

Clinical effect of lamivudine in treating liver function lesion caused by hepatitis B combined with Anti-TB drugs

Yonghong Han¹, Shiyu Xia² and Jiabao Zhou^{3,4*}

¹College of Pharmacy, Jiangsu College of Nursing, Huai'an, China

²Department of Pharmacy, Huaiyin Cotton Centre Hospital, Huai'an, China

³Department of Pharmacy, Huai'an Second People's Hospital, Huai'an, China

⁴The Affiliated Huai'an Hospital of Xuzhou Medical University, Huai'an, China

Abstract: The present study is designed to conduct, the analysis on the curative effect of Lamivudine in treating liver function lesion caused by hepatitis B combined anti-TB drugs. The 4200 patients who have been treated for hepatitis B combined with pulmonary TB in 8 different hospitals from Feb 2014 to Feb 2016 were selected as research objects. They were randomly divided into control group and observation group, each containing 2100 patients. In control group, patients were applied with conventional Anti-TB therapy and liver-protecting therapy; while in observation group, patients were applied with lamivudine in addition to conventional therapies. The variations of liver functions of both groups before and after therapies were observed. After treatment, the liver function lesions of patients in observation group were significantly lower than that in control group; moreover, the drug withdrawal rates of patients in control group were significantly higher. There was statistical difference between both group, $P < 0.05$. In the process of treating patients with liver function lesions caused by hepatitis B combined with anti-TB, applying Lamivudine on the basis of conventional liver protection therapy and anti-TB therapy can effectively inhibit HBV replication, and prevent liver disease from getting worse, so as to reduce the liver function lesions in treating patients with hepatitis B combined with anti-TB and accelerate rehabilitation.

Keywords: Lamivudine, hepatitis B, anti-TB, liver function lesion.

INTRODUCTION

As a common infectious disease, hepatitis B has been widely spread in China. Moreover, the incidence of tuberculosis (TB) is also higher in China and many patients have hepatitis B and TB simultaneously. In the process of treating patients with hepatitis B with TB, applying anti-TB therapy will often cause severe abnormal liver function, leading to severely damaged liver cells. As a result, large amounts of HBV released in blood, which activated immunity induction of specific cells and thus increase liver damage degree. Currently, conventional TB therapy, recommended by WHO can achieve significant curative effect; however it increases liver damage degree in some extent. Some TB patients gradually show acute symptoms of chronic hepatitis B due to chemotherapy, and some even die for severe liver function failure (Duanmu and Cao 2012; Yu *et al.*, 2015; Chen *et al.*, 2018). Therefore, in treating patients with hepatitis B combined with TB, it is suggested to use lamivudine in addition to conventional anti-TB therapy, so as to realize a better curative effect and effective enhance rehabilitation. In this paper, 4200 patients with hepatitis B combined with pulmonary TB, who have been received and treated from Feb 2014 to Feb 2016 by 8 different hospitals. They were selected as research objects, and randomly divided into control group and observation group, each containing 2100 patients. In control group,

patients were applied with conventional anti-TB therapy and liver-protecting therapy; while in observation group, patients were applied with lamivudine in addition to conventional therapies. The variations of liver functions of both groups before and after therapies were observed and compared.

MATERIALS AND METHODS

The 4200 patients with hepatitis B combined with pulmonary TB, who have been received from Feb 2014 to Feb 2016 by 8 different hospitals, were selected as research objects. This paper has a rigorous structure, and the conclusion has been approved by relevant ethics and relevant departments. These patients were randomly divided control group and observation group, each group contained 2100 patients. The observation group contained 1620 male patients and 480 female patients, with age ranging from 24-65 years old; the control group contained 1700 male patients and 400 female patients, with age ranging from 26-68 years old. After accepting anti-TB therapy, all these patients displayed liver dysfunction in different degrees (Zeng *et al.*, 2012; Rashid *et al.*, 2017). The hepatitis B surface antigen of all patients were measured as positive and glutamic-pyruvic transaminase were increased significantly, which doubles that of normal person. All patients accepted anti-TB therapy for the first time, and no significant heart and lung diseases were shown among them. These patients were detected for liver

*Corresponding author: e-mail: dhdinghui007@163.com

diseases other than hepatitis B and it has found that they have no history of drinking alcohol or taking medicines that will cause liver dysfunction. By comparing general data of both groups of patients, there was no significant difference between two groups before treatment (Yang and Song 2015; Guo 2013; Subhani *et al.*, 2018).

