TO FIND OUT THE CORRELATION OF MICROALBUMIN WITH FBS, PPBS, BLOOD UREA & SERUM CREATININE

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Abstract:

Background: The Aim is to find out the Correlation of Microalbumin with Fbs, Ppbs, Blood Urea & Serum Creatinine. The target population of this study was individuals who have Type-2 DM for different period of time and resident in Dehradun.

Result: The percentage distribution of urinary microalbumin at different levels in controls and cases are shown in table (11) and the graph of figure (11), in which 100% of control group had urinary cases of diabetes mellitus had value >15mg/l. this microalbumin value <15mg/l where as 100% cases diabetes mellitus has value > 15mg/l. This increase in urinary microalbumin values statistically highly significant with $p < .001$ in cases as compared to controls.

The Mean values of Urinary Microalbumin in cases & controls are shown in table 02 and the mean values are 10.57 ± 2.47 & 110.76 ± 56.081 in diabetes mellitus cases respectively. This increase mean values of Urinary Microalbumin in cases compares to control is statistically significant.

Conclusion: In present study a very large correlation was observed between microalbumin and other parameter in cases

It was also observed the microalbumin conc., Were strongly associated with several risk factor glycemic control, renal dysfunction and other complication these marker were clinically correlate with in with increasing the concentration of microalbumin.

It is concluded that increase in microalbumin is an early manifestation of diabetic renal disease and hence microalbumin can be used as a marker of renal dysfunction in diabetic nephropathy further studies world help to clarify its role in pathogenesis of diabetic renal disease.

Keywords: Microalbumin, FBS, PPBS, Blood Urea & Serum Creatinine.

Introduction

Microalbuminuria is usually associated with other microvascular complications of diabetes namely retinopathy, neuropathy, and ischaemic heart disease. So, microalbuminuria may be used as a clinical biochemical marker to look other for widespread microvascular damage in a patient of diabetes mellitus.¹ Microalbuminuria significantly increase in albumin excretion rate (AER). Albumin excretion. Microalbuminuria defines the wide substantial range of albumin hypersecretion ranging between 20 to 200mcg/min (30 to 300mg/day).²

The presence of microalbuminuria precedes the development of overt diabetic nephropathy by 10-15 years. Therapeutic interventions which reverse microalbuminuria include intensified insulin administration, dietary protein restriction.

Diabetic nephropathy is the most frequent cause of end stage renal disease. Microalbuminuria is the first clinical detectable sign of involvement of the kidney. It affects between 20-40% of subjects, 10-15 years after the onset of DM. Once microalbuminuria is present, it progresses over

5-10 years to proteinuria in 20-50% of subjects. With microalbuminuria, the decline in renal functions varies but average reduction in glomerular filtration is around 10-12 ml/min/year. Progression to end stage renal disease is accelerated by hypertension. The process of renal involvement is step wise and microalbuminuria (also referred to as incipient nephropathy) is potentially reversible. Microalbuminuria is also strongly associated with traditional cardiovascular risk factors and cardiovascular complications. (Ahmedani, 2012).³

Material & Method

Study Design

The target population of this study was individuals who have Type-2 DM for different period of time and resident in Dehradun. Another group of apparently healthy individuals represented the control group.

Sample size

The sample size was determined by number of patients according to the inclusion criteria for cases during the sampling period in 2014. The Case group is a total of 25 case individuals (12 Men and 13 Women) who are already diagnosed as type-2 DM and were selected from OPD and

IPD of Shri Guru Ram Rai Medical College, Dehradun. The other group consists of 25 non diabetic healthy individuals and served as controls (17 men 8 women). The ages in both groups ranged from 30 to 90 years male and female, and all are resident in Dehradun.

Inclusion Criteria

- Patients who are already diagnosed as type-2 DM.
- Individuals who have type-2 DM for different periods.
- Individuals who do not suffering of UTI, renal and liver abnormality.
- Individuals who reside in Dehradun.

Exclusion criteria

- Diabetics with Proteinuria.
- Diabetics with urinary tract infections.
- Diabetes suffering Diabetes suffering from renal or liver disease and hypertension.
- Diabetics with type-1 DM.
- Diabetics women in pregnancy

Results

Table 1: Frequency & Percentage Distribution of Urinary Microalbumin at different levels in two groups.

