

Investigation and Analysis of the Current Status of Patients with Hepatitis C Combined with Tuberculosis Infection in the Hospital

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Abstract: HCV infection causes acute and chronic hepatitis. If it is not treated in time, it may even develop into liver fibrosis, cirrhosis and liver cancer. Therefore, timely antiviral treatment is very important. In addition, besides being infected with hepatitis C, patients are very likely to have other complications such as hepatitis C combined with tuberculosis. For this reason, this article needs to investigate and analyze the current situation of patients with hepatitis C combined with tuberculosis infection in the hospital. This article mainly uses the methods of investigation, experimental analysis and statistical analysis to sort out and analyze the collected materials. The survey results show that 52 % of hepatitis C patients with tuberculosis infection have undergone surgery. This shows that some hospitals still have certain problems with the handling of medical tools. In order to reduce the incidence of hepatitis C combined with tuberculosis infection, prevention work needs to be done in daily life and iatrogenic behavior.

Keywords: Hepatitis C, Tuberculosis Infection, Current Status Survey, Analysis Research

1. Introduction

With the development of society, patients have higher and higher requirements for disease treatment and medical quality, especially for liver cirrhosis infections, cardiovascular and cerebrovascular systems and other aspects. Therefore, it is necessary to take corresponding measures according to different conditions when carrying out relevant treatment in the hospital. Therefore, it is very important to analyze the patient's situation.

There are many research results on the investigation and analysis of the status of patients with hepatitis C combined with tuberculosis infection in the hospital. For example, Dong Ni tested the hepatitis C virus (HCV) infection of maintenance hemodialysis (MHD) patients, analyzed HCV susceptibility factors, and looked for measures to prevent the spread of HCV [1]. Wang Qin analyzed the drug consumption of patients with chronic hepatitis C combined with other diseases and illnesses by the Chinese urban health insurance company, and provided a basis for the choice of drugs for chronic hepatitis C combined with various diseases [2]. Chen Yongzhi studied the effectiveness and feasibility of hepatitis C clinical trial methods, and compared the test results of different methods [3]. Therefore, this article studied the situation of patients with hepatitis C combined with tuberculosis infection by means of questionnaire survey.

This article first studied the relationship between HCV genotype and disease, and described these basic common sense. Secondly, the epidemiology of hepatitis C is analyzed. Then the treatment methods of hepatitis C combined with tuberculosis are described. Finally, a questionnaire survey was conducted on patients suffering from the disease through experimental investigation, and the results were obtained.

2. Investigation and Analysis of the Current Status of Patients with Hepatitis C Combined with Tuberculosis Infection in the Hospital

2.1 The Relationship between HCV Genotype and Disease

(1) Distribution characteristics of HCV genotypes

China's HCV genotypes are mainly type 1, 2, 3 and 6, and type 1b and 2a genotypes are still relatively common in clinical patients in most areas of my country. There are reports of types 1a, 3a and 3b and multiple mixed types in some areas, and type 6 is mainly seen in special administrative regions. In recent years, the distribution of genotypes in China has gradually changed due to population mobility and an increase in the number of intravenous drug users. The prevalence of type 1b and type 2a is gradually decreasing. There are population differences in the distribution of HCV genotypes in China. Due to strict screening of blood products and an increase in the number of intravenous drug users, the infection rates of types 1b and 2a have gradually decreased, while the infection rates of types 6a and 3 have gradually increased, and HCV is spreading from high-risk groups to clinical patients [4-5].

(2) Common modes of transmission of hepatitis C virus:

Transfusion of unscreened blood or blood products. Because HCV has a window of anti-HCV in the early stage of infection, it cannot be detected immediately. The reagents for detecting HCV are unstable and a small number of people do not produce HCV antibodies [6].

Spread through damaged skin and mucous membranes, such as intravenous drug use (IDU), the infection rate is significantly higher than that of the general population. It is more serious in some marginal or underdeveloped areas such as Yunnan, Guangxi, Xinjiang, Hunan, and Hubei. Due to intravenous drug injection and polysexual behavior, the transmission of HCV accounts for a high proportion. In health care institutions, due to repeated use of medical equipment, sterilization is insufficient [7-8].

