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Full Length Research Paper

EFFECT OF ANTI TB/ HIV DRUGS ON LIVER ENZYMES AMONG SUDANESE PATIENTS WITH HIV/TB CO-INFECTION

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Abstract

Background: Hepatitis B & Hepatitis C infections are common in Sudan where TB is endemic & HIV is prevalent. Anti-tuberculosis and/or antiretroviral drugs induced liver injury (DILI) is a major challenge when managing TB and/or HIV patients.
Objective: The aim of this study was to determine the effect of anti TB/ HIV drugs on AST, ALT, GGT and albumin among Sudanese patients with HIV/TB co-infection
Methodology: This study was a case control study carried out in three HIV centers in Khartoum state-Sudan (Omuderman, Aboanga and Bshaeer) during the period from January to May 2015 in Khartoum-sudan. 54 HIV/TB co-infected patients were enrolled to participate in this study (27 of them were treated with anti TB/HIV drugs and 27 of them were still not receiving anti TB/HIV drugs .venous Blood samples were collected from each participant in a plain containers for serum preparation. All parameters to be investigated in this study were done using Cobas C 311 chemistry analyzer.
Result: A totals of 54 Sudanese HIV/TB co-infected patients were enrolled in this study 20 of them were males and 34 of them were females their age range from 13 to 60 years. The mean of serum AST, ALT, GGT and albumin among cases were 32.2, 11.4, 62.9, and 3.06 respectively and among control group they were 45.6, 11.1,163 and 2.7 respectively.
Conclusion: Anti-tuberculosis therapy as well as TB can be safely employed in HIV/ TB co infected patients related to this study . The incidence of drug induced liver disease is not well known for most antiretroviral

Keywords: HIV/TB, anti HIV/TB, AST, ALT, GGT, albumin

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INTRODUCTION

Tuberculosis (TB) and the human immunodeficiency virus (HIV) are continuous to be the major public health challenge in sudan and around the world. In the many studies showed that more than 75% of TB patients have also HIV, and possibly more than half of worldwide patients infected with HIV will also develop TB (Bowen *et al*., 2000; Msamanga and Fawzi, 1997). The optimal treatment regimens for TB/HIV co-infection are not yet clearly defined. Current treatment of mycobacterium tuberculosis in most resource limited settings is comprised of a four-drug initial anti-tuberculosis regimen for 2 months (rifampicin, isoniazid, pyrazinamide and ethambutol), followed by two-drugs continuation phase of anti-tuberculosis regimen for 4 months (rifampicin and isoniazid). For TB/HIV co-infected patients the guidelines which exist have shown many challenges (http://www.cdc.gov/nchstp/tb/tb_hiv_ drugs/toc.htm). As therapy for HIV disease becomes more available, physicians need to know how to treat these two diseases effectively while minimizing the risk of drug interactions and maintaining the shortest possible duration of treatment for TB.

Abnormalities in liver function are common and may be caused by HIV itself, hepatitis viruses ,systemic opportunistic infection, malignancies and drug induced hepatotoxicity (Kreisberg, 1995). Co-infection of TB with HIV are common and liver disease is becoming a leading cause of death in this group; as the result of anti-TB and antiretroviral drugs. In previous studies showed that the relation on anti TB and antiretroviral drugs on the live parameters change (Rohit Singla *et al*., 2010; Hadija H Semvua, 2011; Ungo *et al*., 1998). The most frequent adverse effects of antituberculosis treatment are hepatotoxicity, skin reaction ,gastrointestinal and neurological disorder. Hepatotoxicity is most serious one and is the focus of the present review (8) Antituberculosis drug-induced hepatotoxicity (ATDH) causes substantial morbidity and mortality and diminishes treatment effectiveness. Asymptomatic transaminase elevations are common during ant tuberculosis treatment, but hepatotoxicity can be fatal when not recognized early and when therapy is not interrupted in time. Adverse effects diminish treatment effectiveness, because they significantly contribute to no adherence, eventually contributing to treatment failure, relapse or the emergence of

drug-resistance (Kaona *et al*., 2004; Wares *et al.,* 2003; World Health Organization, 2004). The aim of this study was to determine the effect of anti TB/ HIV drugs on AST, ALT, GGT and albumin among Sudanese patients with co-infection of HIV and TB.

