Title: Evaluation of renal function in a cohort of patients affected by obstructive sleep apnea

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Body: Introduction: Obstructive sleep apnea (OSA) has been linked to chronic kidney disease (CKD). We investigated the renal function (GFR) of a cohort of non-CKD patients admitted to our Sleep Medicine Unit for suspected OSA. Materials and Methods: 374 subjects underwent a cardiorespiratory polysomnography (PSG) and a blood collection for GFR. Oronasal airflow, respiratory efforts and oxyhaemoglobin saturation were recorded. PSG was scored according to AASM rules. GFR was calculated through the MDRD equation. Descriptive statistic, analysis of variance (ANOVA), linear regressions were performed. A p value < 0.05 was considered significant. Results: Patients were 53.1 ± 12 years old, with a mean BMI >30. Estimated GFR was 95.1 ± 19 mL/min/1.73 m². The population was suffering from severe OSA (AHI=45.8 ± 19.7; min spO2=72.2 ± 10.9%; T<90% =28 ± 26.6%). No differences were seen in baseline GFR according to AHI and ODI. A significant difference in GFR according to T<90% (p=0.005) and min spO2 (p=0.017) was observed. These results were attributable to higher levels of GFR in more hypoxemic patients. GFR showed no correlation with AHI, ODI or T<90%, but it was related to min spO2. These results were confirmed in univariate linear regressions, but not in multivariate regression analyses. However, when mild to moderate OSA cases were excluded, spO2 turned out to be the first independent predictor of GFR. Conclusion: In severe OSA cases, GFR seems to be inversely related to the severity of oxygen desaturation, but not to the common OSA's indexes. These findings may be due to nephropulmonary compensatory mechanisms against chronic hypoxia that need to be studied in a longitudinal way.