Sexual transmission and mother-to-child transmission: Unlike hepatitis B virus (HBV), these transmission methods of HCV are less common. In sexual transmission, the infection rate is usually relatively high in the following situations, such as having sex with an HCV-infected person, having multiple sexual partners, homosexuality, not using condoms, etc [9-10].

2.2 Hepatitis C Combined with Tuberculosis

HCV infection causes chronic hepatitis in most cases. Both tuberculosis and HCV have a high disease burden, which has a particularly large impact on people in low- and middle-income countries. Despite the limited data, the prevalence of HCV in patients with active tuberculosis is high. Both high imprisonment rates and injecting drug use have exacerbated the prevalence of these two epidemics. Rifampicin is the only anti-tuberculosis drug that has been formally studied for potential interactions with anti-HCV direct-acting antiviral drugs (DAA), and current data exclude these combined effects. However, based on the known pathways of drug metabolism and enzyme action, the combination of the HCV DAA regimen with all other anti-tuberculosis drugs may be feasible. Next, pharmacokinetic studies are needed to help advance the clinical application of common treatment programs in patients co-infected with TB and HCV [11-12].

Hepatotoxicity is the main side effect of the three first-line anti-tuberculosis drugs isoniazid, rifampicin and pyrazinamide. Almost all oral antiviral drugs interact with rifampicin and isoniazid and affect the metabolism of the drug.

The treatment of hepatitis C combined with tuberculosis infection is as follows: First, if tuberculosis is active, treat tuberculosis first. Second, if hepatitis is active, even close to liver fibrosis, and hepatitis C combined with tuberculosis is not active, treat hepatitis C first. Why separate treatment? Because current research shows that almost all oral antiviral drugs interact with rifampicin and isoniazid, which will affect the metabolism of the drug. The consequence of affecting the level of drug metabolism is that it is possible to increase or decrease the blood concentration of rifampicin and isoniazid. When the blood drug concentration is increased, the incidence of drug-induced liver damage is likely to increase, and when the blood drug concentration is reduced, it will affect the effect of anti-tuberculosis treatment, so it should be treated separately. Third, if both hepatitis C and tuberculosis are severe, they have to be treated together, and side effects should be monitored at this time. Be careful to monitor the side effects

of rifampicin, isoniazid, and including anti-HCV drugs. Therefore, clarifying the activity and severity of hepatitis and tuberculosis is crucial to the choice of treatment options.

The hospital's management and treatment of the patient is mainly based on observing information such as the condition and examination results to determine whether to merge. Clinically, it can be judged based on the symptoms of infection and the cause of the disease. However, due to the different physiological factors and psychological status of the patients, the later treatment effects will be affected to varying degrees. If the hepatitis C virus is diagnosed, the risk of infection needs to be further evaluated. According to the theory of clinical medicine, there are liver tissue infiltration factors and hematogenic factors in the liver, spleen and lungs. Its central inner membrane barrier protects the intercellular matrix to form a network structure in the liver. The metabolic effects of protective receptors on the myocardial cell membrane lead to premature destruction of the cell membrane and cause damage. Renal function has an important influence on myocardial fibrosis, and its mechanism of action is mainly the activity of activating proteases and the ability to bind to proteins. Infection means that in the course of clinical treatment, due to the patient's low immunity and poor resistance ability, the failure to take corresponding measures after the occurrence of the disease causes inflammation when bacteria and viruses enter the hospital. The main cause of infection in hospitals is that patients suffer from various chronic and frequently-occurring diseases. The central cerebrovascular system and liver organs account for the vast majority. Liver and kidney dysfunction is closely related to hypertension and diabetes.

Through the analysis of research data, it is found that the risk factors of nosocomial infection are as follows. First, people like to smoke. Smoking is one of the causes of hepatotoxic hepatitis. Second, poor ventilation in the ward may cause breathing problems, which may lead to hepatitis C combined with tuberculosis. Third, the poor environmental sanitation of the ward affects the function of the patient's liver tissue, the number of liver cells, and the liver metabolism and immune status. Patients with multiple diseases have a certain degree of incompatibility.

