

Lung Tuberculosis with Anti Tuberculosis Drugs Safe Aspartate Aminotransferase Enzyme and Alanin Aminotransferase Enzyme

by Elne Vieke Rambli

Submission date: 09-Dec-2021 09:06AM (UTC+0700)

Submission ID: 1725000372

File name: e_Aminotransferase_Enzyme_and_Alantin_Aminotransferase_Enzyme.pdf (152.83K)

Word count: 1291

Character count: 7079

Lung Tuberculosis with Anti-Tuberculosis Drugs Safe Aspartate Aminotransferase Enzyme and Alanin Aminotransferase Enzyme

Linda Augustien Makalew*, Dyan Rahajuni Sukandar*, Elne Vieke Rambli*,
Deasy Estefine Yulike Mambo**

*Department of Medical Laboratory Technology, Polytechnic of Health, Manado, Indonesia

**Employee at Bethesda Public Hospital, Tomohon, Nort Sulawesi, Indonesia

Corresponding Author : Linda Augustien Makalew, Polytechnic of Health, Manado, Indonesia, Address: Jl. R. W. Monginsidi Malalayang, Manado, Indonesia, Email: linda.makalew@poltekkermanado.ac.id

ABSTRACT

Patients with pulmonary tuberculosis undergo Anti Tuberculosis Medication for at least 6 (six) months, this causes disruption of liver function or metabolism of the enzymes aspartate aminotransferase and alanine aminotransferase. This study aims to prove the safety of the enzymes of aspartate aminotransferase and alanine aminotransferase in patients with pulmonary tuberculosis who consume anti-tuberculosis drugs. This research is a descriptive type by taking 30 patients with tuberculosis in Ranotana Weru community health center in Manado, who are currently undergoing anti-tuberculosis drug therapy. The results obtained by all respondents were Serum Glutamic Oxaloacetic Transaminase <37 U/L and Serum Glutamic Pyruvate Transaminase was <65 U/L. The conclusion that can be drawn is that, as long as tuberculosis patients undergo anti-tuberculosis drug therapy maintaining food intake and regular exercise activities will not experience interference with the metabolism of the enzymes aspartate aminotransferase and alanine aminotransferase. It is recommended that further studies look at liver function in patients with drug resistant tuberculosis.

Key Words: Tuberculosis Patients, Anti-Tuberculosis Drugs, Aspartate Aminotransferase Enzyme, Alanine Aminotransferase Enzyme

INTRODUCTION

AST (aspartate aminotransferase), is a liver enzyme found in liver parenchyma cells, when normal conditions are in the cell, so that if liver cells are damaged, these enzymes will come out and there are many in the blood. ALT (alanine aminotransferase), an enzyme found in liver cells. When liver cells are damaged, these enzymes will come out and flow into the bloodstream⁽¹⁾.

Patients with pulmonary tuberculosis receive TB treatment in two stages, namely the initial and advanced stages. The combination of anti tuberculosis drugs (ATD) in the early stages consists of at least 4 types of drugs namely Rifampicin, Isoniazid, Pirazinamid and Etambutol. The advanced ATD alloy consists of two types of drugs namely Rifampicin and Isoniazid⁽²⁾. Most pulmonary TB patients can complete treatment without side effects. But not infrequently it can also experience side effects, therefore monitoring the possibility of side effects is very important during treatment. One of the side effects that occur is caused by Rifampicin and Pirazinamid namely hepatotoxic effects⁽³⁾. Patients with pulmonary tuberculosis with OAT therapy will they always experience disorders of AST and ALT metabolism ?

MATERIAL AND METHODS

In this study blood samples were taken from patients with pulmonary tuberculosis at the Ranotana Weru community health center in Manado who were undergoing treatment as many as 30 people. Then the SGPT and SGOT were examined in the laboratory using the Cobas C 311 tool with the Photometric Enzymatic method automatically. SGOT normal values for men <37 U / l; Female <35 U / l. Whereas the normal SGPT values for Men <65 U / l and Women <55 U / l⁽⁴⁾.

RESULTS

From 30 respondents with pulmonary tuberculosis at Ranotana Weru community health center in Manado who have consumed OAT for at least 2 weeks, the results of SGPT and SGOT are shown in table 1:

Table 1. Distribution of respondents based on duration of treatment in Ranotana Weru Health Center in 2019

Duration of Treatment	Amount	%
1 - 3 month	17	57%
4 - 6 month	13	43%
Total	30	100%

From 30 respondents who suffer from pulmonary tuberculosis in Ranotana Weru community health center in Manado who have consumed OAT for at least 2 weeks, the results of SGPT and SGOT are shown in table 2:

Table 2. SGPT Examination Results in Lung Tuberculosis Patients in Ranotana Weru Health Center in 2019