Study Variables	Controls	Cases	P Value
<15 mg/l	25 (100%)	0	0.001**
>15 mg/l	0	25 (100%)	

The percentage distribution of urinary microalbumin at different levels in controls and cases are shown in table (11) and the graph of figure (11), in which 100% of control group had urinary cases of diabetes mellitus had value >15mg/l. this microalbumin value <15mg/l where as 100% caese diabetes mellitus has value > 15mg/l. This increase in urinary microalbumin values statistically highly significant with p<.001 in cases as compared to controls.

Table 2: Comparison of Microalbumin between two groups.

Study Variables	Controls	Cases	P Value
Microalbumin mg/dl	10.57±2.47	110.76±56.081	0.001**

The Mean values of Urinary Microalbumin in cases & controls are shown in table 02 and the mean values are 10.57±2.47 & 110.76±56.081 in diabetes mellitus cases respectively. This increase mean values of Urinary Microalbumin in cases compares to control is statistically significant.

Table 3: Correlation of Microalbumin with other parameter.

Case	Cases r value	Cases P value	Controls r value	Controls P value
Microalbumin vs FBS	0.358	0.66	0.031	0.460
Microalbumin vs PPBS	0.0906	0.006	0.03	0.892
Microalbumin vs Serum Urea	0.028	0.001	-0.2577	0.231
Microalbumin vs Creatinine	0.304	0.003	-0.343	0.804

Correlation study revealed a large positive correlation between microalbumin and both Fbs and Ppbs in diabetes mellitus cases, where as there in a small positive correlation between microalbumin and Fbs in control group & small positive correlation between micro albumin Ppbs in control in diabetes mellitus cases microalbumin is significant with urea in cases and negative correlation it controls.

Correlation study revealed positive correlation between microalbumin and serum creatinine in cases and negative correlation in between microalbumin and serum creatinine in controls.

So this study shows that microalbumin significantly higher in DM cases than controls.

Discussion

CORRELATION BETWEEN MICROALBUMIN AND OTHER PARAMETERS -

Correlation study reveals high small positive correlation in cases between microalbumin and all parameters fbs, ppbs, serum urea, serum creatinine, microalbumin indicating the role of parameter hyperglycemia towards renal damage. This correlation is disorted in DNP cases when compared to control group

A High percentage of diabetic patients (60.0%) having FBS > 120 mg/dl had microalbuminuria and 80.6% of diabetic patients having PP2BS > 250 had microalbuminuria. So significant correlation found which was studies done by Park et al (1960), Hashim 10 at al (2003).⁴

In other study Shonima Venugopal (2010) found high prevalence of microalbuminuria patients having high fbs, urea, creatinine, microalbuminuria. The group of patients having high creatinine has high prevalence of microalbuminuria. Higher prevalence of microalbuminuria was seen in patients having high HbA1C.⁵

Divija DA et al (2013) also found urea significantly higher correlation with microalbumin than normal. It

is interesting to note that increase in urea may increase prevalence of microalbuminuria in diabetic patients. Serum creatinine is a less accurate indicator of renal function as compared to creatinine clearance, since the latter takes into account age, gender and body weight, variables that are known to influence glomerular filtration rate.^{6,7}

Possibly, such factors can influence the overall prevalence observed in this study. The measurement of serum creatinine concentration is widely used clinically as an index of renal function. It is widely affected by age, sex and body weight. Microalbuminuria and serum creatinine increase significantly in Type 2 DM as reported in an earlier study.

Sheikh. 2009 found that there is only slight correlation of creatinine with microalbuminuria values. This is in contrast with Sheikh Study (2009) where a highly significant between microalbuminuria and serum creatinine level was seen.⁸

Conclusion

In present study a very large correlation was observed between microalbumin and other parameter in cases It was also observed the microalbumin conc., Were strongly associated with several risk factor glycemic control, renal dysfunction and other complication these marker were clinically correlate with in with increasing the concentration of microalbumin.

It is concluded that increase in microalbumin is an early manifestation of diabetic renal disease and hence microalbumin can be used as a marker of renal dysfunction in diabetic nephropathy further studies world help to clarify its role in pathogenesis of diabetic renal disease.

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