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AN EQUIVALENT STUDY OF SERUM URIC ACID AND BLOOD UREA IN POST-MENOPAUSAL WOMEN WITH DIABETES MELLITUS

Pavithra I[1] & Tarangini Gajjala[2*]

[1]Associate Professor, Department of Obstetrics and Gynaecology, Shri Satya Sai Medical College and Research Institute, Tamilnadu, India.
[2]Associate Professor, Department of Obstetrics and Gynaecology, Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry-605502, (Affiliated to Bharath University, Chennai), India.

ABSTRACT

Menopause is a biopsychosocial phenomenon encompassing the transition in a woman's life. Which defined as the end of menstruation due to the period of change in ovarian function from being fertile to becoming infertile. The postmenopausal state was significantly associated with the presence of dysglycemia independently of normal aging, although increased glucose levels have deleterious effects on several organs. The aim of this study is to an equivalent Study of Serum Uric Acid and Blood Urea in Post-Menopausal Women with Diabetes Mellitus. Total of 97 subjects including the age group of post-menopausal women it is between 45–75.First groups 68 postmenopausal women without diabetes and second group consisted of 29 postmenopausal women with diabetes. Fasting blood samples were collected and analyzed for glucose, uric acid and urea by semi-auto analyzer using commercial kits. Values were reported as mean ± standard deviation. Fasting blood glucose levels were clearly showed an increased level in post-menopausal women with diabetes. Serum uric acid levels of postmenopausal women with diabetes were significantly high when compared to without diabetic post menopausal women. Uric acid level is a best marker to estimate the high risk group CKD and CVD in postmenopausal.

Key words: Post menopause, Diabetes, Uric Acid, Urea, Diabetic kidney disease.

INTRODUCTION

The menopause transition is experienced by 10.5laks women each year.1 Which defined as the end of menstruation due to the period of change in ovarian function from being fertile to becoming infertile. It is a natural and inevitable change that affects all women.2During menopause, women may additionally expand depressive signs and symptoms and cognitive problems, that are extra subtly and unevenly connected to hormones. Depression and cognitive impairment can be burdensome for girls and additionally compound the burden of medical contamination for the growing older lady populace. As postmenopausal ladies are already at chance for osteoporosis and cardiovascular disease, it's far vital to cope with potentially changeable psychiatric problems which could make scientific issues greater hard to deal with Reduced estrogen levels can lead to insulin

Corresponding Author :- **Dr.Tarangini Gajjala** Email:- drpebyreddy@gmail.com

resistance, which is when the body does not respond to insulin well and blood sugar increases.

The postmenopausal state was significantly associated with the presence of dysglycemia independently of normal aging, although increased glucose levels have deleterious effects on several organs. Diabetic kidney disease develops in approximately 40% of patients who are diabetic and is the leading cause of CKD worldwide. [3]As kidneys fail, the blood urea nitrogen (BUN) levels will rise as well as the level of creatinine, in the blood Elevated serum uric acid (SUA) is increasingly recognized as a risk factor for kidney disease in adults with diabetes.[4]

Numerous mechanisms describe the role of uric acid on diabetes and its chronic complications. Increased uric acid levels have been implicated in inflammation, oxidative stress, endothelial dysfunction, inhibiting insulin pathway, intra renal hemodynamic dysfunction, vascular, glomerular, and tubular injuries and loss of nephron mass.[5] All these could explain an etiological relationship between elevated serum uric acid and vascular disease in T2D and how elevated serum uric acid may accelerate progression of CKD and CVD. About 30 percent of patients with Type 1 diabetes and 10 to 40 percent of those with Type 2 diabetes eventually will suffer from kidney failure.[6]The purpose of this study is to determine an equivalent study of Serum Uric Acid and Blood Urea in Post-Menopausal Women with Diabetes Mellitus.

MATERIAL AND METHODS

Healthy postmenopausal women who visited the outpatient of obstetrics and gynaecology, Shri Satya Sai medical college and research institute and gynecologic endocrinology clinic of Sri Lakshmi Narayana institute of medical sciences for a regular gynecological check-up were considered for this study.

Participants with diseases such as cancer, rheumatoid arthritis and thyroid disease or Smoking, alcohol intake and those with prolonged steroid use were excluded.

In the present study the total numbers of participants were ninety seven. The age group of post-menopausal women it is between 45–75.First group 68 postmenopausal women without diabetes and second group consisted of 29 postmenopausal women with diabetes.

