Searching for peripheral biomarkers of disease severity and neurodegeneration in obstructive sleep apnea syndrome: a preliminary study

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Background: Obstructive Sleep Apnea Syndrome (OSAS) could significantly impact cognitive functioning in affected individuals. Several studies have highlighted the possible association between obstructive sleep apnea syndrome and the increase of cerebral amyloid beta deposits, concluding that apnoic disorder can be considered a risk factor for the development of cognitive impairment and Alzheimer's disease. In this scenario, it would be usefull to identify biological markers able to underline which clinical phenotypes of obstructive sleep apnea syndrome are more associated with disease severity and neurodegeneration.
Methods: Fifty-patients with a first diagnosis of OSAS (AHI>5) were recruited at Sleep Medicine Units of IRCCS Istituto Auxologico Italiano Piancavallo of Verbania and San Luca of Milan. Patients were not under treatment for OSAS (i.e. baseline condition). At the baseline patients underwent the measure of the following peripheral molecules: Orexin-A and Histamine determination in serum (ELISA), serum neurofilament light chain (NFL, SIMOA), serum Amyloid beta 1-40 (Abeta 1-40) and Amyloid beta 1-42 (Abeta 1-42, ELISA), serum catecholamines (ELISA).
Results: In the whole OSAS group we found a positive correlation between serum Orexin A concentration and baseline PSG mean saturation time < 90% of total sleep time ($R= 0.37$, $p<0.05$). We also found a positive correlation between serum Orexin A and serum neurofilament light chain concentrations ($R= 0.37$, $p<0.05$). These correlations proved to be independent from age, sex and BMI.
Conclusions: Serum Orexin A and neurofilament light chain could become potential biomarkers of disease severity and give information about neurodegenerative phenomena in obstructive sleep apnea syndrome.