



COMPARISON OF URIC ACID LEVEL IN TYPE 2 DIABETES MELLITUS WITH PCOS AND WITHOUT PCOS

Dr. Vikas Goyal

Associate Professor, Department of General Medicine, Chirayu Medical College & Hospital, Bairagarh, Bhopal, M.P.

Dr. Sanjay Gupta*

Assistant Professor, Department of General Medicine, Chirayu Medical College & Hospital, Bairagarh, Bhopal, M.P. *Corresponding Author

ABSTRACT

INTRODUCTION : Uric acid levels are generally higher in males than in females. due to higher levels of estrogen in the plasma of females compared to males. The present study was to comparison of uric acid level in type 2 diabetes mellitus with pcos and without pcos.

Material and methods: Study was carried out in 300 patients with T2DM with and without PCOS, from Departments of obstetrics and Gynecology and Medicine, Chirayu Medical College and Hospital, Bhopal. Estimation of uric acid by standard methods

RESULTS: There was no significant difference in the mean uric acid of T2DM with PCOS compared to T2DM ($3.3 \pm .8$ Vs $3.2 \pm .8$, $t = .797$, $P = .432$). Therefore, uric acid was found to be statistically non significant.

CONCLUSION: this study showed significantly elevated uric acid in patients with Type 2 diabetes with PCOS, as compared to T2dm subjects.

KEYWORDS : URIC ACID, T2DM, PCOS,

INTRODUCTION:-

Type 2 diabetes mellitus (T2DM) itself is the fundamental driver of vascular infections among patients, and diabetic nephropathy (DN) and diabetic retinopathy (DR) are the major microvascular complexities in patients with T2DM¹. Uric acid levels are generally higher in males than in females. This is thought to be due to higher levels of estrogen in the plasma of females compared to males leading to higher renal clearance of urate by estrogen in females.² There is shortage of information among the Indian populace as the vast majority of the examination are from Japan and China and not very many have considered the relationship in type 2 diabetes mellitus (DM) Patients³.

This endocrinopathy has traditionally been related to anovulatory infertility and hirsutism. However, during the past years, it has become increasingly evident that alterations in insulin action are prevalent in women with PCOS⁴. Polycystic ovary syndrome (PCOS) is one of the most common female endocrine disorders of uncertain etiology. The disorder causes multiple abnormal cysts in enlarged ovaries so they do not produce the normal no. of eggs & do not ovulate normally⁵. Polycystic ovary syndrome (PCOS) has, since its first description by Stein and Leventhal in 1935, become one of the commonest disorders in women, affecting 5 to 10% in the reproductive age-group^{6,7}. In a study Vuorinen-Markkola and Yki-Jarvinen (1995) demonstrated an inverse correlation between serum uric acid concentration and insulin sensitivity in patients with metabolic syndrome⁸. Many women with PCOS are characterized by disturbances in reproductive hormones, including androgen, the luteinizing/follicle-stimulating hormone (LH/FSH) ratio and estrogens⁹.

The relationship between raised serum uric corrosive focus and the risk of improvement of diabetes mellitus was not all around explained. A few examination recommended that high serum uric corrosive is related with expanded risk of diabetes mellitus. However, other studies revealed that there is no huge affiliation, different investigations came to a resolution that diabetes mellitus hazard is expanded with low degree of serum uric corrosive¹⁰. The present study was to comparison of uric acid level in type 2 diabetes mellitus with pcos and without pcos.

MATERIALS AND METHODS:

The current investigation is a case-control study. The Sample size was 150 sort 2 diabetic mellitus with PCOS and 150 sort 2 diabetic mellitus. The objective populace was type 2 diabetic mellitus women with and without Polycystic ovary condition matured 20-60 years from Departments of obstetrics and Gynecology and Medicine, Chirayu Medical College and Hospital, Bhopal.

EXCLUSION CRITERIA:

- Patients age under 20 and over 60 years.
- Pregnant women
- Women under hormonal treatment.

- Type 1 diabetic patient.
- Patients with other chronic diseases.

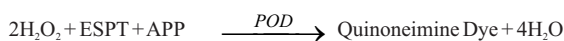
Blood tests were gathered from 300 T2dm with and without PCOS patients. Fasting for the time being venous blood test (around 6 ml) was drawn by a confirmed phlebotomist into vacutainer plane cylinders and serum separator tube and EDTA tubes from all patients.

