Sleep Apnea in a Sample of Patients with Treatment Resistant Depression Referred for Electroconvulsive Therapy

Elektrokonvülsif Terapi için Sevk Edilen Tedaviye Dirençli Depresyonlu Hasta Örneğinde Uyku Apne

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Summary

Objective: Symptoms of sleep apnea (SA) often overlap with symptoms of depression. Without extensive exploration of a patient's history it is possible that SA could complicate depression leading to treatment resistant depression (TRD) which is then referred for electroconvulsive therapy (ECT). To date no study has reported on prevalence of SA within this population.
Materials and Methods: We conducted a retrospective chart review of patients referred for ECT for TRD from 2008 to 2011 (N=118) at the Central Arkansas Veteran's Healthcare System. Patients were placed into categories of known SA (diagnosed with polysomnography and recorded on chart), high risk SA (suspected SA documented in the chart by a physician), or unknown/low risk SA (negative polysomnography).
Results: Average age was 54.5±12 years. Average body mass index (BMI) was 30.3±7.3 kg/m^2. 36% had either known SA (27%) or were at high risk of having SA (9%). Those with known SA were more likely to have hypertension (9.4 CI 3-29.5), BMI≥30 kg/m^2 (5.4 CI 2.2-13.5), and hyperlipidemia (4.2 CI 1.6-11.4). Known SA was not significantly associated with diabetes mellitus (2.2 CI 0.8-5.6), complaints of pain (2.4 CI 0.9-5.9), or headache (1.5 CI 0.6-3.8).
Conclusion: A diagnosis of SA should be considered in patients referred for ECT for TRD. BMI≥30 kg/m^2, presence of hypertension, and hyperlipidemia are more likely in patients with SA and should raise suspicion of the disorder in patients within this population. (JTSM 2015;1:7-10)
Key Words: Sleep apnea, depression, electroconvulsive therapy, hypertension, obesity

Özet

Amaç: Genellikle depresyon ve uyku apne (UA) semptomları örtüşür. Hastaların geniş kapsamlı öyküleri alınmadığı taktirde, tedavi dirençli depresyon (TDD) nedeni ile elektrokonvülsif terapiye (EKT) giden hastalardaki depresyonun uyku apnenin komplikasyonu olabilir.
Gereç ve Yöntem: Orta Arkansas Veteran Sağlık Sistemi'ne 2008'den 2011'e (N=118) TDD nedeni ile EKT için başvuran hastaların retrospektif dosyalarının taraması ile yapılmıştır. Hastalar, bilinen uyku apneli hastalar (tanısı konmuş ve hasta dosyasına işlenmiş), yüksek riskli uyku apneli hastalar (uyku apne bir hekim tarafından şüphelenmiş ve dosyalarına işlenmiş) ya da bilinmeyen/düşük riskli uyku apneli hastalar (negatif polisomnografi) olarak kategorize edildiler.
Bulgular: Hastaların yaş ortalaması 54,5±12 yıl, ortalama Vücut kitle indeksleri (VKİ) 30,3±7,3 kg/m^2 idi. Hastaların %27'sinin test ile gösterilmiş uyku apnesi ve %9'unun şiddetli uyku apne şüphesi olmak üzere toplam %36'sının uyku apnesi vardı. Bilinen uyku apnesi olanlarda, hipertansiyon (9,4 CI 3-29,5) VKİ≥30 kg/m^2 (5,4 CI 2,2-13,5), ve hiperlipidemi (4,2 CI 1,6-11,4) olasılığı daha yüksekti. Uyku apne, diabetes mellitus (2,2 CI 0,8-5,6) ağrı) şikayetleri (2,4 CI 0,9-5,9), ya da baş ağrısı (1,5 CI 0,6-3,8) ile ilişkili değildi.
Sonuç: Uyku apne tanısı EKT için sevk TDD'li hastalarda düşünülmelidir. VKİ≥30 kg/m^2, hipertansiyon varlığı, ve hiperlipidemi sıklığı, uyku apneli hastalarda daha yüksektir ve bu popülasyondaki kişilerde hastalık şüphesi akla gelmelidir. (JTSM 2015;1:7-10)
Anahtar Kelimeler: Uyku Apne, depresyon, elektrokonvülsif terapi, hipertansiyon, obezite

Conflicts of Interest: The authors reported no conflict of interest related to this article.