Treatment method

Patients in control group were applied with anti-TB therapeutic medicine of isoniazide and rifampicin, wherein isoniazide was taken by 0.4g per day from continuous 6-9 months, while rifampicin was taken by 0.6g per day for continuous 6-9 months. For patients in observation groups, they were applied with anti-virus therapeutic medicine lamivudine on the basis of conventional therapies in control group. Lamivudine was taken before chemotherapy by 100mg per day and kept until the finish of anti-TB therapy. In the meantime, patients in observation group were applied with liver protection therapy by taking 0.15g per day when ALT began to increase during chemotherapy, and kept with this medicine until the finish of anti-TB therapy (Huang *et al.*, 2015; Ling 2014; Alvi *et al.*, 2017a).

STATISTICAL ANALYSIS

In this research, data was analyzed and processed using SPSS15.0 statistical software. Enumeration data is expressed by (n, %) and subjected to chi-square test; while measurement data is expressed by ($\bar{x}\pm s$) and tested by t. The intergroup difference was of statistical significance, $P<0.05$.

RESULTS

Comparison of liver damage degrees of both groups

Through comparing liver damage situation between both groups of patients, it has been found that the liver index level of control group of patients was significantly increased as compared with that of observation group. By comparing both groups, significant statistical difference was observed (Hui, Chen, Li, 2015; Alvi, *et al.*, 2017b).

Comparison of drug withdrawal rates of both groups

By comparing drug withdrawal rates between both groups, it can be found that 56 patients in observation group stopped drug, reaching drug withdrawal rate of 2.7%; while 421 patients in control group stopped drug, reaching drug withdrawal rate of 20.00%. The drug withdrawal rate of control group was significantly higher than that of observation group, and the difference was of statistical significance (Li, Liu, Zhou, Huang, 2011; Fu, 2013).

Comparison of HBV DNA level between two groups

After treatment, the logarithmic value of HBV DNA load decrease in observation group was (3.11 ± 0.52) and this

value in control group was (2.08 ± 0.64). There was significant difference in such value, with statistical significance.

Comparison of liver function between two groups after treatment

In control group, ALT was (95.66 ± 22.35) U/L, AST was (92.35 ± 16.73) U/L, A/G was (1.98 ± 0.32), TBL was (22.63 ± 4.35) $\mu\text{mol/L}$; In observation group: ALT was (81.35 ± 12.36) U/L, AST was (59.26 ± 13.38) U/L, A/G was (1.32 ± 0.32), TBL was (18.08 ± 2.45) $\mu\text{mol/L}$. The intergroup difference was of statistical significance.

DISCUSSION

In China, the rates of TB and hepatitis B are both large. In anti-TB treatment, isoniazid and rifampicin are adopted as main drugs. Although, this therapy can achieve certain curative effect, it also causes liver damage for some patients. For hepatitis B patients, they are more likely to suffer severe liver dysfunctions during chemotherapy. In recent years, many clinical doctors have strengthened the clinical curative effect of anti-TB drugs, especially for treating patients with hepatitis B with TB. In the process of treating TB, some toxic metabolic drugs have generated during metabolism of isoniazide, which changes the disease situation of patient in some extent; rifampicin accelerates metabolism velocity of isoniazide and convert it into acetamide, which greatly increases the damage on liver function (table 1).

