



A STUDY OF CLINICAL PROFILE OF TUBERCULOSIS IN PRE AND POST RENAL TRANSPLANT PATIENTS

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ABSTRACT

Tuberculosis is one of the most common bacterial infections in developing countries. Uremia is an acquired immunodeficiency state with functional abnormalities of neutrophils and T and B lymphocytes, monocytes and natural killer cells. Risk of infection in post renal transplant recipients is primarily determined by immunosuppression and immune status. We compared the demographic characteristics, clinical and laboratory variables between pre renal transplant (chronic kidney disease and dialysis patients) and post renal transplant patients. Total of 47 patients were included in the study. Out of 47 patients, 21 patients were CKD without dialysis and 12 patients were on dialysis and 14 patients were post renal transplant recipients. Pulmonary TB was seen in 43%(20) patients. Pleural TB was seen in 24%(11). X ray features of consolidation was found in 45%(9/20) and cavitation presents in 15%(3/20) of patients. Lower lobe involvement is present in 20% (4/20) of patients. Sputum AFB positivity was seen in 26% (6/20) of patients with pulmonary involvement. Past history of TB was present in (6/47)12% of patients. In CKD patients without dialysis, 38%(8) are CKD stage3 and 38%(8) are CKD stage 4 and 24% (5) patients are CKD stage 5 without dialysis. In post-transplant recipients 50 %(7) had pulmonary TB. 22%(3) patients had pleural TB.

KEYWORDS :

Introduction:

Tuberculosis is one of the most common bacterial infections in developing countries. Susceptibility to tuberculosis has been attributed to host resistance, socioeconomic and environmental factors. Uremia is an acquired immunodeficiency state with functional abnormalities of neutrophils and T and B lymphocytes, monocytes and natural killer cells. IL-2 production by activated T helper cells are decreased and also defective antigen presentation by monocytes are documented in patients on hemodialysis. Risk of infection in post renal transplant recipients is primarily determined by immunosuppression and immune status. We compared the demographic characteristics, clinical and laboratory variables between pre renal transplant (chronic kidney disease and dialysis patients) and post renal transplant patients.

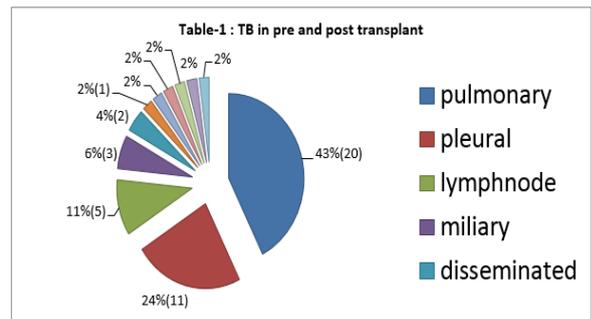
Materials and methods:

We conducted a retrospective and prospective study for 4 years on those who attended the nephrology outpatient clinic and in-patients in Madurai government Rajaji hospital.

CKD patients with or without dialysis and post renal transplant recipients diagnosed of tuberculosis infection either by microbiology or histopathology or radiological suspicion and started on anti-tuberculosis drugs were included in our study. Patient's demographic profile and past history of tuberculosis and contact history was also studied. Diagnostic evaluation included acid fast bacilli staining by Ziel Niehlsion staining of sputum , x ray chest, mantoux test , PCR test as whenever required . Other specific investigations included culture of sputum and urine and pleural and ascitic fluid analysis and biopsy of lymph node were done. In post renal transplant situation, history of rejection treatment and CMV infection and immunosuppressive protocol and other associated infection and NODAT are also studied. We compare the presentation of tuberculosis in pre and post renal transplant status.

Results:

Total of 47 patients were included in the study. Out of 47 patients, 21 patients were CKD without dialysis and 12 patients were on dialysis and 14 patients were post renal transplant recipients. Pulmonary TB was seen in 43%(20) patients. Pleural TB was seen in 24%(11). X ray features of consolidation was found in 45%(9/20) and cavitation presents in 15%(3/20) of patients. Lower lobe involvement is present in 20% (4/20) of patients. Sputum AFB positivity was seen in 26% (6/20) of patients with pulmonary involvement. Past history of TB was present in (6/47)12% of patients. Contact with TB (1/47) was seen in only 1 patient. Diabetes is present in 23%(11/47) of patients. ADA level is helpful to diagnose TB in some patients. ATT induced jaundice occurred in 12%(6/47) of patients. Peripheral neuropathy exacerbation was seen in 4%(2/47) of patients. TB related mortality in 8%(4/47) of patients.



In CKD patients without dialysis, 38%(8) are CKD stage3 and 38%(8) are CKD stage 4 and 24% (5) patients are CKD stage 5 without dialysis. In CKD patients without dialysis, Fever was present in 38% and cough present in 43% of patients. Out of 12 patients on dialysis, 43%(5) patients have pulmonary TB and 25%(3) have pleural TB and bone and lymph node and peritoneal TB present in 8% of patients. 83% have TB within 6 months of starting dialysis and 17% had TB more than 6 months after starting of dialysis. Diabetes and low BMI

and hypoalbuminemia are risk factors for developing TB in dialysis population.