Çıkar Çatışması: Yazarlar bu makale ile ilgili olarak herhangi bir çıkar çatışması bildirmemiştir.

Introduction

Sleep apnea (SA) is a serious, treatable medical condition characterized by inability to breathe appropriately during sleep. Untreated SA impacts mental and physical health and greatly impacts overall mortality (1-10). Fifty-eight percent of those with untreated SA fulfill criteria for depression within the last 5 years and they are 6 times more likely to present with depression than the general population (11,12). Treatment of SA with continuous positive airway pressure (CPAP) leads to improvements in subjective complaints including depression, insomnia, poor energy, poor concentration, pain, and headache as well as objective signs including hypertension, inflammatory markers, weight, and blood sugar (13-17).

Prolonged complaints such as insomnia, hypersomnia, poor energy and/or concentration, changes in mood and appetite may overlap between SA and the DSM IV diagnostic criteria for major depressive disorder thus making it difficult to distinguish between the two. Without exploration into the risk factors for SA the disorder may go untreated leading to residual symptomatology and a diagnostic picture that then appears consistent with treatment resistant depression (TRD). Therapies for TRD are ever growing, but use of Electroconvulsive Therapy (ECT) is a widely accepted option. Little is known about SA in patients who have been diagnosed with TRD and referred for ECT. In this article we describe the prevalence of SA in a sample of TRD patients and the associations between SA, patient characteristics, and medical comorbidities.

Materials and Methods

Retrospective chart review of all patients that were referred for ECT for TRD from 2008 to 2011 was undertaken at the Central Arkansas Veteran's Healthcare System (CAVHS) in Little Rock, AR. Each chart from this sample was searched using the CAVHS computerized patient record system (CPRS). Information was obtained from the CPRS Cover Page, Notes and Consult Section, Vista Imaging, and Vista Web. For each patient in the sample a specific search was done under both the Consult and Notes Section. The Consult Section was searched for any sleep referral and the Notes Section was searched for the words "apnea", "OSA (obstructive sleep apnea)" or "CPAP". A hit on any of these words would lead to further investigation.

Patients were then placed into categories for SA. The first category was known SA diagnosed by a polysomnogram (PSG) and documented in the chart. The second category was high risk SA and included subjects who were either currently awaiting a PSG or had physicians that documented the need for a sleep study in the medical record. The last category was unknown/low risk SA and included patients with negative PSGs or had no mention of suspicion of SA by a physician documented in the chart.

Additional data was collected on age, gender, race, ethnicity, BMI, presence of hypertension, hyperlipidemia, diabetes mellitus, and complaints of pain or headache. All data regarding comorbidities was included regardless of whether or not it was present at the time of original consult for ECT. Additionally, the BMI recorded was the most current on file and not the one at the time of ECT consult.

Logistic regression models were used while controlling for age, race, and gender. Odds ratios are presented comparing medical comorbidities between those with known SA and those in the unknown/low risk category. The Central Arkansas Veteran's Healthcare System Institutional Review Board approved the study. Patient confidentiality was of the upmost concern. Data retrieval was limited to a small group with secure access. All collection was done on CAVHS grounds and all data sheets were deidentified with the master key kept behind a double locked area on secure CAVHS property.

Table 1. Sample description and distributions				
	Total Sample 118 (100%)	Known OSA 32 (27%)	High Risk OSA 11 (9%)	Unknown or Low Risk OSA 75 (64%)
Age				
Mean Age (SD)	54.5±12	56.0±6	55.2±9	53.8±14
Gender				
Male	95 (81%)	29 (91%)	9 (82%)	57 (76%)
Race				
White	91 (77%)	24 (75%)	11 (100%)	56 (75%)
Black	25 (21%)	6 (19%)	0 (0%)	19 (25%)
Other	2 (2%)	2 (6%)	0 (0%)	0 (0%)
Comorbidities				
Mean BMI	30.4±7.3	35.6±8.3	31.7±6.3	27.9±5.6
Hypertension	68 (58%)	28 (88%)	7 (64%)	33 (44%)
Hyperlipidemia	70 (59%)	26 (81%)	6 (55%)	38 (51%)
Diabetes Mellitus	25 (21%)	10 (31%)	2 (18%)	13 (17%)
Headache	31 (26%)	11 (34%)	2 (18%)	18 (24%)
Pain	74 (63%)	24 (75%)	8 (73%)	42 (56%)