After an overnight fasting for 12 -14 hours, sample was collected from the patients. About 5 ml of venous blood was drawn under aseptic precaution in a sterile plain vacutainer from selected subjects. Sample for glucose estimation was separately taken in fluoride, oxalate vial and remaining sample is collected into a plane vial. Glucose is estimated in plasma whereas urea, uric acid were estimated in serum. As soon as the sample is collected, serum is separated, and estimations were done on the same day.

Assay of samples for various estimations was done using Erba-chem-5 plus2 semi-automated analyser. The quality control was checked using control sera of two levels. Glucose was estimated by GOD/PAP method, urea by urease method18,19 and uric acid by uricase method.

Sample was collected after taking written/oral consent from the subjects. This study has been approved by the ethical committee of SLIMS.

Statistical analysis as mean + standard deviation (SD).The data were analysed by one-way ANOVA with Tukey-Kramer Post Hoc test using SPSS version 20 and p value of < 0.05 was taken as statistically significant at 95% confidence interval.

Results

Table 1 gives the number and age of subjects in study groups. Postmenopausal women with diabetes group was 68 number of subjects having 22.6±13.5mean ± standard deviation years of age

Table 2 showed postmenopausal women without diabetes group was 9.66±8.32. Overall, the subjects were from 45 to 75 years of age. Most significant in 56-65 age group.

Fasting Blood Glucose, serum uric acid, blood urea, the study groups were shown in Table 3. The analysis of results by ANOVA indicated the statistically significant mean values (p<0.05) for all the parameters. Fasting blood glucose levels were clearly showed an increased level in post-menopausal women with diabetes.

Serum uric acid levels of postmenopausal women with diabetes were significantly high when compared to and without diabetic post menopausal women. Blood urea of postmenopausal women with diabetes was significantly high when compared to and without diabetic post menopausal women.

Table. 1: Age wise distribution of post menopausal with diabetes mellitus

S.no	Age	No of patients	Percentage	Mean ±SD
1	45-55	35	51.4%	22.6±13.5
2	56-65	24	35.2%	
3	66-75	9	13.2%	

Table. 2: Age wise distribution of post menopausal without diabetes mellitus

S.no	Age	No of patients	Percentage	Mean ±SD
1	45-55	7	24.1%	9.66±8.32
2	56-65	19	65.5%	
3	66-75	3	10.3%	

Table 3: Fasting blood glucose urea and uric acid levels in study group.

Study group	FBS	Urea	Uric acid
Postmenopausal women without diabetes	96.6±16.4	27.3±6.92	7.98±0.67
Postmenopausal women with diabetes	194.6±74.5	32.5±12.3	9.46±2.09

DISCUSSION

High blood glucose can harm the blood vessels inside the kidneys. Many humans with diabetes also develop high blood strain, which also can damage their kidneys. The most effective manner to know in the event that they have diabetic kidney ailment is to get the kidney feature checked. Serum urea and uric acid form the principle markers of kidney characteristic.

Menopause contributes to renal disorder in girls, which is normally attributed to estrogen withdrawal. In addition to reduced estrogen degree, serum follicle-stimulating hormone (FSH) degree increases after menopause. A high circulating FSH degree is an independent risk aspect for renal disorder in women after menopause. Additionally, growing older might also aggravate the association of high FSH levels with reduced renal function in post-menopausal women. The incidence of renal disease associated with both type 1 and type 2 DM is far greater in diabetic compared with nondiabetic women, both pre- and postmenopausal.[7]

Uric acid is a last by product of purine metabolism and its increased levels have been associated with insulin resistance and in Type-2 Diabetes Mellitus. The relation between Type-2 DM and increased serum uric acid level has been observed Dr.Nayana Deb et al study.[8] Usually a higher SUA level was associated with an increased prevalence of CVD and DKD and a variety of diabetic complications in both men and postmenopausal women with T2DM.[9] Liubao Gu et al and Ryuichi Kawamoto studies have shown serum uric acid to creatinine ratio might be a better predictor of incident chronic kidney disease in type 2 diabetes mellitus patients.[10-11]

The present study results have clearly showed that there is a significant increase in uric acid and urea in postmenopausal women with and without diabetes compared to nondiabetic premenopausal women which is correlated with the Mummedy Swamy et al.[12]

Another interesting result is that there is a significant increase in the ratio of Uric acid /urea ratio in postmenopausal women with diabetes compared to without diabetes premenopausal women.

CONCLUSION

The study was concluded that the observed increased serum uric acid and urea in postmenopausal women with diabetes are at high risk cardiac and kidney problems. Therefore uric acid is best marker to assess the high risk group CKD and CVD in postmenopausal.

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