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TRIYGLYCERIDE AND HIGH-DENSITY LIPOPROTEIN CHOLESTEROL RATIO SIMPLE PARAMETER TO PREDICT DEVELOPMENT OF LIFE STYLE DISORDERS

Biochemistry

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ABSTRACT

Objective : To find out importance of Triglyceride and High density lipoprotein cholesterol ratio in early screening of life style disorder

Methods: A cross sectional study and has been carried out in our institute during the period of February 2014 - August 2015. All the study subjects were examined & investigated according to predefined Performa. The study protocol was approved by the Ethical Committee of the Institute. Informed written consent was obtained from all the study subjects enrolled in the study.

Results: women with Polycystic ovarian syndrome have high Triglyceride/High Density Lipoprotein ratio as compared with healthy normal control womens

Conclusion : Triglyceride and High Density Lipoprotein ratio is simple parameter to predict risk of development of life style disorder helpful in early diagnosis, treatment and preventing their complication

KEYWORDS

Polycystic Ovarian syndrome, life style disorder, Cardiovascular disease.

INTRODUCTION

Hypertension, Diabetes Mellitus, Dyslipidemia, and Overweight/obesity associated with cardiovascular diseases are most common lifestyle disorder in developed and emerging problems developing countries.

Polycystic ovaries develop when the ovaries are stimulated to produce excessive amounts of male hormones (androgens), in particular testosterone, by the release of excessive luteinizing hormone (LH) by the anterior pituitary gland. or high levels of insulin in the blood (hyperinsulinaemia) in women whose ovaries are sensitive to this stimulus. Dyslipidemia is likely to be the major risk factors for CVD in women with PCOS

Cardio vascular disorders continue to be the major cause of mortality representing about 30% of all deaths worldwide. With rapid economic development and increasing westernization of lifestyle in the past few decades, prevalence of these diseases has reached alarming proportions among Indians in the recent years.[1]

Incidence of development of life style disorder in PCOS patient increased now day. By calculating Triglycerides/High Density Lipoprotein ratio a simple parameter which is useful to predict or screen risk of life style disorder like Diabetic mellitus, cardiovascular diseases & complication

Material and methods

A cross sectional study and has been carried out in our institute during the period of February 2014 - August 2015. All the study subjects were examined & investigated according to predefined Performa. The study protocol was approved by the Ethical Committee of the Institute. Informed written consent was obtained from all the study subjects enrolled in the study.

Group A Consists of 60 clinically diagnosed and biochemically confirmed cases of polycystic ovarian syndrome. These were selected from patients attending the outpatient department of Obstetrics and Gynaecology. Group B Consist of 60 age and sex matched normal individuals were studied as controls were enrolled in the present study
All the calculations were done by using Microsoft Office Excel 2007 and statistical analysis was done using the SPSS software, Version 11.5. All statistical data was analysed by, Levene's test for Equality of Variances, t-test for Equality of Means. Mann-Whitney test. P-value less than 0.05 ($P < 0.05$) was considered to be statistically significant (S). P value of less than 0.001 ($P < 0.001$) was considered to be statistically highly significant (HS). P-value more than 0.05 ($P > 0.05$) was considered to be statistically non-significant (NS).

Result

In this study, there was significant increase in the serum triglyceride/HDL cholesterol ratio (<0.05) in group A as compared to that of group B.

Group of A has mean of triglyceride/HDL cholesterol ratio 2.7± 0.32 and group B has mean of triglyceride/HDL cholesterol ratio 2.44 ±0.22

Comparison of triglyceride to high density lipoprotein ratio among PCOS and healthy women

Parameter	Group A (n=60) (mean ± SD)	Group B (n=60) (mean ± SD)	P Value
Triglycerides/ HDL-cholesterol ratio	2.7 ± 0.32	2.44 ±0.22	0.05

DISCUSSION

Lifestyle diseases are ailments that are primarily base on the day to day habits of people. Habit that detract people from activity and push them towards secondary routine can cause a number of health issue that can lead to chronic non-communicable disease that can have near life threatening consequences Non communicable diseases (NCDs) kill around 40 million people each year that is around 70% of all deaths globally.[2] Non communicable disease umbrella term includes Hypertension, Diabetes Mellitus, Dyslipidemia, and Overweight/obesity associated with cardiovascular diseases and other disorders.