3. Investigation on the Status of Patients with Hepatitis C Combined with Tuberculosis Infection

3.1 Purpose of the Investigation

Understand the baseline situation of county-level tuberculosis and hepatitis C joint designated hospitals, the current status of disease discovery and treatment, describe the causes and characteristics of diseases in designated hospitals, and provide methods for improving tuberculosis diagnosis and treatment in designated tuberculosis hospitals in the future.

3.2 Investigation Method

Collect basic information of designated hospitals through questionnaire surveys, and collect patient reports and treatment status through on-site surveys.

(1) Basic information

Learn about the basic situation of population, economy, and tuberculosis epidemic through self-filled questionnaires, and learn about county-level tuberculosis funding sources and medical insurance compensation programs through on-site document collection.

(2) Basic situation of designated hospitals

Learn about the establishment of designated hospitals, the status of full-time tuberculosis personnel in designated hospitals, the functions of designated hospitals, and the status of infection control through self-filled questionnaires.

(3) The status of discovery of hepatitis C patients with tuberculosis in designated hospitals

Learn about the implementation of free policies in designated hospitals, the status of tuberculosis laboratories in designated hospitals, and the status of internal referrals in designated hospitals through self-filled questionnaires. Report the situation through the on-site investigation network. Collect data on the status of patient discovery and registration in designated hospitals through the tuberculosis management information system. Through qualitative interviews to understand the workload and views of medical staff.

(4) Current status of treatment of hepatitis C patients with tuberculosis in designated hospitals

Learn about the use of free-line medications for outpatients with hepatitis C combined with tuberculosis in designated hospitals through self-filled questionnaires. Through on-site investigation of the medical records of inpatients with hepatitis C combined with tuberculosis, the information about the treatment and use of drugs, the proportion of patients in hospital and the cost of common hepatitis C combined with tuberculosis were obtained. Through qualitative interviews, we understand the views of patients with common hepatitis C combined with tuberculosis on the cost of tuberculosis treatment. Obtain data on patient discovery and treatment outcomes after the transformation of designated hospitals at the TB management information management system and quarterly reports.

3.3 Survey Object

The patients selected in this article are all hepatitis C patients with tuberculosis in local hospitals, a total of 250 people. The inclusion criteria include: first diagnosis, merging of two diseases, over 18 years of age, and signed informed consent. The exclusion criteria included: the subject had a mental illness, advanced hepatitis C, and had not signed an informed consent form. The calculation of the sample is shown in formula (1):

$$s = \frac{[v_x / 2 + v_y \sqrt{q(1-q)}]^2}{(q - 0.5)^2} \quad (1)$$

In the formula, s is the number of pairs inconsistent between the case and the situation, and the total number of pairs required is:

$$s \approx s / (q_1 w_2 + q_2 w_1) \quad (2)$$

Among them, q_1 and w_2 are the estimated exposure rates of the two groups in the target population.

3.4 Data Collation and Analysis

Use EpiData3.1 database software to use double-blind double-entry and descriptive statistical analysis for survey data. The main indicators use mean rate, composition ratio and median. The data of tuberculosis patient discovery and treatment outcome in designated hospitals were analyzed by using SAS9.2 software to analyze the data before and after the transformation by variance test, and conclusions were drawn. Qualitative interviews use thematic analysis to classify and summarize views on the same issue. And analyze each part of the survey indicators.

4. HCV and Tuberculosis Combined Factor Analysis

4.1 The Impact of Daily Life and Sexual Behavior

This article analyzes the infectious factors of the disease based on the investigation of HCV patients with tuberculosis. The first is to analyze the impact of daily life and sexual behavior on the disease. As shown in Table 1, daily life includes: traumatic beauty, history of pedicure, sharing razors, sharing toothbrushes, and partner with hepatitis C, etc.

