



Serum Uric Acid Association with Nephropathy in Diabetic Patients – Study at a Tertiary Care Center

KEYWORDS

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ABSTRACT *Diabetic nephropathy is considered as one of the dreaded complications of diabetes mellitus and the commonest cause of end-stage renal disease. There are various studies done which show that uric acid is an inflammatory factor could have a role play in the development of a role in endothelial dysfunction, of diabetic nephropathy. In view of the above said facts we considered this study to see if there is any association between serum uric acid level and proteinuria levels in diabetic patients.*

Introduction

Diabetic nephropathy is considered as one of the dreaded complications of diabetes mellitus and the commonest cause of end-stage renal disease. Several factors which influence the development of diabetic nephropathy like the age, poor glycemic control, the most important role seems to be the inflammation and endothelial dysfunction .There are various studies done which show that uric acid is an inflammatory factor could have a role play in the development of a role in endothelial dysfunction, of diabetic nephropathy. In view of the above said facts we considered this study to see if there is any association between serum uric acid level and proteinuria levels in diabetic patients.

Materials and Methods

A prospective cross-sectional analytical study conducted on 88 diabetic nephropathy patients who met the inclusion criteria. Venous blood samples were obtained in fasting state for determinations of serum creatinine, uric acid, and hemoglobin A1c (HbA1c) 24-hour urine protein.

Inclusion criteria were Diabetic nephropathy patients with no significant body weight changes for at least 3 months before the study. Age group between 20-60 years, Patients willing to take part in the study

Exclusion criteria were Family history of gout ,patients with known gout , on chemotherapy and known cancer patients,

Statistical analysis

Results were expressed as mean \pm standard deviation (SD) and all the results which were having a $P < 0.05$ was considered as statistically significant

Results and observations

Mean age of the patients was 57 ± 8.3 years. Mean \pm standard error (SE) of serum creatinine was 0.88 ± 0.038 mg/dL, mean \pm SE of serum uric acid was 4.3 ± 0.10 mg/dL, and mean \pm SE of proteinuria was 398 ± 16.8 mg/day

In this study, there was no significant difference of se-

rum uric acid, glycosylated hemoglobin, and renal functions between males and females ($P > 0.05$). There was a significant positive association between body mass index and serum uric acid ($P < 0.001$). After adjustment for weight, a significant positive association of serum uric acid level with proteinuria level was seen ($P < 0.001$).

Discussion

Diabetes mellitus is a growing disease which has come as gift to India with the adaptation to westernization, industrialization and competitive stressful life. When the statistics of the world are glanced this disease continues to be the fore runner of end-stage renal disease in India and most parts of the world. Once set in diabetic nephropathy is considered as a progressive disease which cannot be reversed. End-stage renal disease is one of the most draining stage which requires lifelong renal replacement which makes the diabetic a burden to the family and the society at large in terms of social life and financial drains. By finding out the possible pathophysiological causes that lead to the development and progression of diabetic nephropathy it may be possible to halt the progression or even the start of diabetic nephropathy.

In this study, we found the significant positive association of serum uric acid with level of proteinuria, there is a well established association of hyperuricemia with obesity and various components of metabolic syndrome and chronic renal failure. There are documented studies which argue that hyperuricemia may have a pathogenic role in the development and progression of chronic renal failure, and may not be just due to decreased renal uric acid excretion. In studies by Hovind et al¹⁰ and Nakagawa et.al¹¹ showed that in diabetic patients elevation of serum uric acid early in the course of diabetes mellitus has a significant association with development of macroalbuminuria in the later stages of the disease. These studies also showed the renin-angiotensin system is the responsible system for renal damage in hyperuricemic .Various studies have shown that hyperuricemia can cause various damages like the arteriolopathy of preglomerular vessels, impaired autoregulation, glomerular hypertension, endothelial dysfunction microvas-

cular disease¹²⁻¹⁵

The results of our study are similar to the study by Saeed-

Behradmanesh¹⁶ who had similar results in his study

Conclusion

Serum uric acid had a significant positive association with diabetic nephropathy.

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