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Prophylactic use of Antibiotics under Microscope in General Surgery for Liver Cancer

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Keywords: Liver Cancer Surgery in General Surgery, Microscope Prevention, Preventive Use, Antibacterial Drugs

Abstract: With the continuous development of medicine, antibiotics have become the commonly used drugs in many patients during the operation period. However, excessive use of antibiotics is harmful to human health. Objective to investigate the prophylactic use of antibiotics under microscope during the operation period of liver cancer in general surgery department of a hospital. In this paper, 248 patients with prophylactic application of antibiotics under microscope during the operation of liver cancer in general surgery were randomly selected. The basic information and medication situation of these patients were investigated and filled in, and then the data of each group were analyzed and counted. According to the investigation and analysis, 16.8% of the 248 patients used prophylactic antibiotics under the microscope 3 hours before operation, 7.2% after operation. Among them, 52 cases (23.76%) were treated with one combination of antibiotics, 102 cases (68.43%) with two drugs and 8 cases (4.61%) with triple drugs. A total of 24 kinds of antibiotics were involved in the survey. The most commonly used antibiotics were penicillin, cephalosporin, monocyclic β - lactam antibiotics, minocycline, doxycycline, tetracycline, oxytetracycline, lincomycin, clindamycin, vancomycin, norvancomycin, enoxacin and ofloxacin. Therefore, the situation of prophylactic use of antibiotics under microscope in patients with liver cancer in general surgery is basically reasonable, and a few patients use antibiotics for a long time after operation, which is not conducive to the recovery of patients after operation. Therefore, we should strengthen the management and distribution mechanism of antibiotics to ensure that patients can use antibiotics within a reasonable range.

1. Introduction

General surgery [1] is a clinical discipline with surgery as the main means to treat liver, gallbladder, pancreas, gastrointestinal, anorectal, vascular diseases, thyroid and breast tumors and trauma. It's the largest specialty in the surgical system. The common diseases in general surgery

include thyroid, breast cancer, peritonitis, gastric perforation, rectal cancer, liver cancer, etc. Liver cancer [2] is a malignant tumor of the liver, which can be divided into primary and secondary types. Primary malignant tumor of the liver originates from the epithelial or interstitial tissue of the liver. Primary liver cancer is a malignant tumor with high incidence rate and high risk in China. The latter, called sarcoma, is relatively rare compared with primary liver cancer. Secondary or metastatic liver cancer (HCC) is a malignant tumor that originates from multiple organs and invades the liver. Common in stomach, bile duct, pancreas, large intestine, ovary, uterus, lung, breast and other organs of liver metastasis.

According to the different stages of liver cancer, individualized comprehensive treatment is the key to improve the curative effect. The treatment methods include surgery, hepatic artery ligation, transcatheter arterial chemoembolization, radiofrequency, cryotherapy, laser, microwave, chemotherapy, radiotherapy, etc. biotherapy and traditional Chinese medicine are also widely used in the treatment of liver cancer [3]. Surgery is the first choice and the most effective method for the treatment of liver cancer. The surgical methods include radical hepatectomy and palliative hepatectomy. For unresectable liver cancer, intraoperative hepatic artery ligation, transcatheter arterial chemoembolization, radiofrequency, cryotherapy, laser and microwave can be used. Primary liver cancer is also one of the indications of liver transplantation. If the tumor cannot be removed by laparotomy or as a follow-up treatment of palliative tumor resection, hepatic artery and / or portal vein pump (subcutaneous implantable perfusion device) can be used for local chemoembolization; for the tumor that is estimated to be unresectable, interventional radiotherapy can also be used. After embolization, the embolic agent (commonly used iodized oil) and anticancer drugs were injected into hepatic artery through selective femoral artery catheterization. For patients with good general condition, good liver function, no cirrhosis, no jaundice, ascites, hypersplenism, esophageal varices, tumor limitation, no distant metastasis, unsuitable for surgical resection or postoperative recurrence, comprehensive treatment based on radiotherapy can be used. Commonly used are immune ribonucleic acid, interferon, interleukin-2, thymosin, etc., can cooperate with chemotherapy. It is often used in combination with other therapies. Improve the disease resistance of patients, improve the general condition and symptoms of patients, reduce the adverse reactions of chemotherapy and radiotherapy.

