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A Comparative Study of SUA Levels in Pre-Diabetic and Diabetic Complication

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Abstract: ***Background: Several researches have reported that high SUA levels are associated with pervasive health disorders such as obesity, insulin resistance, metabolic syndrome, hypertension and renal disease. This research aimed to explore the level of SUA in diabetics, pre-diabetics and non diabetic. Method: This prospective study includes ninety participants for each group 30 participants. All participants are aged in between 35-75 years. Pre-diabetic values consider as 110-125mg/dl. Conclusion: Serum uric acid levels raises in the pre-diabetic and not so much in diabetes and non-diabetics.***

Keywords: Serum uric acid (SUA), Pre-diabetic, non-diabetic,diabetic

1. Introduction

High serum uric acid level associated with pervasive health disorders such as obesity, insulin resistance, metabolic syndrome, hypertension and renal disease. Also, elevated levels of uric acid are a risk factor for peripheral arterial disease [1], insulin resistance, and components of the metabolic syndrome[2]. However, the putative association between serum uric acid levels and diabetes mellitus is not clear. Some studies reported that there is a positive association between high serum uric acid levels and diabetes [3-8] ,whereas other studies reported no association [9], or an inverse relationship [10] .

Diabetes mellitus is a group of disorders characterized by chronic hyperglycemia associated with disturbance of carbohydrate, fat and protein metabolism due absolute or relative deficiency of insulin secretion or its action. In this context, the main purpose of our research aimed to explore the level of SUA in diabetics, pre-diabetics and non diabetic.

2. Materials and Methods

A total of 90 patients were selected using purposive sampling technique in Father Muller Medical College and Hospital from Jan 2016 to June 2016.This was an eventual study with allocation into three groups. Group was as follows. The first 30 patients were included in group1-diabetics; next 30 patients were included in group 2-pre-diabitics and another group3-non diabetic as 30 patients .For each group as comparing age, sex, no. of participants and mean of serum uric acid level.

Inclusion Criteria

- Aged between 35 to 75
- Diabetic patient
- Pre-diabetic
- Non-diabetic

Exclusion Criteria

- Other muscle wasting, starving, liver disease patients were omitted.
- Patients with serum creatinine >1.0 mg/dL (sign of renal failure) were excluded.

3. Results

The study included total 90 participants. The number of participants in individual group was as follows: Non-diabetics30 participants: it contains 17 male and 13 female, pre-diabetics-30 participants: it contains 15 male and 15 female and diabetics30 participants: it contains 15 male and 15 female.

The mean serum uric acid level is lower in non-diabetic group 3.8mg/dl in male and 4.6mg/dL in female, higher in pre-diabetics 5.5 mg/ dL in males and in females 7.5 mg/dL , decreased in diabetics males 4.5 mg/dl dL in males and in females 5.8 mg /dL .

Table 1: Mean SUA levels in Non-diabetics

Sex	*Number of patients*	*Mean Uric acid Level*
Male	17	3.8
Female	13	4.6

Table 2: Mean SUA levels in Pre-Diabetics

Sex	*Number of patients*	*Mean Uric acid Level*
Male	15	5.5
Female	15	7.5

Table 3: Mean SUA levels in Diabetics

Sex	*Number of patients*	*Mean Uric acid Level*
Male	15	4.5
Female	15	5.8

Final result analysis is serum uric acid levels raises in the pre-diabetics and not so much in diabetics and non-diabetics and there is a significant relation between pre-diabetes condition and the serum uric acid levels.

4. Discussion

Pre-diabetes defines a condition in which the fasting blood glucose is elevated above which is considered normal levels,

but is not high enough to be classified as diabetes mellitus. It is associated with insulin resistance and increased risk of cardiovascular pathology. It is thought to be lesser risk than impaired glucose tolerance (IGT). In 50% cases, it progresses to type 2 diabetes mellitus. There is a 50% risk over 10 years of progressing to overt diabetes.

Numerous studies conducted on this aspect shows uric acid is significantly elevated in pre-diabetic stages and low in diabetes and rises after subsequent progression of the disease to renal insufficiency. So measurement of uric acid serves as a effective tool and simplicity of procedure as well as its inexpensive. Also it helps as a powerful tool for identifying pre-diabetes. estimation of serum uric acid reduces disease burden on individual as well as on society too. It allows taking necessary precautions and to make suitable life style modifications to prevent pre diabetes as well as related complications as far as diabetes is concerned.

5. Conclusion

Serum uric acid levels raises in the pre-diabetic and not so much in diabetic and non-diabetics. Serum uric acid had a significant positive association with pre-diabetics and if significantly elevated medications need to be initiated, and further research needs to be done on the beneficial role of medications for diabetics.

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