Harmanjit Singh Hira, J Sleep Disord Ther 2015, 4:4
http://dx.doi.org/10.4172/2167-0277.S1.002

OMICS International
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Annual Summit on
Sleep Disorders & Medicine
August 10-12, 2015 San Francisco, USA

Plasma level of hypoxanthine/xanthine as markers of oxidative stress with different stages of obstructive sleep apnea syndrome

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Background: Increased plasma level of hypoxanthine/xanthine as a criterion of tissue hypoxia is established. We presumed that plasma levels of hypoxanthine/xanthine might be high among patients of obstructive sleep apnea syndrome (OSAS) due to oxidative stress.

Material & Methods: A case control study of forty three patients with OSAS diagnosed by overnight polysomnography (PSG), were included in study. Age and sex matched 43 subjects in whom presence of OSAS ruled out by overnight PSG were enrolled as healthy controls. Severity of disease was based on apnea-hypopnea index (AHI). Out of 43 patients, nine were of moderate severity, other 14 were of severe OSAS; none was with mild OSAS. Venous blood sample was collected in morning following PSG. Hematological and biochemical investigations were done. Plasma levels of hypoxanthine/xanthine were measured by fluorometric analysis. Data collected was analyzed statistically by SPSS version-14software, student's unpaired T test, Chi square test and Mann-Whitney U test and Pearson's correlation coefficient.

Results: Mean plasma levels of hypoxanthine/xanthine in patients of OSAS and controls were 5.38±5.11 mmol/L and 1.23±0.42 mmol/L respectively. Statistically significant (p value 0.000) difference was found between them. Among patients, positive correlation between hypoxanthine/xanthine levels with age, AHI and serum triglyceride levels was observed. Joint explanatory power of these significant factors was found to be 59.6% (p-value<0.001). Multivariate analysis revealed the positive correlation between neck circumference, serum cholesterol level, plasma levels of hypoxanthine/xanthine and severity of OSAS.

Conclusion: Plasma levels of xanthine/hypoxanthine were significantly elevated in patients of OSAS and these were positively correlated with age, serum triglyceride levels, AHI and severity of the disease. Probability of OSAS was higher with subjects with increased neck circumference, serum cholesterol and xanthine/hypoxanthine levels.

Clinical Implications: Level of increase in marker of oxidative stress in the blood of OSAS patients varies with severity of the syndrome and therefore, its measurement may be suitable for a clinical follow-up of these patients.

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