The production of antibacterial drugs has made an indelible contribution to the continuation of human life, but with the development of society and the progress of medicine, more and more antibacterial drugs are produced and used by people. Antibacterial drugs generally refer to the drugs with bactericidal or antibacterial activities, including various antibiotics, sulfonamides, imidazoles, nitroimidazoles, quinolones and other synthetic drugs. Some products obtained by culturing bacteria, actinomycetes, fungi and other microorganisms, or the same or similar substances produced by chemical semi synthesis method can also be chemically synthesized. Antibacterial drugs are mainly divided into eight categories, of which β - lactams include penicillins, cephalosporins, carbapenems, β - lactams containing enzyme inhibitors, aminoglycosides, tetracyclines, fluoroquinolones, folate pathway inhibitors, Chloramphenicols, glycopeptides, including vancomycin and teicoplanin; macrolides. The application of antibiotics should be selected according to different infectious diseases [4]. These antibiotics can help patients recover better, and if they are not used correctly, they will also deepen the harm to the patients. Human body function itself has a strong immune function. If you take these antibacterial drugs for a long time, then the body's immune function will decline. At the same time, the bacteria in the body will also be resistant to the antibacterial drugs. At this time, it will be unable to continue to control the damage of bacteria to the body's functions, and eventually lead to death.

Liver cancer is the most common malignant tumor of digestive tract in China. However, liver cancer is multicentric, easy to invade intrahepatic blood vessels and spread rapidly to the whole

liver. Patients often have severe cirrhosis. In addition, due to the occult onset, early asymptomatic or obvious symptoms, rapid progress, most patients have reached local advanced or distant metastasis, high degree of malignancy, easy recurrence and metastasis, poor prognosis, etc., which has been the difficulty of clinical treatment [5]. Because of the late discovery, most patients are in the middle and late stage, so they lost the opportunity of surgical resection. With the development of interventional radiology, transcatheter arterial chemoembolization (TACE) provides the possibility of secondary surgery and achieves good results. TACE has the advantages of small trauma, high local drug concentration and small side effects. It is the first choice for the treatment of unresectable and postoperative recurrent liver cancer and is widely used in clinical practice. Postoperative infection is one of the main complications of invasive surgery. Surgical infection can delay the healing period of surgical wound, lead to surgical failure and increase the length of hospital stay. Postoperative infection is the key factor leading to surgical failure. Although intravascular intervention is less invasive and has a lower risk of infection than traditional surgery, this risk has not been completely eradicated. At the same time, due to the decline of autoimmune function, the use of chemotherapy drugs with immunosuppressive effect increases the risk of infection [6]. Therefore, conventional prophylactic use of antibiotics in the past, some only use before surgery, some only use after surgery, some preoperative and postoperative two months, and often because of fever and prolong the medication time. However, a large number of literatures reported that the infection rate was not high. However, it has been proved by many cases that prolonged use of antibiotics after surgery will increase the risk of infection, which is not conducive to better recovery of patients.

In order to better explain the effect of prophylactic application of antibiotics in general surgery, 248 cases of liver cancer patients in a hospital were selected as the investigation and analysis objects. It is understood that the 248 cases of patients were under the microscope prophylactic use of antibiotics, and the use of antibiotics before and after surgery is different. This paper first introduces the basic situation of prophylactic use of antibiotics under microscope during the operation of liver cancer in general surgery, and then randomly selects 248 investigation and analysis objects, and carries out statistical analysis on the situation of preventive use of antibiotics under microscope during operation; finally, the data provided by these investigation objects are analyzed, and it is concluded that the use of antibiotics should be within a reasonable range, such as If the use of antibiotics beyond the time limit, it will bring side effects to patients. Therefore, major hospitals should actively guide patients to use antibiotics correctly.