SPSS software version 20 used for statistical analysis of total data of current study

ESTIMATION OF URIC ACID :-

Uricase - PAP method

Principle :



The absorbance at 546nm is directly proportional to uric acid concentration.

Reagent composition :-

Reagent :-1

Borate buffer pH 7.7	180 mMol/L
Uricase	50 U/L
4-Aminophenazone	0.25 mMol/L
Peroxides	> 100U/L
ESPT	1mMol/L
Surfactant	0.5mg/L
Stabilizer	1g/L

Standard reagent:-

Uric acid - 5mg/dL

Procedure:-

Pipette into tube marked	B	S	T
Working reagent No.1	1500µL	1500µL	1500µL
Standard	-	20µL	-
Serum /Plasma	-	-	20µL

1. Mix well, incubate at 37°C for 10 minutes or at room temperature (15-30°C) for 30 minutes.
2. Read at 546nm (490-540nm) or Green filter against blank.

RESULTS:

Table No :1 Mean Distribution Of Uric Acid Among T2dm With Pcos And T2dm

AGE GROUPS	GROUPS (n=300)	
	T2DM with PCOS (n=150)	T2DM (n=150)

	URIC ACID (mg/dl)	URIC ACID (mg/dl)
	Mean±Sd	Mean±Sd
20-30	3.1 ± .5	2.9 ± .3
30-40	3.4 ± 1.0	2.9 ± .4
40-50	2.9 ± .3	3.2 ± .8
50-60	-	3.7 ± 1.0

- 1) It is evident from the above table that the mean value of uric acid among 20-30 years of age is higher in T2DM with PCOS (3.1± .5) and lower in T2DM (2.9±.3) respectively.
- 2) Among 30-40 years of age is higher in T2DM with PCOS (3.4± 1.0) and lower in T2DM (2.9± .4) respectively.
- 3) Among 40-50 years of age is higher in T2DM (3.2± .8) and lower in T2DM with PCOS (2.9±.3) respectively.
- 4) Among 50-60 years of age is found that no patients in T2DM with PCOS, mean value higher in T2DM (3.7± 1.0).

Table No: 2 Comparison Of Uric Acid Level Between T2dm With Pcos And T2dm

RFT VARIABLES	T2DM with PCOS (n=150)	T2DM (n=150)	t	P
	Mean ± Sd	Mean ± Sd		
URIC ACID(mg/dl)	3.3 ± .8	3.2 ± .8	.787	.432 [#]

*Statistically significant (P<0.001), # Non significant (p>0.005)

The mean uric acid of study population There was no significant difference in the mean uric acid of T2DM with PCOS compared to T2DM (3.3± .8 Vs 3.2±.8, t= .797, P=.432). Therefore, uric acid was found to be statistically non significant. (using independent sample 't' test).

DISCUSSION:

In this present study the serum uric acid concentration level was statistically non significant between study groups. Previous studies examining the association between serum uric acid level and diabetes mellitus were restricted to specific racial/ethnic group and gender and were consistent in their findings. Some studies reported that there is a positive association between elevated serum uric acid level and diabetes¹¹⁻¹³. F.Fang et al¹⁴ reported that uric acid was significantly higher in the PCOS women compared to T2DM women.

The results of many studies available until now are controversial. One of the first studies that have analyzed the utility of serum uric acid determination for the screening of metabolic syndrome in PCOS was conducted almost 20 years ago, and its results were not encouraging. In our present study comparison of uric acid level between T2DM with PCOS vs T2DM without PCOS was found to be statistically non significant (P>0.005) using independent sample 't' test. In a more recent study, no differences were observed between PCOS and non-PCOS women (with similar BMI) regarding plasma uric acid concentrations¹⁵. Observed the results of present study increasing serum uric acid and diabetes mellitus may be related to the inhibition of uric acid re absorption in the proximal tubule by high glucose levels in diabetic individuals. Therefore, higher uric acid levels may not be a risk factor for diabetes mellitus as some researchers previously argued¹¹⁻¹³. According to L.Anttila et al., (1996)⁴ and Manuel LuqueRamirez et al., (2008)¹⁶ no statistically significant differences were found in the mean concentrations of uric acid between PCOS and T2dm.

CONCLUSION:

In summary, this study showed significantly elevated uric acid in patients with Type 2 diabetes with PCOS, as compared to T2dm subjects. Therefore, higher uric acid levels may not be a risk factor for diabetes mellitus.

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