It has been shown that women with central obesity, the type most commonly seen with PCOS, lead to insulin resistance and rise in insulin circulating level defect in insulin action enhance the steroidoeenic effects on theca cell and suppress sex hormone – binding globulin production by hepatocytes, leading to high free androgen levels and exhibit significantly higher levels of insulin insensitivity compared to weight matched controls which leads to development type 2 Diabetic mellitus [3,4]

It is well recognized that the liver is the primary site of lipogenesis in the body and one of the main sources of lipids for adipocytes alongside dietary lipids. Enhanced hepatic delivery of FFA results in increased generation of VLDL .This situation is further exacerbated by excess synthesis of apolipoprotein B-100 in the liver, which stimulates the transfer of TG in exchange for cholesterol esters resulting in smaller and less dense HDL particles being produced these HDL particles are rapidly metabolized leading to a drop in circulating HDL levels together these disturbances in lipid metabolism lead to the development of dyslipidemia characterized by elevated VLDL, LDL, and reduced HDL.

The increase in triglycerides may be due the accumulation of triglycerides, which may occur due to the increased lipogenesis,

decreased clearance or reduced fatty acid oxidation.[5]

Elevated plasma triglycerides concentration results in increased secretion of VLDL particles by the liver. This may occur due to insulin resistance, which is seen in PCOS patients. Insulin resistance also contributes more catabolism of HDL particles and formation of LDL particles.[10] Cholesterol ester transfer protein may contribute to this. In addition to the insulin resistance, hyperandrogenism also contributes for an altered lipid profile. Hyperandogenism has been associated with increased hepatic lipase activity which has a role in the catabolism of HDL particles.

Hypertension and dyslipidemia are important risk factors for cardiovascular disease. Coexistence of hypertension and dyslipidemia is often observed in daily clinical practice[6]

Relationship between insulin and lipid explain by three way Insulin resistance causes adverse changes in lipids and lipoproteins, Abnormalities in lipids and lipoproteins cause impairment in insulin action. And the association of insulin resistance and abnormal lipid and lipoprotein levels is caused by factors that influence both glucose and lipid metabolism.

Population-based epidemiological studies have also reported that gradual increases in blood pressure (BP) or prevalence of hypertension are associated with increases in blood lipid levels.[7] One possible explanation for these relationships is that hypertension and dyslipidemia share common pathophysiological etiologies, such as obesity and the resulting dysregulation of adipocytokine release from adipose tissue. Furthermore, dyslipidemia adversely affects functional and structural arterial properties and promotes atherosclerosis.[8] These changes may impair BP regulation, which, in turn, predisposes individuals with dyslipidemia to development of hypertension.

In this study, there was highly significant increase in ratio of serum triglyceride to high density lipoprotein level in group A as compared to that of group B.

CONCLUSION

In present study we observed that women with Polycystic ovarian syndrome have increase Triglyceride/High Density Lipoprotein ratio as compared with healthy normal control womens. As we know high density liprotein has crdioprotective role in human body and triglyeride which has key role in development of various life style disorder hence to conclude PCOS women have more risk of developing life style disorder in their life span.

REFERENCES

1) Pappachan MJ. Increasing prevalence of lifestyle diseases: high time for action. Indian J Med Res.2011;134:143–5
2) WHO. Noncommunicable diseases. Fact Sheet. (Retrieved from: http://www.who.int/mediacentre/factsheets/fs355/en/ on: 2/05/2017
3). Bruce R Carr, Richard E Blackwell. Textbook of Reproductive Medicine: 1988 2nd ed. Chapter 19, 399.
4). Guzick D. Polycystic ovary syndrome: symptomatology pathophysiology and epidemiology, Am J Obstet Gyn, 1988, 179, 589-593.
5) Dunaif A, Graf M, Mandeli J, Laumas V, Dobrjansky A. .Characterization of groups of hyperandrogenic women with acanthosis nigricans, impaired glucose 1987.
6) Nakamura H, Arakawa K, Itakura H, Kitabatake A, Goto Y, Toyota T, Nakaya N, Nishimoto S, Muranaka M, Yamamoto A, Mizuno K, Ohashi Y. Primary prevention of cardiovascular disease with pravastatin in Japan (MEGA study): a prospective randomised controlled trial. Lancet. CrossrefMedlineGoogle Scholar 2006; 368:1155–1163.
7) Elias PK, Elias MF, D'Agostino RB, Sullivan LM, Wolf PA. Serum cholesterol and cognitive performance in the Framingham Heart Study. Psychosom Med. 2005; 67:24–30.
8) McGill JB, Haffner S, Rees TJ, Sowers JR, Tershakovec AM, Weber M. Progress and controversies: treating obesity and insulin resistance in the context of hypertension. J Clin Hypertens (Greenwich). 2009; 11:36–41.