2. Prophylactic use of Antibiotics in General Surgery for Liver Cancer

2.1. Types and Treatment of Liver Cancer in General Surgery

Liver cancer can be divided into primary and secondary [7]. The former is a malignant tumor of the liver itself, and the latter is a metastatic tumor. In recent years, with the improvement of early diagnosis, early treatment, comprehensive treatment, biological therapy and liver transplantation, the therapeutic effect of liver cancer, especially early liver cancer, has been greatly improved. The treatment of liver cancer also pay attention to, because the formation of liver cancer and disease stage is different, so the treatment of liver cancer is also divided into many ways. At present, the first choice of treatment for primary liver cancer is surgery and minimally invasive interventional therapy. Many patients with liver cancer are in the middle and late stage when they are diagnosed, so they can only choose minimally invasive interventional therapy. In addition, patients can choose systematic treatment, systemic chemotherapy and other methods when the disease allows. The 4-year survival rate of HCC patients with tumor diameter less than 6 cm was 48%, while that of HCC patients with tumor diameter larger than 6 cm was close to 0. But overall, the prognosis of

HCC is still relatively poor [8]. Therefore, strengthening the prevention of liver cancer and regular monitoring of high-risk groups, early detection, early diagnosis and early treatment are the key to improve the prognosis of liver cancer.

2.2. Prevention and Treatment of Liver Cancer in General Surgery

(1) Symptoms of liver cancer: more than half of the patients had liver pain, mostly persistent dull pain, tingling pain or distending pain. Gastrointestinal symptoms: gastrointestinal symptoms: fatigue, weight loss, loss of appetite, abdominal distension, accompanied by nausea, vomiting, fever, diarrhea and other symptoms. Anemia, jaundice, ascites, edema of lower limbs, subcutaneous hemorrhage and cachexia occurred in the late stage. The liver is large and progressive, with hard texture, irregular edge, uneven surface, and large and small nodules or huge masses can be seen. If liver cancer has lung, bone, brain metastasis, it will produce corresponding symptoms.

(2) Prevention and treatment of liver cancer: first of all, we should have a correct understanding of liver cancer. Liver cancer is the result of a variety of pathogenic factors. Viral hepatitis: about 1 / 4 of primary liver cancer patients have a history of chronic hepatitis. The positive rate of serum HBsAg and other viral hepatitis B markers was 92%, which was significantly higher than that of healthy people, suggesting that hepatitis B virus is related to the high incidence of liver cancer. Immunohistochemistry showed that HBV-DNA could be integrated into the DNA of host hepatocytes, and HBV X gene could change gene expression in hepatocytes. Hepatitis C is also closely related to liver cancer. Liver cirrhosis: 52% - 97% of patients with primary liver cancer complicated with liver cirrhosis. Pathological examination found that liver cancer complicated with liver cirrhosis was mostly large nodular cirrhosis after hepatitis B. in recent years, the proportion of liver cirrhosis developed from hepatitis C was not lower than that of hepatitis B. Aflatoxin: the metabolite of aflatoxin, aflatoxin B1 has strong carcinogenic effect. The liver is inflamed, hardened, and finally cancerous. AFB1 has synergistic effect with HBV infection. Nitrosamines: widely exist in nature, the damage to the liver cannot be underestimated. It is well known and indisputable that alcohol is toxic to the liver [9]. Malnutrition and cirrhosis caused by long-term drinking.

