Renal Amyloidosis Secondary to Pulmonary Tuberculosis in India: Changing Pattern and Need for Awareness

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Renal amyloidosis continues to be a major cause of morbidity and mortality among patients having systemic amyloidosis. There are only few epidemiological studies that have addressed renal involvement in amyloidosis in our country. Infections and particularly tuberculosis, still continue to be dominant etiology for renal amyloidosis, however, noninfective inflammatory conditions are also immerging as underlying cause for renal amyloidosis from few centers over the years.

Secondary renal amyloidosis is a well-known sequelae of chronic pulmonary tuberculosis, but a much less recognized clinical entity. Patients with advanced pulmonary tuberculosis are usually malnourished, emaciated, or anemic due to various factors. When investigated for the cause of hypoproteinemia and pedal edema, many tuberculosis patients that were initially thought to be having anemia and malnutrition, were subsequently proved to be having secondary renal amyloidosis in one study. In contrast to western literature, the patient’s age at the onset of clinical symptoms of secondary renal amyloidosis is early in Indian population and now increasingly observed among females in recent years.

The interval between the onset of predisposing disease and the first evidence of secondary renal amyloidosis varied from 1 to 30 years with a mean of 6.92 years. This was more than 5 years in 67% of patients in one study. However, this interval varies widely and may be as short as 6 months or as long as 43 years. Although the average interval between tuberculosis and the subsequent diagnosis of amyloidosis has been reported to be as long as 21–22 years and a mean interval of 12 years has been reported in secondary amyloidosis due to various chronic inflammatory diseases. It is also surprising to note that mean duration between pulmonary tuberculosis and the onset of clinical features of secondary amyloidosis is also less in our settings compared to western studies.

Secondary renal amyloidosis is not only seen in active tuberculosis but also in healed/inactive cases and pedal edema, hypoproteinemia, and proteinuria are the most consistent observation in these patients. Most of these patients have moderate to far advanced tuberculosis on chest X-ray and almost all patients have ultrasonographic evidence of bilateral medical renal disease with altered corticomedullary differentiation or bright cortex or enlarged kidneys. Renal functions are often deranged in these patients. Subnephrotic proteinuria and renal insufficiency are more frequently observed in recent years compared to past. Renal biopsy is generally a safe procedure when performed under ultrasound guidance and devoid of major complications.

"Dixit triad," a triad of pedal edema, proteinuria, and abnormal kidneys on ultrasound has been consistently used at several centers for suspecting renal amyloidosis in tuberculosis patients. This is sound enough to presume and plan workup for secondary renal amyloidosis in patients with pulmonary tuberculosis or other diseases. Although after effective chemotherapy regimen, pulmonary tuberculosis is not considered a significant cause of secondary renal amyloidosis in western countries, the same is not true in our setup. In the setting of
HIV coinfection and day-by-day increasing drug-resistant tuberculosis, the duration of active tuberculosis disease process is likely to increase with an additional expected increase in incidence of secondary renal amyloidosis in such patients.

A collective effort between clinicians, pathologists, and researchers can accelerate early diagnosis of renal amyloidosis by studies at protein and gene levels to address prediction models and treatment strategies in newer mode. This will not only enable early diagnosis of renal amyloidosis but also benefit those having end-stage renal disease with unknown etiology.

**References**