

SERO-PREVALENCE OF HBV AND HCV IN TUBERCULOUS PATIENTS AT SHEIKH ZAYED HOSPITAL RAHIM YAR KHAN, PAKISTAN

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ABSTRACT

Introduction: Infections due Hepatitis B and C with co-infection tuberculosis are important health issues all over the world. In TB patients, viral hepatitis infection increases risk of drug related hepatotoxicity up to three to five times more than TB patients which do not have viral infection. The study was designed to determine the frequency of Hepatitis B and C among the tuberculous patients admitted at Sheikh Zayed Hospital, Rahim Yar Khan.

Methodology: This is descriptive and cross sectional study which was conducted at Sheikh Zayed Hospital Rahim Yar Khan from September 2011 to April 2012. Blood samples were collected from TB patients aseptically from Pulmonology Department Sheikh Zayed Hospital Rahim Yar Khan. HBsAg and anti HCV antibodies were detected using ICT and ELISA techniques according to SOP of the kit manual.

Results: Among the 110 TB positive patients, 5.5% were positive for HBsAg and 9.1% were positive for anti HCV antibodies using ELISA technique. Whereas, 5.5% HBsAg and 10% anti HCV antibodies were positive using ICT. The transmission of HBV and HCV was expected to have occurred were mostly found in barber shop and during ear nose piercing (30%), blood transfusion (20%), visit to quack (10%) as indicated from the history. Detection rate of HCV using ELISA is greater than ICT method. Male to female ratio 1:1 and age mean was 42 with standard deviation 18.2.

Conclusion: We found a relatively increased frequency of HBV and HCV among TB patient. Therefore TB patients should also be screened for HBV and HCV for better management of the conditions.

Key Words: TB, HBV, HCV.

INTRODUCTION

Infections due to viral hepatitis B and C are substantial health problem.¹ Hepatitis B and C viruses are causing serious liver problems throughout the world particularly in developing countries like Pakistan and are responsible for increase rate of morbidity and mortality.^{2,3} HBV are causing infections over 2 billion people and HCV responsible for above 200 million people every year globally.⁴⁻⁶ Pakistan has the second highest prevalence rate of HCV ranging from 4.5% to 8%.⁷ Infection of HBV and HCV is a communal cause of chronic liver disease and is habitually encountered in populations at risk for tuberculosis (TB) infection.⁸ Tuberculosis (TB) is an infection of respiratory tract and causative agent of this is *Mycobacterium tuberculosis*.⁹ Tuberculosis had always been prevalent in third world countries like Pakistan and eighth most heavily burdened country in the world.^{10,11} Chronic liver disease raises a risk of hepatotoxicity during anti-tuberculosis treatment,¹² up to three to five times more than TB patients who do not have viral infection.¹³ Similarly, fourteen fold increase in the risk of anti-TB hepatotoxicity has been reported in HIV and HCV co-infected pati-

ents.¹⁴ With this background of knowledge, the aim of our study was to screen the TB patients for HBsAg and anti-HCV antibodies and advise sero-positive patients to adopt prophylactic measures to preclude from hepatotoxicity.

METHODOLOGY

Study Design and Period

Descriptive and cross sectional study aimed to estimate the prevalence of HBV and HCV in tuberculosis patients between September 2011 to April 2012.

Samples Size

Blood samples of 110 clinical diagnosed TB patients were collected from Pulmonology Department of Sheikh Zayed Medical College / Hospital Rahim Yar Khan.

Determination of HBsAg and Anti-HCV Antibodies by Immuno-chromatography Technique (ICT)

HBsAg and Anti-HCV antibodies in the serum were determine by commercially available ICT kit from

Acon's Laboratories (USA) and test was performed according to the instructions of manufacturer.

Determination of HBsAg and Anti-HCV Antibodies by ELISA

HBsAg and Anti-HCV antibodies were reconfirmed by ELISA technique using quantitative immunoassay kit from Bio-Tech Co., Ltd (USA). Reading of the results was taken by Thermo Scientific Multiskan ® EX ELISA (USA) instrument. Necessary ethical permission was attained from the hospital committee.

Statistical Analysis

The data was entered and analyzed using statistical package for social sciences 16 (SPSS – 16) mean ± SD was given for quantitative variables. Frequencies percentages and graphs were given for qualitative variables.

