To Study the Prevalence of Microalbuniuria in Amyloid Positive and Negative Patients of Rheumatoid Arthritis

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ABSTRACT

Introduction: Rheumatoid arthritis (RA) is a common, chronic, inflammatory, autoimmune disease of unknown etiology affecting approximately 1% of the world population. Current research aimed to study the prevalence of microalbuniuria in amyloid positive and negative patients of rheumatoid arthritis(R.A).

Material and methods: The present study Cross-sectional study was carried out on rheumatoid arthritis patients at Department of Medicine, Chhatrapati Shivaji Subharti Hospital (C.S.S.H), Meerut. RA patients with disease duration > 3 years were included in this prospective study over a 2 year period. All the patients underwent Urine (routine/microscopic) evaluation and urinary Albumin, Creatinine assessment was done to calculate Albumin/Creatinine ratio (ACR). The patients were divided in two groups Group I (n=13) positive for amyloid and Group II (n=87) negative for amyloid.

Results: Proportion of those with urinary albumin levels in + and ++ category was significantly higher in Group I (69.2%) as compared to that in Group II (14.9%) ($p<0.001$). Mean urinary ACR was significantly higher in Group I (73.83±31.64) as compared to that in Group II (31.44±14.41) ($p<0.001$). Patients with subclinical amyloidosis had significantly higher urinary albumin and ACR ratios as compared to those without it.

Conclusion: The study concludes that presence of microalbuminuria indicates severe disease activity and longstanding rheumatoid arthritis. Also microalbuminuria is a sensitive indicator of increased renal vascular permeability in Rheumatoid Arthritis patients.

Keywords: Microalbuniuria, Amyloid Positive and Negative Patients, Rheumatoid Arthritis

INTRODUCTION

The synovium, or membrane present in the synovial joints that lines the joint capsules and creates synovial fluid for the joints in the hands and feet, is the first structure affected.[1,2,3] The subsequent inflammatory changes lead to cartilage and bone destruction.[1] In addition, the corresponding systemic inflammation may result in disorders of multiple organ systems.[1] Indian data suggests the prevalence of RA to be around 0.65–0.75%.[4] The peak age of onset has risen to 50 years or more and is more common in women than men with a ratio of 3:1.[5,6]

Microalbuminuria has been defined as an increased excretion of albumin above the reference range for healthy subjects which is undetectable by dipstick testing.' It is associated with a generalised vascular damage in patients with diabetes mellitus and is a predictor of diabetic nephropathy.[2,3] In nondiabetic populations, microalbuminuria has been found with a prevalence ranging from 6.3% to 13%.[4] Further longitudinal studies are required to elucidate the long term renal prognosis in non-diabetic subjects with the condition. However, increased urinary albumin excretion is associated with hypertension, cardiovascular disease, and increase mortality rate,[4,7] and has also been reported in patients with rheumatic diseases other than rheumatoid arthritis (RA), such as systemic lupus erythematosus[8,9] and systemic sclerosis.[10] but the significance of microalbuminuria in RA and its correlation with disease activity is not well studied. It is suggested that microalbuminuria and subclinical renal damage are frequent in RA patients particularly in those with longstanding disease and with severe disease activity.[10] Urinary albumin measured by immunochemical method is a simple and sensitive test to detect early subclinical renal dysfunction and drug induced renal damage in RA.[11] Hence the present study was conducted to evaluate the association of microalbuminuria with RA

MATERIAL AND METHODS

The present study Cross-sectional study was carried out on rheumatoid arthritis patients at Department of Medicine, Chhatrapati Shivaji Subharti Hospital (C.S.S.H), Meerut. The project was approved by the Institutional Ethics Committee. Informed consent was taken from all the participants.

Method

All the patients fulfilling the inclusion and exclusion criteria were invited to participate in the study. Only those providing informed consent were enrolled in the study.

All the patients underwent Urine (routine/microscopic) evaluation was carried out and urinary Albumin, Creatinine assessment was done to calculate Albumin/Creatinine ratio (ACR).

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SN	Parameters	Group I (n=13)	Group II (n=87)	Statistical significance
1.	Urine Albumin WNL Traces + ++	 4 (30.8%) 0 (0%) 5 (38.5%) 4 (30.8%)	 69 (79.3%) 5 (5.7%) 12 (13.8%) 1 (1.1%)	χ^2=28.29; p<0.001
2.	Mean urinary ACR±SD	73.83±31.65	31.44±14.41	't'=8.166; p<0.001