Secondly, the corresponding treatment should be adopted according to the development of liver cancer in different periods. In the early stage of liver cancer, spleen deficiency, liver depression and qi stagnation, and further damp heat and phlegm stasis are the main causes of liver cancer. Although there is deficiency of healthy qi, it has not been lost greatly, which is more serious than deficiency syndrome. Therefore, it is necessary to overcome the pathogenic factors, supplemented by Yiqi Huoxue Huayu Sanjie, which can inhibit the toxicity of tumor and prevent its rapid development or metastasis. But we need to be careful not to cut too much to avoid injury. The key points of early liver cancer treatment: small liver cancer aims at radical cure, mainly by surgical resection or radiofrequency therapy, combining traditional Chinese and Western medicine, regulating immunity and preventing recurrence and metastasis; according to the characteristics of dampness, toxin, phlegm, blood stasis and deficiency, the main methods of preoperative treatment are removing dampness and detoxification, promoting blood circulation and removing blood stasis, strengthening spleen and kidney after operation, supplementing qi and nourishing Yin [10]; at the same time, pay attention to etiological treatment, such as Chronic viral hepatitis needs antiviral treatment.

Finally, for any patient, having a good mood is the first step in treating the disease. Every day, hospitals gather cancer patients from all over the country. They have all kinds of emotions, such as disappointment, despair, hope and so on. In this department, there is a saying: among the cancer patients who died of cancer, one third of them were scared to death by themselves, one third died because of over treatment, and the other third died due to misdiagnosis. Although there is no scientific evidence, we all agree. In addition to the emotional regulation of patients, from the

clinical point of view, 28% - 56% of cancer patients will have symptoms such as anxiety and depression, so the patients will also show uncooperative attitude, which greatly affects the treatment effect. In order to improve the curative effect, the hospital experts will use cognitive therapy, psychological counseling, music, hypnosis and other psychotherapy means to make cancer patients avoid unnecessary anxiety and fear and affect the treatment effect. It can reduce the side effects of various treatment methods and improve the autoimmune function. It has been proved that the effect of psychological warfare combined with rehabilitation training and psychotherapy is much better than that of conventional treatment.

2.3. Effect and Influence of Antibiotics on Liver Cancer

At present, the use of antibiotics has become a necessary bottle for many patients who need surgery. Some scholars believe that although intravascular interventional therapy is aseptic operation, antibacterial drugs should be used before operation to prevent the occurrence of surgical mouth infection [11]. However, the general guidance is that, generally speaking, intravascular interventional surgery does not require the use of antibiotics. For the preoperative application of prophylactic antibiotics, most studies believe that it cannot prevent the occurrence of infectious complications, but the reason why the preoperative application of prophylactic antibiotics cannot reduce the incidence of infection complications is not clear. Liver cancer has become a very common disease. In the treatment of liver cancer, the use of antibiotics is indispensable. The use of antibiotics before liver cancer surgery can well inhibit the spread rate of cancer cells, making surgical resection more accurate and convenient [12]. After the completion of liver cancer surgery, the use of antibiotics can make the residual cancer cells in patients get good control, so that patients can better recover. However, the use of antibacterials should be controlled by the dosage and time. If the use of antibiotics over time or in excess, not only cannot make it play its due role, but will cause harm to the body of patients.

3. Investigation and Materials

3.1. Patient Inclusion

In order to ensure the representativeness of this survey, 248 liver cancer patients were randomly selected in a hospital, and all of them were treated by surgery. Through direct communication with patients, to ensure the credibility and authenticity of the survey data.

Table 1. Basic information of respondents

project	Male	Female Sex
Average Age	48.34±7.28	56.34±4.12
Duration of Illness	2—3 year	1—2 year
Drink	98	22
Smoking	102	18
There is a Genetic History	27	21
Junior High School Education	32	37
High School Education	48	23
Bachelor-Degree or Above	56	12

Shown as Table 1, after the preliminary survey and statistics of all liver cancer patients, it is known that the vast majority of liver cancer patients are men, only a small number of women, and the duration of male patients is much longer than that of female patients. In these female patients, the majority of patients are caused by family inheritance, while the male patients are mostly caused by smoking and drinking, and a small part of them are caused by family inheritance. The liver is an

important metabolic organ of the human body. Smoking and drinking for a long time will lead to the degradation of liver function, which will make the human body unable to carry out normal metabolism, which will lead to liver cirrhosis and eventually lead to liver cancer. Therefore, the primary task of preventing liver cancer should be to stop smoking and drinking [13].