SGPT Value	F	%
Normal < 65 U/L	30	100
Abnormal > 65 U/L	0	0
Total	30	100

DISCUSSIONS

Patients with pulmonary tuberculosis with OAT therapy are predicted to experience hepatotoxicity, which is influenced by an increase in age that affects the metabolic reaction of the liver enzyme and affects the blood flow in the liver and changes in the size or size of the liver. Evaluation of drug side effects by examination of liver function assessed by measuring the value of SGOT and SGPT which aims to determine whether the occurrence of hepatotoxicity due to the use of OAT by seeing an increase in the value of SGOT and SGPT above the normal limit. For SGPT an increase of 20-50 times the normal value indicates the presence of viral hepatotoxicity or because taking drugs is classified as severe hepatotoxicity while if there is a 10 times increase in the normal value indicates the presence of acute cirrhosis and hepatitis due to alcohol whereas if an increase in SGPT is 1-2 times classified as mild hepatotoxicity. An increase in SGOT with an increase of > 20 times the normal value indicates the presence of acute hepatitis virus and drug damage, classified as severe hepatotoxicity, whereas an increase of 5-10 times is classified as moderate hepatotoxicity and an increase of 2-5 times the normal value indicates mild hepatotoxicity. Research on increasing levels of the SGOT and SGPT enzymes more than the normal range shows that there is a possibility of experiencing acute viral hepatitis or liver necrosis due to drug or chemical toxicity⁽⁵⁾

Respondents in this study showed that 57% underwent initial OAT therapy, which greatly affected SGOT and SGPT metabolic disorders (see table 1). However, the results of this study found 100% SGPT and SGOT normal (see table 2). This is in line with the mini Sidiq T⁽⁶⁾ which writes that with balanced nutrition, liver health will be maintained properly. But still maintaining the transmission of tuberculosis by using a mask and correct cough management. Because as a person with tuberculosis, the correct cough behavior can prevent the spread of tuberculosis⁽⁷⁾.

CONCLUSIONS

Patients with pulmonary tuberculosis who undergo OAT therapy do not always experience an increase in SGPT and SGOT, this study shows that of 30 respondents both SGOT and SGPT were in a normal condition.

CONFLICT OF INTEREST

There is no conflict of interest for authors.

SOURCE OF FUNDING

This research funded by the authors themselves. No other financial support received.

ETHICAL CLEARANCE

Ethical reviewed has been done at the ethical standards of the Health Research Ethics Committee Manado Health Polytechnic.

REFERENCES

1. Chen M, Suzuki A, Borlak J, Andrade RJ, Lucena MI. Review Drug-induced liver injury : Interactions between drug properties and host factors. *J Hepatol* [Internet]. 2015;63(2):503–14. Available from: <http://dx.doi.org/10.1016/j.jhep.2015.04.016>
2. Faraine, Francis, M.D.; Michael L. Rich MDMPH. *Practicans Guide For Clinicians, Nurse, Laboratory Clinicians and Medical auxiliiriaes*. 2014.
3. Raharjo RHLWBUW. Gambaran Kadar Enzim Transaminase Pada Pasien Tuberkulosis Yang Mendapat Terapi Obat Anti Tuberkulosis Di Unit Pengobatan Penyakit Paru-Paru Provinsi Kalimantan Barat. :2–11.
4. Rahayu Anggraini; Nasronudin. Case Report ANALYSIS ON WHOLE BLOOD , SGOT , SGPT , AND TNF- a EXAMINATION IN PATIENTS WITH NON-DENGUE AND POSITIVE DENGUE FEVER (DF / DHF). 2013;4(4):46–52.
5. Lies Luthariana, Teguh H. Karjadi, Irsan Hasan CMR. Faktor Risiko Terjadinya Hepatotoksisitas Imbas Obat Antituberkulosis pada Pasien HIV/AIDS. Vol. 4. 2017.
6. Sidiq T. Nutrient Requirements of Patients with Liver Cirrhosis. 2017;4(4):10–2.
7. Linda Augustien Makalew, Kuntoro, Bambang Widjanarko Otok, Soenarnatalina M. SL. Modeling the Number of Cases of Tuberculosis Sensitive Drugs (TBSD) in East Java using Geographically Weighted Poisson Regression (GWPR). *Indian J Public Heal Res Dev* June 2019, Vol10, No 6 [Internet]. 2017;10(6):416–21. Available from: <http://www.indianjournals.com/ijor.aspx?target=ijor:ijphrd&volume=10&issue=6&article=078>

Lung Tuberculosis with Anti Tuberculosis Drugs Safe Aspartate Aminotransferase Enzyme and Alanin Aminotransferase Enzyme

ORIGINALITY REPORT

2%

SIMILARITY INDEX

0%

INTERNET SOURCES

2%

PUBLICATIONS

0%

STUDENT PAPERS

PRIMARY SOURCES

1

Suprajitno Suprajitno, Imam Sunarno, Oky Aditya Ardiansah. "PERCEPTION OF SUPERVISOR TAKING MEDICINE ABOUT THE SIDE EFFECT OF TUBERCULOSIS MEDICATION FOR PATIENTS", Jurnal Ners dan Kebidanan (Journal of Ners and Midwifery), 2018

Publication

2%

Exclude quotes On

Exclude matches < 2%

Exclude bibliography On