

OBSTRUCTIVE SLEEP APNEA AND NIGHTTIME OXYGEN DESATURATION IN NOCTURNAL VENTRICULAR ARRHYTHMIAS

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INTRODUCTION

Although several arrhythmias have been proposed to be linked with obstructive sleep apnea (OSA), there is some controversy regarding ventricular arrhythmias in these patients.

AIM

To determine if ventricular arrhythmias are associated with OSA.

METHODS

We studied patients referred for polysomnography who also performed a 24-hour Holter monitoring. Moderate to severe OSA was considered when an apnea/hypopnea index (AHI) >15 was present. Mean oxygen saturation (SaO₂) and percentage of total sleep time with SaO₂ <90% (T90) were evaluated during sleep. Based on Holter monitoring, we analyzed number of premature ventricular contractions (PVCs) and the presence of frequent PVCs (>30/h), non-sustained and sustained ventricular arrhythmias and also the circadian pattern of these arrhythmias.

RESULTS

We studied 343 patients [median age 66 (IQR 56-72) years, 62% male, body mass index (BMI)=31 (IQR 28-34)]. 143 (42%) had moderate to severe OSA, median AHI was 12 (IQR 6-26), mean SaO₂ was 94% (92-95) and median T90 was 5% (IQR 1-17). Median number of PVCs was 21 (1-250), 63 patients (26%) had frequent PVCs, 17 (5%) had NSVT, no patient had VT and 19 (6%) had predominantly nocturnal PVCs.

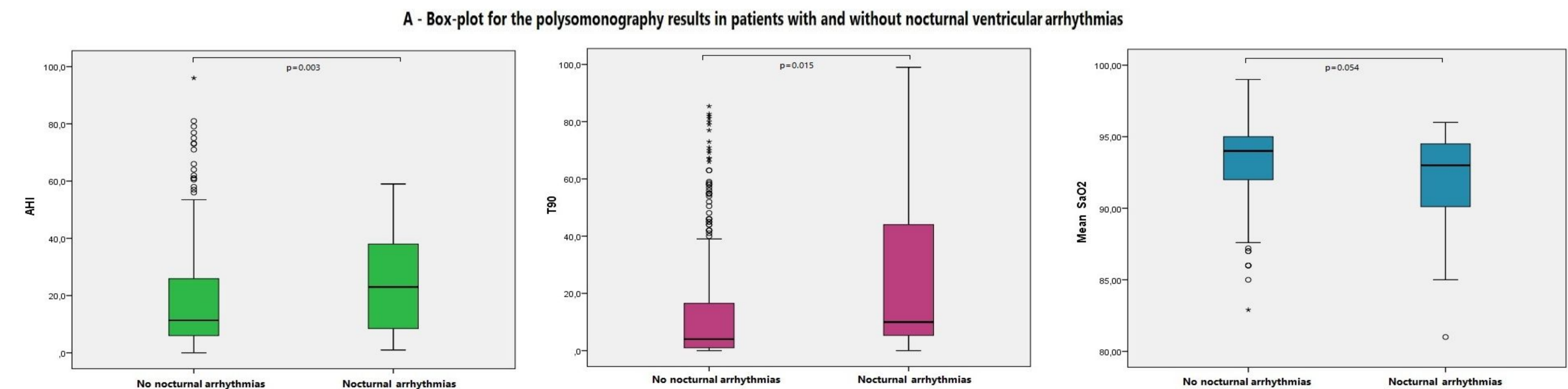
The number of PVCs, frequent PVCs or NSVT were not associated with the presence of moderate to severe OSA. However, patients with nocturnal PVCs had a significant higher AHI and T90 comparing with those without nocturnal PVCs, and there was a trend towards significant difference between the presence of nocturnal PVCs and mean nocturnal SaO₂ (panel A).

CONCLUSIONS

The presence of moderate to severe OSA was not related to the frequency or complexity of ventricular arrhythmias, but it was associated with the circadian pattern of ventricular arrhythmias, namely nocturnal PVCs. The occurrence of nocturnal ventricular arrhythmias was associated with the severity of OSA but also with nighttime oxygen saturation, highlighting the possible role of hypoxemia in ventricular arrhythmogenesis of OSA patients.

In univariate analysis, the presence of nocturnal arrhythmias is associated with AHI, mean SaO₂ and T90 (panel B).

In multivariate analysis, no variable remained independently associated with nocturnal PVCs and no interaction was found between these variables.



B - Univariate logistic analysis for the presence of nocturnal ventricular arrhythmias

	Odds ratio	95% confidence interval	p-value
Moderate to severe OSA	3.2	1.20-8.72	0.020
Mean oxygen saturation (SaO ₂)	0.83	0.71-0.96	0.012
Percentage of total sleep time with SaO ₂ <90% (T90)	1.02	1.01-1.04	0.022