RESULTS

One hundred and ten (n = 110) tuberculosis positive patients were including in this study comprised of 65 (59.1%) males, 45 (40.9%) females, with mean age 42.0 and standard deviation 18.2. Using Immunochromatography technique, 6 (5.5%) HBsAg positive and 11 (10.0%) Anti-HCV antibodies were determined in tuberculous patients (Table 1). Using ELISA technique, 6 (5.5%) HBsAg and 10 (9.1%) Anti-HCV antibodies positive were detected in tuberculosis positive individuals (Table 2). Total prevalence rate for both HBV and HCV was 14.6% by ELISA technique in tuberculosis positive patients. Hepatitis B positive individuals had history of blood transfusion, others (16.7%), contacted at barber's shop (33.4%) with no history of dental surgery and injecting drug user. In case of HCV positive patients there was a had history of dental surgery (10%), blood transfusion (20%) and ear / nose piercing (30%) with no history of injecting drug (Table 3).

Table 1: ICT result status of study population (n = 110).

HBsAg	Anti HCV Antibodies	ICT Results
6 (5.5%)	11 (10%)	Positive
104 (94.5%)	99 (90%)	Negative

Table 2: ELISA result status of study population (n = 110).

HBsAg	Anti HCV Antibodies	ELISA Results
6 (5.5%)	10 (9.1%)	Positive
104 (94.5%)	100 (90.9%)	Negative

Table 3: Positive history of risk factors among TB patients infected with HBV (n = 6) and HCV (n = 10).

Risk Factors	HBV (%)	HCV (%)
Shaving and Razor at Barbers shops	33.4	20.0
Blood Transfusion	16.7	20.0
Ear Nose Piercing	16.7	30.0
Surgery	16.7	0.0
Visit to Quack	16.7	10.0
Dental Surgery	0.0	10.0
Injecting Drug Users	0.0	0.0
Others	0.0	10.0

DISCUSSION

Viral hepatitis is a serious global health problem. Prevalence rates in developing and underdeveloped countries are much higher as compared to developed countries.¹⁵ Hepatotoxicity of B and C viruses spread rapidly in general population particularly in TB patients. In them, viral hepatitis infection increases risk of drug related hepatitis up to three to five times more than TB patients who do not have viral infection.¹³

In the present study frequency of HBV was 5.5% and HCV was 9.1% using ELISA technique in TB patient. Prevalence rate of HBV and HCV among TB patients varies internationally. Almost similar results of HCV (7.5%) was documented by Reis NR *et al*,¹⁶ whereas in Thailand, a study revealed very high prevalence for HBsAg (9%) and HCV (31%).¹⁷ Another study conducted in Georgia, Richards et al found that 22% were HCV – seropositive,¹⁸ Kuniholm et al revealed (4.3%) HBsAg positives and 12% HCV positives,¹⁹ Wang et al (2011) showed HBV 11.7% and 6.7% HCV 6.7%,²⁰ Khalil et al reported HBV and HCV co-infections in TB were 8 (7.84%) and 28 (27.45%) patients respectively positive among TB patients.²¹ This variation among results may be due to the use of conventional and different techniques including ELISA, PCR, and recombinant immunoblot assay (RIBA).

In the present study, there was no difference between ICT and ELISA results for HBsAg (5.5%) whereas anti HCV antibodies were 10% positive using ICT and 9.1% positive by ELISA technique. Therefore ELISA technique is more sensitive and specific as compare to ICT. Similar results have been reported by two studies.^{22,23} Low sensitivity and specificity of ICT device may be due to cross reaction of antigen and antibody, various auto immune diseases, newly vaccinated, numerous transfusions, al-

cohol use or any other viral infections.²⁴

In this study among HBV infected individuals, 33.4% TB patients had history of shaving the use of razor at barber's shop, 16.67% of blood transfusion, ear / nose piercing, surgery, visit to quack while no history of dental surgery and injecting drug. In case of HCV infected persons, 30% TB infected individuals had history of ear / nose piercing, 20% of blood transfusion, 10% of dental surgery, while no history of injecting drug user and surgery. According to our knowledge a very limited data is available regarding co-infection of TB and hepatitis at national and international history. In a study, Kuniholm et al reported that history of blood transfusion; injection of drug and prison were significant risk factors for HBV and HCV among Georgian TB patients.¹⁹ The spread of both HBV and HCV are mainly linked by poor knowledge, socioeconomic status, use of contaminated needles and syringes by quacks, barbers and drug users in our set up.

It is **concluded** the co-infection of HBV and HCV is increasing among TB patients in our setup. Therefore, we used to do surveillance studies to overcome this problem.

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