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# ANTI-TUBERCULOUS THERAPY INDUCED LIVER INJURY IN PULMONARY TUBERCULOSIS PATIENTS.

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**Abstract:**

***Objective:*** *To assess the frequency of ATT induced hepatitis in pulmonary TB patients taking treatment.*

***Materials and methods:*** *This study follows cross sectional study design and was conducted at pulmonology department Mayo Hospital, Lahore. The study duration was from January to July 2018. Total 95 patients were enrolled and assessment of ATT induced hepatitis was made by recording data on a pre-designed Performa.*

***Results:*** *37±14 years was mean age of patients. 53.7% were male and 46.3% were females. 36.8% patients suffered ATT induced hepatitis. 35.8% had raised AST. 35.8% had ALT raised while bilirubin level was higher in 36.8% patients.* ***Conclusion:*** *Frequency of patients suffering ATT induced hepatitis is found to be quite higher in this study. A significant number of patient suffered liver enzymes derangements as a result of anti-tuberculosis therapy.*

**Key Words:** *Hepatitis, anti-tuberculosis, pulmonary tuberculosis, frequency.*

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## INTRODUCTION:

Tuberculosis has caused a significant disease burden on our society. It is caused by mycobacterium, acid fast bacilli. The newer cases of tuberculosis are treated by combination of fur drugs, ethambutol, pyrazinamide, isoniazid and rifampicin. The most commonly seen side effect is hepatotoxicity which either is induced directly, or through toxins affecting the vasculature, parenchyma of liver. The hypersensitivity reaction may also occur which is not affected by ATT dose. AST, ALT are raised [1].

The serum drug level responsible to induce hepatotoxicity was studied by comparing hepatotoxic and non-hepatotoxic patients using ATT. The serum drug level was measured 2 hours after taking ATT. 8.7% population showed antituberculousis- drug induced hepatotoxicity (ATT-DIH) [2].

## MATERIALS AND METHODS:

This cross sectional study was conducted at Mayo Hospital, department of pulmonology during 6 months. All enrolled participants were explained well about purpose of study and informed written consent was taken from all. The enrolled patients were newly diagnosed for tuberculosis and had normal liver function tests at the time of enrollment. Patients were followed up and were looked for treatment compliance and hepatitis as its side effect.

Patient data was recorded on a predesigned proforma, approved by hospital research board. No ethical issue certification was obtained from research ethical committee. Patients between 16 to 65 years were enrolled. Those who were alcohol abusers, were on other hepatotoxic drugs, on higher dose of ATT, abnormal LFTs were excluded from study.

At the time of enrollment LFTs including AST, ALT, bilirubin was performed patients were advised follow up every month and LFTs were repeated monthly. Those who developed jaundice, anorexia, abdominal pain, were followed up frequently and confirmatory tests were performed from hospital laboratory in order to reduce risk of error.

The collected data was analysed using SPSS version 17. Mean and standard deviation was calculated for quantitative data and for qualitative data frequencies and percentages were calculated.

## RESULTS:

There were total 95 patients in study. Patients from both outdoor department and ward admitted were enrolled. Patients were followed up monthly for the period of six months. 37±14 years was mean age of patients. 53.7% were male and 46.3% were females. 36.8% patients suffered ATT induced hepatitis. 35.8% had raised AST. 35.8% had Alt raised while bilirubin level was higher in 36.8% patients.

| Liver function tests | Normal | Deranged |
|---|---|---|
| **AST** | 61(64.2%) | 34(35.8%) |
| **ALT** | 61(64.2%) | 34(35.8%) |
| **Bilirubin** | 60(63.2%) | 35(36.8%) |

Table 1: liver function tests.

## DISCUSSION:

ATT-DIH caused by first line ATT drugs involves variable percentage of population in different communities. In a retrospective study conducted at UK 6.9% study population who was on ATT and was diagnosed as cases of pulmonary tuberculosis suffered DIH. The patients were further categorized on the basis of severity of liver damage. The majority of population 87% suffered milder liver damage while 11% population had severe ATT-DIH [4].
The patients who once suffered ATT-DIH were looked for DIH recurrence. It was observed that the recurrence of DIH was very rare so all four first line drugs can be restarted at full dosage in order to avoid disease transmission or multidrug resistant TB [5].

Patients already taking hepatotoxic drugs or HIV or viral hepatitis, CMV before starting ATT were studied and compared to those with previously normal hepatic functions. The effect of ATT in both groups was not statistically significant [6].

Recent advances in treating and detecting ATT-DIH individuals are liver function tests, in vitro and in silica tools for assessing hepatic injury, novel biomarkers like microRNA-122, APAP, HMGB1, keratin-18 [7].

ATT-DIH is commonly observed side effect which leads to incompliance to drugs and increased drug resistance and disease recurrence [8]. The exact level of drug responsible for DIH has not been known yet, neither is the specific duration of treatment notified which leads to DIH. Different studies have been conducted so far, each study gives variable percentages of population affecting from this side effect. The factors responsible for DIH in some patients and no DIH in other patients must be looked for and studied in detail. The drug and patient related factors must be given attention to be studied and

analysed.

## CONCLUSION:

Frequency of patients suffering ATT induced hepatitis is found to be quite higher in this study. A significant number of patient suffered liver enzymes derangements as a result of anti-tuberculosis therapy.

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