

## Pentoxifylline in combination with ACEI & ARB resulting in significant decline of proteinuria

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### Introduction

In India, Proteinuria is quite common, occurring in upto 50% of patients, resulting in decreased patient survival and increased prevalence of cardiovascular disease. ACE inhibitors (ACEI) & Angiotensin receptor blockers (ARB) have been the mainstay of therapy in native kidney proteinuria, though may not succeed in all patients because of side effects. Pentoxifylline has been advocated as an anti-inflammatory measure, probably contributing to amelioration of proteinuria. Decreasing proteinuria is the mainstay of therapy in order to delay the progression of CKD.

### *Burden of disease*

Diabetic nephropathy (DN) is the main cause of end-stage renal disease (ESRD). Diabetic Nephropathy is the leading cause of DM-related morbidity and mortality. Both microalbuminuria and macroalbuminuria in individuals with DM are associated with increased risk of cardiovascular disease. Prevalence of diabetic nephropathy in INDIA- 30.3%.

### Aim

To study the effects of Telmisartan, Ramipril & Pentoxifylline on Proteinuria in patients suffering from Diabetic Nephropathy.

### Methods

A total of 72 patients suffering from Diabetic Nephropathy having proteinuria of 300 mg/24hr or more with stable GFR of 42ml/min to 70ml/min were studied from October 2011 to June 2012 at a tertiary care nephrology centre under the supervision of Dr. Deepak Sharma. The patients were divided into three groups according to the treatment they are receiving. The patients in Group A, a total of 51 patients received Ramipril, Telmisartan for six months & Pentoxifylline

was added due to persistence of significant proteinuria. The patients in Group B, a total of 11 patients receiving Ramipril, Pentoxifylline was added due to persistence of proteinuria beyond six months. The patients in Group C, a total of 10 patients were given Telmisartan alone for six months & then received Pentoxifylline in addition for another three months.

### Results

In Group A proteinuria ( $p=0.001$ ), albuminuria ( $p=0.005$ ), urinary albumin to creatinine ratio ( $p=0.005$ ) declined and serum potassium ( $p=0.95$ ) did not increase significantly. In Group B proteinuria ( $p=0.015$ ), albuminuria ( $p=0.001$ ), urinary albumin to creatinine ratio (0.019) declined and serum potassium ( $p=0.78$ ) did not increase significantly. In Group C proteinuria ( $p=0.017$ ), albuminuria ( $p=0.011$ ) and urinary albumin to creatinine ratio ( $p=0.007$ ) declined and serum potassium ( $p=0.98$ ) did not increase significantly.

- Serum creatinine in all the groups was stable ( $p=0.030$ ).
- GFR correlated positively with changes in albuminuria which in turn correlated negatively ( $p=0.005$ ) with serum creatinine.
- Changes in urinary albumin to creatinine ratio correlated negatively with serum creatinine ( $p=0.020$ ) in all groups.

### Conclusion

The study reveals the benefit of using Pentoxifylline in combination with ACEI & ARB resulting in significant decline of proteinuria, albuminuria and improvement of GFR especially in patients having persistence of proteinuria despite using ACEI and/or ARB. There was no significant hyperkalemia noted in this study.

- All the drugs (Ramipril, Telmisartan and Pentoxifylline) were well tolerated.