MATERIALS AND METHODS

This study was a case control study carried out in three HIV centers in Khartoum state-Sudan (Omuderman, aboanga and bshaeer) during the period from January to May 2015 in Khartoum-Sudan. 53 HIV positive patient (by ELISA and confirmed by a licensed western blot assay) co-infected with TB (by clinical diagnosis, CT scan and positive AFB smear) were enrolled in this study .Three ml of venous blood sample was collected from each patient; then serum was prepared and stored at -20 ^{o}C until analysis. Serum samples were tested for AST, ALT, GGT and albumin using Cobas C 311 (Roch, Germany) chemistry analyzer.

Statistical Analysis

The data was entered and analyzed using statistical Package for social sciences 16 (SPSS – 21)

Ethical consideration

This study was approved by faculty of medical laboratory sciences, Al Neelain University, Khartoum, Sudan, and ethical clearance was obtained from ministry of health .informed consent was obtained from each patient before sample collection.

RESULTS

A totals of 54 Sudanese HIV/TB co-infected patients were enrolled in this study 20 of them were males and 34 of them were females their age range from 13 to 60 years.

The mean of serum AST, ALT, GGT and albumin among cases were 32.2, 11.4, 62.9, and 3.06 respectively and among control group they were 45.6, 11.1,163 and 2.7 respectively and as shown in Table 1 there is insignificant decrease in the liver enzymes (AST, ALT and GGT) among cases when compared to control group (P.value >0.05). Table (1):- The demographic data in the study population

DISCUSSION

The introduction of combined antiretroviral therapy has reduced deaths and opportunistic infections by between 60% and 90% (Burman and Jones, 2001). However, the use of combined antiretroviral therapy in individuals undergoing treatment for tuberculosis may be increase the risk of toxicity, drug interactions and other adverse effects (Diniz *et al*., 2003).

But according to my study these drug can be safely to use. Isonizd, rifampicin and pyrazinamide are the principal agents successfully used for treating tuberculosis, due to their therapeutic effectiveness and the good acceptance of these drugs among patients. However, a variety of adverse effects have been reported.

Hepatic toxicity is one of the most common effects that lead to frequent interruptions of treatment. This prospective study include 54 subjects, among them 27 as case, were HIV/TB co infected with treatment antiretroviral and antitubercluosis (rifampicin/isonazid) (12 female, 15 male) and 27 as control, were will HIV/TB co infected without treatment (8 female,19 male) among the HIV/TB co infected group 55.6% were male and 44.4c were female.

Table 1. The demographic data in the study population

Descriptive data	Case N=27			Control N=27	
	Frequency	Percent		Frequency	Percent
Route of administration					
-sexual intercourse	18	66.7		22	81.5
- blood transfusion	7	25.9		4	14.8
- unknown	2	7.4		1	3.7
Drugs					
-anti TB/HIV	23	85.2	-anti TB -non-drug	9	33.3
- non-drug	3	11.1		18	66.7
- anti HIV	1	3.7			
Duration					
-Week-1year	15	55.6	- Week-1year	27	100
-2year-6year	6	22.2			
-6year-13year	6	22.2			

Table 2. The (mean±SD) of serum biochemical parameter in study population

Parameter	Case N=27	Control N=27	P.value
AST	32.2±18.3	54.6±50.7	0.2
ALT	11.5±8.79	11.11±7.54	0.87
GGT	62.8±69.9	163.98±409.5	0.21
Albumin	3.06±0.93	2.7±0.978	0.17

This study concludes that the treatment of anti TB /HIV are independent risk factors for development of liver disease and its difficult to predict what patient will develops hepatotoxicity during TB/HIV treatment. Therapy can be safely employed In HIV/TB co infected patient if base line liver functions tests are within normal limits.

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