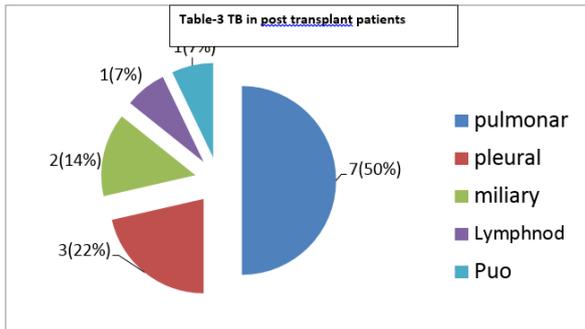
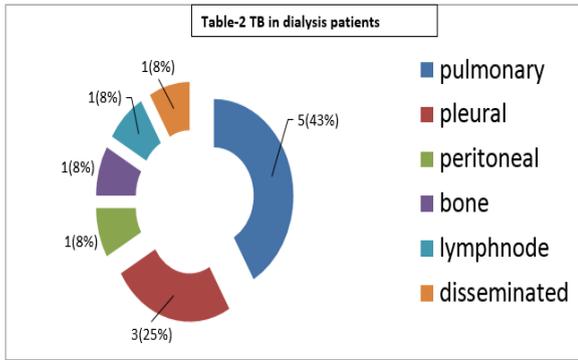


Table 4

	Pre RT	Post RT
Pulmonary	39%	50%
Extrapulmonary	61%	50%
Sputum positivity	28% of pulmonary	42% of pulmonary
Treatment duration	6-12months	18 mnths - 2 years
Regimen	Rifampicin based	Non rifampicin based

In post transplant recipients 50 % (7) had pulmonary TB. 22% (3) patients had pleural TB. One patient presented as PUO. 14% (2) had miliary TB. Mean time interval between renal transplantation and detection of TB is 13 months. Fever was present in 85% of patient and loss of appetite present in 70% of patients in post renal transplant recipients. NODAT was present in 35% (5) and CMV present in 14% (2) and HCV positivity in 7% of patients.

Discussion:

There is an increased incidence of tuberculosis in patients with end stage renal disease as compared to general population. All available studies are retrospective and the incidence of tuberculosis in such patients varied from 1 to 13.3 percent. (1-2). It has been estimated that patients undergoing dialysis have ten to twelve fold higher risk of developing tuberculosis compared to general population. The incidence of tuberculosis in Indian patients receiving maintenance hemodialysis is 3.7 to 13.3 percent. (3,4).

In our study, total of 47 patients were studied. Compared to the previous studies, (1) our study also showed that males are more commonly affected than females. Majority of patients develop TB prior to initiation or within short period of beginning of dialysis (2). Approximately 4/5 th patients develop within 6 months of starting dialysis. Malhotra et al (4) reported that 15% present as pyrexia of unknown origin. Our study 43% had fever.

In majority of the studies, incidence of pulmonary tuberculosis ranged between 40 to 92% (3, 4, 5). Malhotra et al (4) have reported that pleural effusion occurred more frequently than pulmonary parenchymal lesions. In our study 38% had pulmonary TB. In dialysis population 43% had pulmonary TB. Lymph node has been found to

be most common extra pulmonary site of TB in patients on hemodialysis. Lymph node tuberculosis has been found in 15 to 30% patients. In our study in CKD patients without dialysis 14% and patients on dialysis 8% have lymph node tuberculosis. Disseminated /military TB ranged between 10 to 15%. In Our study CKD patients without dialysis have 5% and in dialysis patients 8% have disseminated/military TB.

Treatment of tuberculosis with renal dose modification of pyrizanamide and ethambutol and normal dose of INH and Rifampicin with pyridoxine 40 mg is followed.

Tuberculosis can be encountered in renal transplant patients in two setting. Firstly, a patient with renal failure suffering from TB in the pre-transplant phase may continue to suffer from tuberculosis in the post transplant phase as well. On the other hand, patients may develop tuberculosis following renal transplantation. Patients develop TB following renal transplantation are usually younger. Males are often affected (6-8). In our study also males are commoner than female this is because of the fact that males are undergo renal transplantation more often in a country like India. In our study no patients received INH prophylaxis.

About 45-60% of TB occurred in the first year after transplantation. A global review on TB estimated the median time for onset at nine months post transplantation (9). John et al have shown median onset to be 26 months for those who received azathioprine + prednisolone and 11 months who received cyclosporine and other immunosuppressant. (10). In our study mean time interval between renal transplantation and detection of TB – 13 months. Several risk factors contribute to higher rate of TB infection in post transplant cases, such as use of cyclosporine, hepatitis infection, diabetes mellitus, chronic liver disease, fungal infection, cytomegalovirus, pneumocystis carini, nocardia infection and SLE (11-12).

In post renal transplant, we use four drug regimen –INH, Ethambutol, Pyrizanamide and Ofloxacin for 3 months and for next 6 months – INH, Ethambutol and Ofloxacin. For the next 9 months we are using INH, Ethambutol. INH and ethambutol is adjusted for renal dysfunction. We avoid rifampicin due to cytochrome P450 induction which is responsible for the metabolism of cyclosporine, tacrolimus and prednisolone. It leads to acute rejection 30% and graft loss 20% (9). The dose of calcineurin inhibitors may have to be increased to 2 to 5 fold (13).

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