OSA: Obstructive sleep apnea, BMI: Body mass index

Results

One hundred eighteen charts were reviewed. Eighty percent of the charts were male, 76% were Caucasian, and 21% were African American (Table 1). Average age was 54.5±12 years of age. Average BMI was 30.3±7.3. 36% had either known SA (27%) or were at high risk of having SA (9%). Those with known SA were more likely to have hypertension (9.4 CI 3-29.5), a BMI≥30 (5.4 CI 2.2-13.5), and hyperlipidemia (4.2 CI 1.6-11.4). Known SA was not significantly associated with diabetes mellitus (2.2 CI 0.8-5.6), complaints of pain (2.4 CI 0.9-5.9), or headache (1.5 CI 0.6-3.8) in this study (Table 2).

Discussion

In our retrospective study of 118 veterans referred for ECT to treat TRD we found that the prevalence of known or suspected SA was 36%. These patients were more likely to have hypertension, a BMI≥30, and hyperlipidemia than those at low risk for SA. This is the first study of its kind, but there are significant limitations we need to acknowledge. First, the nature of this study did not allow for definitive diagnosis regarding the presence or absence of SA at the time of ECT by either overnight polysomnogram or CPAP download. There may have been people in the known category of SA who were well treated, but we had no way of knowing definitively. The groups

Table 2. Odd ratios (95% Confidence intervals)	
Comorbidities	Known OSA
BMI≥30	5.4 (CI 2.2-13.5)
Hypertension	9.4 (CI 3.0-29.5)
Hyperlipidemia	4.2 (CI 1.6-11.4)
Diabetes Mellitus	2.2 (CI 0.8-5.6)
Pain	2.4 (CI 0.9-5.9)
Headache	1.5 (CI 0.6-3.8)

OSA: Obstructive sleep apnea, BMI: Body mass index

Table 3. STOP BANG questionnaire
Stop Bang (3 or more is high risk of OSA)
Snoring Do you snore loudly?
Tired Do you often feel tired, fatigued, or sleepy during the daytime?
Observed Apnea Has anyone observed you stop breathing during your sleep?
Pressure Do you have or are you being treated for high blood pressure?
BMI Do you have a BMI≥35 kg/m^2?
Age Are you over 50 years old?
Neck Circumference Is your neck circumference greater than 40 cm?
Gender Are you male?

OSA: Obstructive sleep apnea, BMI: Body mass index

of high risk SA and unknown/low risk sleep apnea were likely heterogeneous groups. Suspicion of sleep apnea in the high risk group is not a definitive diagnosis and a few of these could have failed to meet the specific criteria for SA. In the unknown/low risk category there were patients who had enough known risk factors for sleep apnea but no physician had yet to suspect or refer for testing. Secondly, this was a veteran sample, which consists of mainly older, overweight, white, men and is it not generalizable to other clinic samples. Third, this chart review goes back to 2008 and over the last 5 years SA has gained increasing recognition by providers, so the prevalence could be different now than at the time of these admissions.

The finding of associations between hypertension, hyperlipidemia, and BMI are not novel and in fact two of these factors are among common questions on preanesthesia screening questionnaires for sleep apnea. In the Society for Ambulatory Anesthesia's recent consensus statement on preoperative selection of adult patients with obstructive sleep apnea scheduled for ambulatory surgery the STOP BANG questionnaire is advised and within this questionnaire are items on BMI and HTN (Table 3) (18). Overall, the consensus advises that the limited studies available indicate the importance of screening, optimization of comorbid medical conditions prior to surgery, comprehensive use of CPAP while sleeping for several days during the postoperative period, and predominately nonopioid analgesic technique.

For the ECT patient, given the increased risk of anesthesia and the overlapping symptomatology with TRD it may be particularly important to rule out a diagnosis of SA. The STOP BANG is a useful screening tool for SA and may be appropriate prior to ECT. Important future research questions are whether patients with SA benefit from ECT, if they are at higher risk of complications from the procedure, and if identification and treatment of SA improves outcomes of individuals with TRD.

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