Tuberculosis in Patients on Maintenance Haemodialysis: Experience at East Medical Ward, Mayo Hospital, Lahore

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This study was performed at Haemodialysis Unit of East Medical Ward, Mayo Hospital Lahore, in order to evaluate prevalence, clinical pattern and outcome of tuberculosis in patients who underwent maintenance haemodialysis from August 1997 to July 2001. In our Center, 8 patients out of a total number of 502 patients developed tuberculosis, giving a prevalence of 1.6%. 5 of these 8 patients (62.5%) had extra-pulmonary tuberculosis
Key words: Tuberculosis, Prevalence, Haemodialysis

Tuberculosis is one of the major diseases that afflicts the mankind and is responsible for 3 million deaths worldwide, each year[1].

Patients suffering from chronic renal failure have higher incidence of tuberculosis as compared to the general population[2]. There is increase in both pulmonary and extra-pulmonary tuberculosis in patients on chronic haemodialysis[3]. As haemodialysis is not associated with improvement in the cell mediated immunity, so patients with chronic renal failure on maintenance haemodialysis remain more prone to tuberculosis[4]. Patients on regular dialysis frequently have symptoms of fever, weight loss and malaise that can mask or mimic symptoms of tuberculosis. Skin testing with tuberculin is frequently negative. These factors lead to increase in difficulty, in diagnosing tuberculosis, in patients on haemodialysis and a postmortem diagnosis is not infrequent[5].

The purpose of this study was to evaluate prevalence, clinical pattern and outcome of tuberculosis in patients on maintenance haemodialysis at Haemodialysis Unit of East Medical Ward, Mayo Hospital, Lahore.

Material and methods

This retrospective study envisaged the medical records of patients, who underwent maintenance haemodialysis at east medical ward from August 1997 to July 2001. During this period, a total number of 502 patients (344 males and 158 females) received maintenance haemodialysis. Their ages ranged from 18 to 60 years. Medical record of 8 patients, who were diagnosed to be suffering from tuberculosis was further scrutinized to assess their clinical presentation, duration on haemodialysis before diagnosis, site of involvement and the method of diagnosis.

Specific investigations, which were carried out in these patients, included radiological studies, Z N staining and culture of sputum, urine, pleural, pericardial and ascitic fluid for mycobacterium tuberculosis and biopsies of lymph nodes, peritoneum as well as pleura.

Results

Out of 502 patients, who underwent maintenance haemodialysis, 8 patients (1.6%) developed tuberculosis. Table 1 shows basic clinical parameters of these patients.

Table 1.Basic characteristics of patients with tuberculosis

Age (year)	Sex	Cause of CRF	Haemodialysis duration (months)
43	female	Hypertension	6
54	male	Diabetes	10
31	male	Glomerulonephritis	3
22	Female	Hypertension	4
52	Male	Hypertension	8
38	Male	Polycystic kidneys	36
18	Female	Transplant rejection	24
60	Male	Diabetes	12

As can be seen from this table, there is male preponderance in patients who developed tuberculosis 5/8 (62%). The duration on maintenance haemodialysis before the diagnosis of tuberculosis varied from 3 to 36 months
Table-2 shows clinical presentation and specific investigations undertaken to diagnose tuberculosis.
It can be seen from table II that majority of patients 62.5% developed extra-pulmonary tuberculosis. An unequivocal diagnosis was established in all cases (by culture in 3 cases and histologically in 5 cases).

All patients were treated with four drug combination of Rifampicin, INH, Ethambutol, Pyrazinamide. All patients received pyridoxine 50 mg, in order to prevent development of peripheral neuropathy. Anti-tuberculous drugs were given in a single dose and on the day of dialysis the drugs were given at the end of dialysis session. Patients were treated for one year. All patients tolerated the treatment well and no major side effect of the treatment was noted.

Four out of 8 patients survived for more than two years, while 4 patients died (50% mortality rate). However none of these patients died due to direct consequence of

tuberculosis or its treatment.

Table 2 Clinical presentation and specific investigations to diagnose tuberculosis

PPD Test	X-Ray Chest	Clinical features	Culture/ sputum for AFB	Histology
Positive	Lung infiltrates	Haemoptysis	Positive	Negative
Negative	Pleural effusion	Cough & dyspnoea	Negative	Positive
Negative	Normal	Lymph-adenopathy	Negative	Positive
Positive	Cardiomegaly	Pericardial effusion	Positive	Negative
Positive	Pleural effusion	Pericardial effusion & Pleural effusion	Negative	Positive
Negative	Normal	Ascites	Negative	Positive
Negative	Normal	Lymph-adenopathy	Negative	Positive
Negative	Lung infiltrates	Haemoptysis	Positive	Negative

Discussion

Whereas some reports have shown no increase in incidence of tuberculosis in patients undergoing haemodialysis[6] the result of our study is consistent with the study done by Lundin A P.et.al. that has shown an increase in incidence of tuberculosis in patients undergoing haemodialysis[7].

During the period of our study 1.6% (8/502) patients developed tuberculosis. This figure is higher than the 0.17% incidence of tuberculosis in general population in developing countries[8]. Our finding of preponderance of extrapulmonary tuberculosis is consistent with similar finding by Nabil A. et al[9].

None of our patients were receiving steroids or cytotoxic drugs and only two patients had associated diabetes.

There exists a difference of opinion regarding the dosage, duration and selection of anti-tuberculous drugs in *patients with chronic renal failure* undergoing haemodialysis. Combination of Rifampicin & INH is considered safe and all of our patients received these drugs. Rifampicin dosage needs no alteration in patients on haemodialysis[10]. Though the acetylator status of patient can affect half-life of INH, still some studies have shown good tolerance of INH by patients with slow acetylator status. [10] We have used the standard dose of 5 mg/kg in our patients and on the day of dialysis the drug was administered after dialysis. Pyrazinamide was given in a dosage of 40mg/kg thrice weekly, 24 hours prior to dialysis. We gave Ethambutol in a dose of 15 mg/kg three times per week, after each dialysis. Colour vision and visual acuity was monitored before and during treatment with Ethambutol. Although 4 of our patients died, none of them died because of tuberculosis or its treatment related side-effects.

Conclusion

The results of our study support the previously held view of other studies showing increase incidence of tuberculosis *in chronic renal failure patients on haemodialysis.* The results of our study suggest that despite of impaired immunity and drug elimination, tuberculosis patients on haemodialysis can be safely managed with anti-tuberculosis chemotherapy.

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