



STUDY OF SERUM LIPID PROFILE IN SLEEP APNOEA PATIENTS

Biochemistry

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KEYWORDS

INTRODUCTION

Sleep disordered breathing (SDB) includes a spectrum of conditions, the most severe of which is obstructive sleep apnoea syndrome (OSA). OSA is a potentially disabling condition characterized by repeated episodes of upper airway obstruction during sleep associated with increasing respiratory efforts, intermittent arterial oxygen desaturation, systemic and pulmonary arterial blood pressure surges and sleep disruption. The main symptoms of OSA are nocturnal respiratory pauses interrupted by loud intermittent snoring and excessive daytime somnolence. Obstructive sleep apnoea and dyslipidaemia are common medical disorders that independently increase vascular morbidity and mortality. Current studies show that, indeed, obstructive sleep apnoea may mediate pathological alterations in cholesterol and triglyceride metabolism. The mechanisms involved are increased lipolysis, decreased lipoprotein clearance, and enhanced lipid output from the liver. The understanding of the interrelationship between obstructive sleep apnoea and dyslipidaemia may hence essentially help reduce hyperlipidaemia-related vascular outcomes.

AIM

To study the role of serum lipid profile in patients with Obstructive Sleep Apnoea.

OBJECTIVES

To assess serum lipid profile in Obstructive sleep apnoea patients. To compare the serum lipid profile in Obstructive sleep apnoea patients with Respiratory disturbance index >15 and Respiratory disturbance index <15.

MATERIAL AND METHODS

After taking necessary permissions from The Ethical Committee, Research Review Board, Department of Medicine, study was conducted as below:

Study Area:

The study was conducted in the Department of Biochemistry and Central lab, S.M.S. Medical College and attached Hospitals, Jaipur in association with Department of Medicine of S.M.S. hospital, Jaipur

Study Period: August 2019 to November 2020. Data collection started after approval from institutional research review board till the desired sample size was achieved. Sample size was calculated at the study power of 80% assuming the level of serum triglyceride among OSA patients with RDI>15 and OSA patients with RDI<15 patients have 1.76mmol/L and 1.6mmol/L respectively as per the reference study. (Dmitri Karkinski et al (2017) Obstructive Sleep Apnoea and Lipid Abnormalities). Sample size of 30 patients in each group was adequate to detect the difference of 0.16mmol/L of serum triglyceride level among OSA Cases with RDI>15 and OSA Cases with RDI< 15 for this study.

Observation Table

Table 1: Comparison of Mean BMI between Cases with RDI<15 (Group A) And Cases with RDI>15 (Group B)

Test/ Parameters	Cases with RDI <15(n=30)	Cases with RDI >15(n=30)	P-Value
BMI (Kg/m ²)	24.6+/- 1.38	24.5 +/- 1.04	0.341 (NS)

- P-value as obtained on applying students' t-test In the above table it is shown that mean BMI of cases with mean BMI of cases with RDI>15 (24.5 +/- 1.04 Kg/m²) is slightly lower RDI<15 (24.6 +/-

1.38 Kg/m²). However, P value is non significant (p=0.341)

TRIGLYCERIDES

Table2: Comparison of Mean Triglycerides between Cases with RDI<15 (Group A) And Cases with RDI>15 (Group B)

Test/ Parameters	Group A Cases with RDI <15(n=30)	Group B Cases with RDI >15(n=30)	P-Value
Triglycerides (Kg/dL)	87.1 +/- 16.17	88.5 +/- 19.86	0.382 (NS)

- P-value as obtained on applying students' t-test As shown in the above table, the mean serum Triglyceride in cases with RDI>15 (88.5 +/- 19.86 mg/dL) is slightly higher than that of cases with RDI<15 (87.1 +/- 16.17 mg/dL). However, this difference is not significant statistically (p=0.382)

TOTAL CHOLESTEROL

Table 3: Comparison of Mean Total Cholesterol between Cases with RDI<15 (Group A) And Cases with RDI>15 (Group B)

Test/ Parameters	Group A Cases with RDI <15(n=30)	Group B Cases with RDI >15(n=30)	P-Value
Total Cholesterol (mg/dL)	128.9 +/- 18.19	149.1 +/- 29.31	0.0011 (S)

- P-value as obtained on applying students' t-test As shown in the above table, the mean Total Cholesterol in cases with RDI>15 (149.1 +/- 29.31 mg/dL) is higher than that of cases with RDI<15 (128.9 +/- 18-19 mg/dL). This difference is significant statistically (p=0.0011)

HIGH DENSITY LIPOPROTEIN (HDL)

Table 4: Comparison of Mean HDL Levels between Cases with RDI<15 (Group A) And Cases with RDI>15 (Group B)

Test/ Parameters	Group A Cases with RDI <15(n=30)	Group B Cases with RDI >15(n=30)	P-Value
HDL (mg/dL)	39.1 +/- 3.73	30.0 +/- 4.51	<0.001 (S)

- P-value as obtained on applying students' t-test As shown in the above table, the mean HDL Cholesterol in cases with RDI>15 (30.0 +/- 4.51 mg/dL) is Lower than that of cases with RDI<15 (39.1 +/- 3.73 mg/dL). This difference is significant statistically (p=0.001)