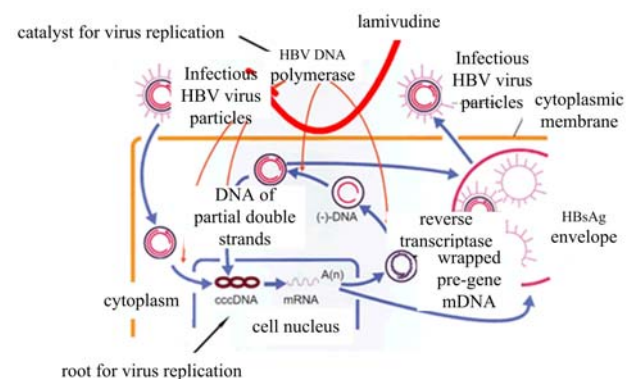


Fig. 1: Action mechanism of Lamivudine in treating hepatitis B.

In this research, patients were given with lamivudine for anti-virus therapy on the basis of anti-TB therapy. Research results showed that lamivudine can effectively inhibit the replication of HBV, as well as increase the drug resistance of liver cell against anti-TB drugs, so as to reduce the damaged degree of liver cell by anti-TB drugs. Massive replication of HBV will stimulate patient's body in some degree as well as realize immune responses, which will increase damaged degree and lesion degree of liver tissues. Therefore, application of lamivudine is

Table 1: Laboratory test report of a patient with liver damage

Code	Item	Results	Unit	Reference
TP	Total protein	68.8	g/L	55-85
ALB	Albumin	46.5	g/L	35-55
GLO	Globulin	22.3	g/L	20-38
A/G	Albumin / Globulin	2.1		1.2-2.5
TBIL	Total bilirubin	14.7	umol/L	5.1-20
DBIL	Direct bilirubin	5.9	umol/L	0-7
IDBIL	Indirect bilirubin	8.8	umol/L	2-14
ALT	glutamic-pyruvic transaminase	51	U/L	0-40
AST	glutamic oxalacetic transaminase	322	U/L	0-40
AST/ALT	AST/ALT	0.6		0.36-2
ALP	alkaline phosphatase	93	U/L	35-130 for adult 156-340 for child
GGT	glutamine transferase	20.0	U/L	0-40

suggested in treating hepatitis B combined with TB. As a anti-virus drug, lamivudine can effectively inhibit replication of HBV, so as to increase drug resistance of liver cell, and thus enhancing the treatment work and patient's rehabilitation. In addition, massive replication of HBV is an important reason which causes liver function damage. Lamivudine can significantly reduce the incident rate of chronic hepatitis B disease during anti-tuberculosis chemotherapy process for patient with hepatitis B combined with TB, so as to increase patient's tolerance against chemotherapy, reduce damage to liver cells caused by chemotherapy, making a smooth completion of chemotherapy and an effective treatment for TB (Wang *et al.*, 2011; Sarwar *et al.*, 2017).

Lamivudine is a common anti-virus drug, of which the action mechanism is shown in fig. 1. In the process of treating patient with hepatitis B combined with TB, the application of lamivudine can reduce the damaged degree of liver to the lowest degree. Therefore, in clinical practice, the usage of lamivudine should be strengthened in treating patients with hepatitis B and TB, so as to realize a necessary intervention for liver function damages caused by long-terms anti-TB therapy, and thus improve liver cell function in certain degree. In the treatment process, application of anti-virus drugs can effectively avoid liver damage caused by chemotherapeutics, consolidated therapeutic effect, increases curative effect for TB disease and enhance patient's health.

CONCLUSION

In all, both hepatitis B and TB are common infectious diseases in clinics. Hepatitis B combined with TB has become a focus for clinical treatment. In process of treating the combined disease, it is not only needed to perform anti-TB therapy, but also to conduct necessary

anti-virus therapy. Lamivudine, as a common anti-virus drug, can inhibit adverse reactions during chemotherapy process, so as to improve curative effect and health level, making more and more patients treated and recovered.

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