Table-1: Comparison of urine investigation findings between two groups

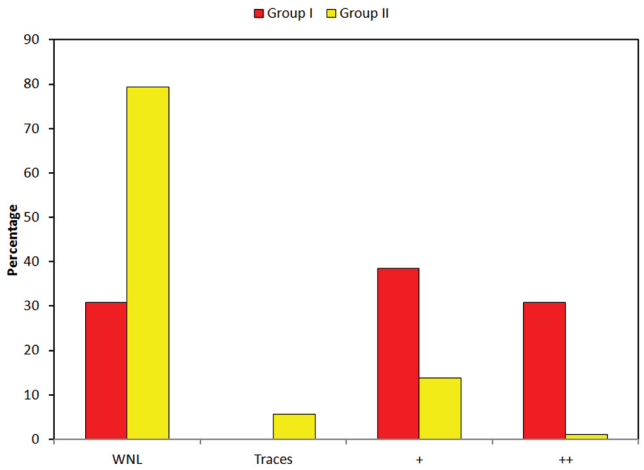

Figure-1: Comparison of Urinary Albumin Status between two groups

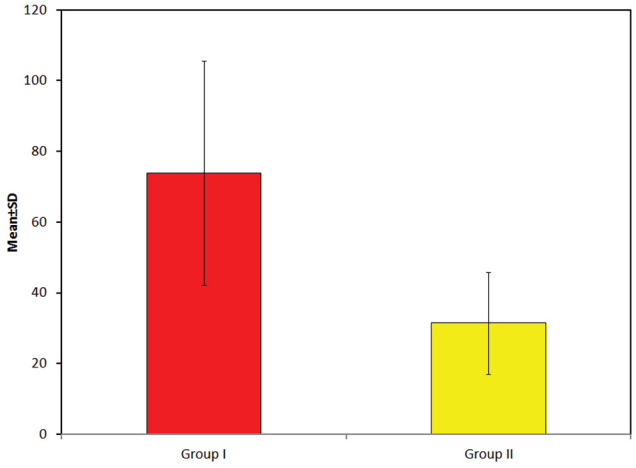

Figure-2: Comparison of Urinary ACR between two groups

Patient selection

Inclusion Criteria

1. Patients with RA in the clinical immunology clinic (CSSH, Meerut) Duration of the disease for all subjects was longer than 3 years.

Exclusion Criteria

1. Co-existing chronic disease itself capable of inducing amyloidosis e.g., tuberculosis, bronchiectasis, chronic pyelonephritis, glomerulonephritis, leprosy and diabetes.

STATISTICAL ANALYSIS

Data was analyzed using Statistical Package for Social Sciences (SPSS) version 21.0. Chi-square test and Independent samples 't' test was used to compare the data. A 'p' value less than 0.05 indicated a statistically significant association.

RESULT

The patients were divided in two groups Group I (n=13) positive for amyloid and Group II (n=87) negative for amyloid.

Proportion of those with urinary albumin levels in + and ++ category was significantly higher in Group I (69.2%) as compared to that in Group II (14.9%) (p<0.001) (figure-2).

Mean urinary ACR was significantly higher in Group I (73.83±31.64) as compared to that in Group II (31.44±14.41) (p<0.001).

DISCUSSION

Patients with subclinical amyloidosis had significantly higher urinary albumin and ACR ratios as compared to those without it, thus indicating a renal impairment. Similar to findings of present study, Gomez-Casanovas et al.[11] found renal insufficiency and proteinuria to be significantly higher in amyloidosis cases as compared to non-amyloidosis cases. Wakhlu et al.[12] found proteinuria to be significantly higher in amyloidosis as compared to non-amyloidosis cases. Ghosh et al.[13] in their study reported high prevalence of raised ESR and microalbuminuria in patients with amyloidosis but did not report its significance in statistical terms. Alishiri et al.[14] also found proteinuria to be significantly associated with increased risk of amyloidosis. Kobayashi et al.[15] in their study reported proteinuria to be significantly associated with amyloidosis. Wiland et al.[16] who evaluated the role of haemoglobin, ESR, platelet count, CRP, Rheumatoid factor, proteinuria, serum creatinine, serum uric acid and culture positivity also found on proteinuria to be significantly associated with increased risk of amyloidosis. Younes et al.[17] also evaluated the role of rheumatoid factor, proteinuria, hemoglobin and creatinine but found only proteinuria to be significantly associated with amyloidosis. The findings in general agree that proteinuria or increased urinary albumin levels were significantly associated with increased risk of amyloidosis as observed in present study.The findings of present study and its evaluation in the light of existing literature on the occurrence of subclinical amyloidosis among rheumatoid arthritis patients show that it is a widespread problem and given its association with a poor outcome, it has not been studied as extensively as it should have been. The literature is generally scarce and limited, marred by small case series. In view of some contradictory findings in two studies, there are limited subsequent studies to address the problem. Hence, there is enormous need to

study the problem extensively. Further studies on a larger sample size, most appropriately in a multicentric setup with a standardized design are recommended to study the problem in detail.

CONCLUSION

The study concludes that presence of microalbuminuria indicates severe disease activity and longstanding rheumatoid arthritis. Also microalbuminuria is a sensitive indicator of increased renal vascular permeability in Rheumatoid Arthritis patients. Thus immunological methods for detecting microalbuminuria should routinely be used in all rheumatoid arthritis patients to detect renal involvement in its initial phase in order to devise the most appropriate treatment.

Patients with subclinical amyloidosis had significantly higher urinary albumin and ACR ratios as compared to those without it.

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