LOW DENSITY LIPOPROTEIN (LDL)

Table 5: Comparison of Mean LDL Levels between Cases with RDI<15 (Group A) And Cases with RDI>15 (Group B)

Test/ Parameters	Group A Cases with RDI <15(n=30)	Group B Cases with RDI >15(n=30)	P-Value
LDL (mg/dL)	72.4 +/- 17.48	101.4 +/- 31.49	<0.001 (S)

- P-value as obtained on applying students' t-test As shown in the above table, the mean LDL Cholesterol in cases with RDI>15 (101.4 +/- 31.49 mg/dL) is higher than that of cases with RDI<15 (72.4 +/- 17.48 mg/dL). This difference is significant statistically (p=0.001)

VERY LOW DENSITY LIPOPROTEIN (VLDL)

Table 6: Comparison of Mean VLDL Levels between Cases with RDI<15 (Group A) And Cases with RDI>15 (Group B)

Test/ Parameters	Group A Cases with RDI <15(n=30)	Group B Cases with RDI >15(n=30)	P-Value
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VLDL (mg/dL)	17.4 +- 3.23	17.7 +- 3.97	<0.389 (NS)
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- P-value as obtained on applying students' t-test As shown in the above table, the mean VLDL Cholesterol in cases with RDI>15 (17.7 +- 3.97 mg/dL) is higher than that of cases with RDI<15 (17.4 +- 3.23 mg/dL). This difference is not significant statistically (p=0.389)

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PEARSON CORRELATION BETWEEN CASES WITH RDI > 15 AND Cholesterol Profile

Table : 6 Pearson Correlation between Cases with RDI<15 and Cholesterol Profile

Parameters	P Value	R Score	R 2	Significance
Cases with RDI < 15 vs. TC	<.00001	0.7729	0.5974	S
Cases with RDI < 15 vs. HDL	0.0098	-0.4649	0.2161	S
Cases with RDI < 15 vs. LDL	<.00001	0.7652	0.5855	S

- Data analysis using Pearson Correlation analysis Pearson correlation is applied to compare the cases with RDI > 15 with parameter Total Cholesterol, HDL and LDL Cholesterol. Total cholesterol and LDL Cholesterol has positive correlation in Cases with RDI > 15 and are statistically significant p < .00001 . HDL cholesterol has negative correlation in Cases with RDI < 15 and is statistically significant (p=0.0098).

Observations statistics with discussion

- Mean age group of cases with RDI> 15 (49.4 + 6.29) was slightly higher than cases with RDI<15 (47.2 + - 6.94 years). However, p value was non Significant (p=0.098) as both the groups were matched for age. There was a male dominance of the disease. Male cases were cases were 73% as compared to 27% of female in both the group. Mean RDI of cases with RDI> 15 (24.4 +- 4.82) was higher than the cases with RDI<15 (7.5 = 1.91). P value was significant (p< 0.001) Mean BMI of cases with RDI>15 (24.5 +- 1.04) was slightly lower than mean BMI cases with RDI<15 (24.6 +- 1.38). However, this difference was not significant statistically (p=0.341). Mean Serum Triglyceride of Cases with RDI>15 (88.5 +- 19.86 mg/dL) was slightly higher than that of Cases with RDI<15 (87.1 +- 16.17 mg/dL). However, this difference was not significant statistically (p=0.382). Mean Total Cholesterol in Cases with RDI>15 (149.1 +- 29.31 mg/dL) was higher than that of Cases with RDI<15 (128.9 +- 18.19 mg/dL). This difference was significant statistically (p= 0.0011). Mean LDL cholesterol in Cases with RDI>15 (101.4 + 31.49 mg/dL) was higher than that of Cases with RDI<15 (72.4 +- 17.48 mg/dL). This difference was significant statistically (p<0.001). Mean HDL cholesterol in Cases with RDI>15 (30.0 +- 4.51 mg/dL) was lower than Cases with RDI<15 (39.1 +- 3.73 mg/dL). This difference was significant statistically (p<0.001). Mean VLDL cholesterol in RDI>15 (17.7 +- 3.97 mg/dL) was higher than that of RDI<15 (17.4 +- 3.23 mg/dL). This difference was not significant statistically (p=0.389).

CONCLUSION

In the present Study, it was observed that the mean Total Cholesterol and mean LDL- Cholesterol were Significantly higher in OSA Cases with RDI > 15 than in OSA cases with RDI < 15 HDL Cholesterol was found to be significantly lower in OSA Cases with RDI > 15 when compared with OSA cases with RDI < 15 Also Total Cholesterol and LDL Cholesterol had significant positive correlation and HDL Cholesterol had significant negative correlation in OSA cases with RDI > 15. Therefore, as a implication of the study, clinicians may systematically asses the coexistence of sleep apnoea and dyslipidaemia, as co-morbid dyslipidaemia, a well recognized cardiovascular risk factor, is highly likely to affect the overall cardiovascular consequences and prognosis in OSA.

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