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Title: Influence of smoking on sleep and disease severity in a population of obstructive sleep apnea patients

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Body: RATIONALE: Despite many studies, the question of whether and how smoking habits and sleep are related is only partially answered. OBJECTIVE: To analyse the effects of smoking on sleep architecture and on obstructive sleep apnea (OSA) symptoms, comorbidities and severity of disease. METHOD: We studied retrospectively 104 OSA patients with normal lung function, without diurnal hypercapnia, without other sleep disrupting diseases who underwent polysomnography (PSG) and compared different groups (active smokers-AS, former-smokers-FS and never-smokers-NS) regarding anthropometrical data, OSA symptoms, severity, comorbidities and sleep study parameters using SPSS. RESULTS: 32.69% AS, 30.76% FS and 36.53% NS. We found no differences regarding demographic data, OSA symptoms, comorbidities and sleep architecture between AS vs FS and AS vs NS. Analyzing FS vs NS we found that FS are sleepier (10.3 ± 5.3 vs 7.4 ± 4.4), with a higher latency of sleep (26.8 ± 27.5 vs 14.1 ± 12.5) but also with a higher percent of REM sleep (11.5 ± 7.7 vs 8 ± 6.5), $p < 0.05$. Comparing ever-smokers (AS and FS) with NS we found that ever-smokers have a higher arousal index (29.2 ± 25.2 vs 17 ± 14.1 , $p = 0.002$), higher AHI (39 ± 27.1 vs 24.5 ± 22.1 , $p = 0.004$) and AHI with arousal (16.7 ± 20.2 vs 5.4 ± 7.4 , $p < 0.001$) and higher AI in non-REM supine (19.4 ± 25.6 vs 9.2 ± 17.9 , $p = 0.021$) despite no difference regarding demographics, BMI and ENT alterations. OSA severity (AHI, AHI with arousal, arousal index, nighttime SpO₂) correlates well ($r = 0.5$, $p < 0.001$) with smoking severity (pack-year) but not with nicotine addiction (Fagerstrom). CONCLUSION: Despite literature findings, it seems that smoking has more influence on OSA severity rather than on sleep architecture in our studied population.