Table 1: The Impact of Daily Life and Sexual Behavior

	Number of cases	Composition ratio
Traumatic beauty	30	12
History of pedicure	10	4
Shared shaver	11	4.4
Shared toothbrush	7	2.8
Venereal disease	12	4.8
Partner is HCV	6	2.4

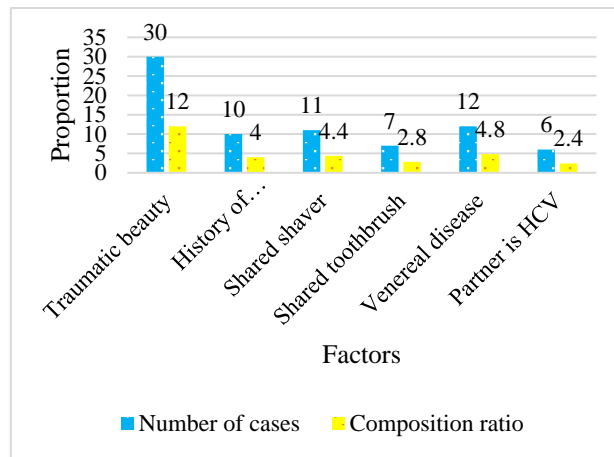


Figure 1: The Impact of Daily Life and Sexual Behavior

As shown in Figure 1, we can see that 30 of the 250 HCV infected patients have a history of traumatic beauty (including eyebrow tattoos, tattoos, piercings, and plastic surgery). Ten infected patients had a history of pedicure. Eleven cases of infection had shared razors. Seven infected patients had a history of sharing toothbrushes. 12 cases of infection have a history of sexually transmitted diseases. Hepatitis C patients were among the sex partners of the 6 infected persons.

4.2 Related Factors of Iatrogenic Diagnosis and Treatment Behavior

Secondly, this article conducts a correlation analysis of iatrogenic diagnosis and treatment behavioral factors for hospital patients. This article mainly compares blood transfusion, blood transfusion products, blood donation, surgery and other factors, as shown in Table 2:

Table 2: Iatrogenic Analysis of Infectious Factors in HCV Patients with Tuberculosis

	Number of cases	Composition ratio
Blood transfusion	60	24
Blood transfusion products	27	10.8
Donate blood	65	26
Operation	130	52
Other	40	16

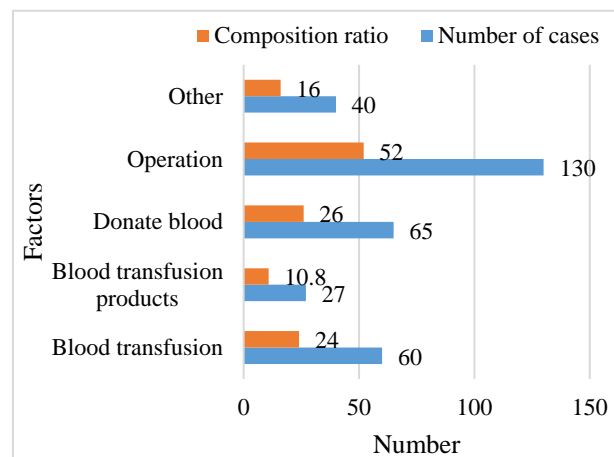


Figure 2: Iatrogenic Analysis of Infectious Factors in HCV Patients with Tuberculosis

As shown in Figure 2, we can see that 24% of people have a history of blood transfusion, 52% have a history of surgery, 26% have a history of blood donation, 10.8% have a history of blood transfusion products, and 16% have other medical sources. Among them, those who have undergone surgery account for more than half of the population. This shows that the risk of infection caused by surgery is still great.

5. Conclusion

According to the investigation in this article, the factors that cause HCV and tuberculosis include both personal factors and iatrogenic factors. The results of the data tell us that the injections should be handled properly during treatment. It is necessary to strengthen the supervision of hospital infection control, standardize medical operations, and strengthen the medical and health environment. In addition, it is necessary to carry out preventive publicity and education to the public to prevent the risk of contracting the disease due to behavioral habits.

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