was 61.26 years and its standard deviation was 12.88. There was a predominance of women aged over 40 years (95.92%), submitted to gynecological surgeries (46.94%), non-smokers (69.39%), hypertensive (89.80%), obese (BMI>30 kg/m²=63.30%) and with a high risk of VTE (86.05%). Only 10.2% were from other specialties, such as mastology and vascular surgery — data not shown in the table. Table 1 shows the distribution of these variables.

Assuming p-value <0.05 for the hypotheses formulated, when testing the χ^2 between the variables identified in the female profile with the high risk of OSAS, a significant association was found between OSAS and the following variables: age range, presence of comorbidities, BMI and VTE (Table 2).

There was no association between dependence among women at high risk of OSAS with the habit of smoking and the predictor of difficult airway.

DISCUSSION

Diagnosing women with OSAS can be difficult, since they have more generalized symptoms than men, related to depression, insomnia, morning headaches, anxiety, tired legs, nightmares,

Table 1. Clinical profile of the female population at high risk of developing obstructive sleep apnea syndrome.

Surgical specialty	Gynecological	General	Orthopedic
%	46.94	20.41	22.45
Age range (years)	20–40	41–60	>60
%	4.08	40.82	55.1
Body mass index (kg/m²)	<30	30–34.9	>35
%	36.7	28.6	34.7
Comorbidity	Hypertension	Hypertension and diabetes	
%	63.27	26.53	
Risk of thrombosis	Low	Moderate	High
%	6.98	6.98	86.05
Predictor of difficult airway	Yes	No	–
%	50.00	50.00	–
Smoking	Yes	No	–
%	14.29	69.39	–

Table 2. Result of the hypothesis test between the variables of the patients.

	χ^2	Degrees of freedom	p	Expected χ^2
Age range	10.253	02	0.006	5.991
Comorbidity	30.771	03	0.000	7.815
Body mass index	22.441	01	0.000	3.841
Venous thrombolism	16.516	02	0.000	5.991
Smoking	6.061	11	0.869	19.675
Pedictor of difficult airway	3.093	01	0.079	3.841

palpitations and hallucinations. The Wiscon Sleep Cohort Study estimates that 90% of the female public is underdiagnosed and that the reason may be related to this presence of atypical symptoms[12]. The classic symptoms of the syndrome are the presence of snoring and apnea, which are most commonly referred by men[13].

In a comparative clinical study with 130 homogeneous pairs of men and women with OSAS, the authors found that women refer to insomnia as poorly slept nights, are less aware of apnea symptoms, and are often diagnosed with depression. These differences in the clinical presentation of the syndrome in women should be better evaluated[11].

A survey[7] randomly evaluated 400 women from a sample of 10,000 women aged between 20 and 70 years old, who completed a questionnaire on the presence of snoring and were submitted to the polysomnography test. As a result, 50% of the sample was diagnosed with OSAS, related to age, obesity and the presence of hypertension, but not with diurnal somnolence or snoring. It was concluded that women with hypertension or obesity should be investigated for OSAS.

Taking into account our audience of 230 women, 21.3% of them presented a high risk for OSAS, which was the sample of this study. Most of them were older than 40 years of age and coming from the gynecological clinic, with only 2 in the range of 20 to 30 years old. Recent studies involving women have shown percentages between 12 and 50% of them evaluated with OSAS by means of the polysomnography examination and stratification questionnaires[7,11,14].

Age is one of the risk factors evaluated in the STOP-BANG questionnaire and it scores one more point when age is greater than 50 years. Although the risk of having the syndrome increase with advancing age, women may be prone to this diagnosis sooner. As age progresses, the risk of OSAS increases, as a result of increased body mass, decreased progesterone production and increased neck circumference[14].

OSAS is often related as a risk factor for hypertension, diabetes, cerebrovascular and coronary diseases, myocardial infarction and increases the chance of mortality[6]. In our study, 89% of women were diagnosed with hypertension, which is the same reported in an European survey[7].

Women with established cardiovascular diseases experience more coronary events, thromboembolic events, and increased risk of mortality when prescribed hormone replacement therapy. As the incidence of cardiovascular risk factors is high in OSAS, and in our study there was a correlation with both the presence of hypertension and the high risk of developing thrombosis, this therapy can bring significant damages to these patients[12]. In these cases, the control of BMI, diabetes and hypertension, evaluating the previous cardiovascular history and the use of continuous positive pressure therapy (CPAP) is a good treatment alternative[12].

Although smoking and alcohol consumption were considered risk factors for developing the syndrome, our sample consisted mostly of non-smokers, with no significant association of this variable with the risk of developing the syndrome, which is shown in agreement with another study[7].

The prevalence of OSAS is high in obese subjects[14]. In our study, the mean BMI was 32.05 kg/m^2 and 63% were classified as obese, which is somewhat lower than that reported in another study[7]. The questionnaire only scores when BMI>35 kg/m^2, and 35% of our sample had this index. Therefore, 65% of our sample had a high-risk OSAS score, regardless of the BMI. Researchers report that women with OSAS are more likely to be obese than men with similar degrees of the syndrome[12].

Studies suggest that progesterone and estrogen exert a protective role in the upper airway and in the distribution of fat in the body, playing an important role in sleep physiology in different age groups in women. There are indications that women undergoing hormone replacement have a lower incidence of OSAS[13]. The present study did not evaluate how many women were in menopause, or who did hormone replacement.

The association between dependence between OSAS and the presence of hypertension, or hypertension and diabetes, age group, BMI and VTE ($p<0.05$) was observed through the χ^2 test. These same findings were analyzed in an epidemiological study carried out in South Korea[14].

Although no significant correlation was found in our sample between difficult airway predictors and the syndrome, women with broad neck, obese and with abnormal facial anatomical structures (oropharyngeal narrowing, retrognathia, macroglossia, uvula lengthening, high arched palate, deviated nasal septum) should be investigated. Each anatomical finding increases the likelihood of having OSAS[12].

CONCLUSION

In view of the correlation of OSAS with vascular diseases and with post-surgical morbidity and mortality, it is necessary to establish an accurate diagnosis of OSAS. The STOP-BANG questionnaire is an accessible and highly sensitive tool to detect the syndrome.

The questionnaire was administered at the outpatient level during the preoperative consultation at APA-HRG. Our public was mostly over 40 years old, diagnosed with hypertension and obese.

The clinical profile of women with OSAS is difficult to diagnose. The hypothesis of the relationship of OSAS with age, comorbidity, BMI and thrombosis was tested, with results of associations between variables and OSAS. But there was no relationship with smoking or presence of any predictor of difficult airway.

Thus, it was found that obese, hypertensive women with a risk for thrombosis and those over 40 years of age are at higher risk for developing OSAS.

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