3.2. Selection Principle

(1) Patients with liver cancer who are qualified for surgical treatment of liver cancer in general surgery and use antibiotics.

(2) Except for liver cancer, there were no other emergency diseases, such as diabetes, cerebral thrombosis and myocardial infarction.

(3) The cognitive function test of patients is based on the brief psychological state test, which is the most commonly used cognitive level screening scale at home and abroad. Each MMSE is limited to 30 minutes, the full score is 100 points, illiteracy > 60 points is normal, primary school>78 points is normal, junior high school and above 88 points are normal.

3.3. Reasons for Not Selecting

(1) Patients who had been sick for less than six months and did not use antibiotics were excluded. (2) Patients with mental illness affecting self-awareness were not selected. (3) Patients with other systemic diseases (such as diabetes, atherosclerosis, etc.) may affect the observation of facial convulsions. (4) There are serious hearing, visual impairment and other related diseases, communication barriers, affecting cognitive function. (5) Patients who failed to reach corresponding problem communication with their families.

3.4. Basic Information of Patients before Operation and the Effect of Using Antibiotics

First of all, patients have the right of informed consent. Before treatment, each patient invited to participate in clinical observation should sign an informed consent form to inform the purpose, time and procedure of clinical observation; introduce the possible benefits of the study to the subjects; explain the scope of confidentiality of patient information; and inform patients whether they are fully willing to participate in the trial and can freely refuse to participate. If you agree to participate, you can drop out without losing the benefits you deserve.

The choice of antibiotics for patients should be based on the common pathogens in the surgical site, the pathophysiological status of patients, the antimicrobial spectrum, the pharmacokinetic characteristics of antibiotics, and the adverse reactions of antibiotics. The differences of infection rate, infection type, fever rate, initial fever time, duration, average fever temperature and maximum body temperature between patients with fever and those without antibiotics can guide the rational application of antibiotics in interventional therapy of primary liver cancer. There was no significant difference in infection rate and fever rate between antibiotics and not. Therefore, we suggest that patients in good condition do not need to use prophylactic antibiotics under normal circumstances. This can not only reduce the cost of treatment, shorten the length of hospital stay, but also prevent the drug adverse reactions caused by the abuse of antibiotics out of control, reduce the probability of serious consequences such as bacterial resistance, intestinal flora imbalance and so on. There are few prospective studies on the application of antibiotics in endovascular interventional therapy at home and abroad. Therefore, it is meaningful to study the interventional therapy of primary liver cancer. In principle, antibiotics with broad spectrum, definite curative effect, safety and relatively low price should be selected, such as cephalosporins. The second generation cephalosporins, ceftriaxone, cefoperazone and sulbactam are the antibiotics that most patients in general surgery

choose to use before operation. These drugs can well prevent the further development of liver cancer and provide great convenience for the later operation. The effective coverage time of antibiotics should include the whole operation process and 3 hours after operation [14]. When choosing antibiotics with short half-life, if the operation time is more than 4 hours or the blood loss is more than 1800 ml, one dose should be added. A third dose can be used if necessary.

3.5. Design and Reasons of Questionnaire Survey

Questionnaire survey was used to further understand the selected respondents. The survey included:

(1) Demographic characteristics of the respondents, such as name, gender, age, occupation, education level, income level, residence, etc.

(2) Smoking history, drinking history, eating habits, the choice of drinks, and other behavioral risk factors.

(3) Whether the psychological factors have depression, whether the work pressure is too large, whether there are negative life events in recent two years.

(4) Whether there is a history of diabetes, coronary heart disease, osteoporosis and other related diseases.

(5) Usually can appear sudden headache, have nerve problem.

3.6. Quality Control of Investigation

All the patients with liver cancer in the Department of general surgery who were selected as the subjects of investigation have had a comprehensive physical examination in a regular and authoritative hospital, and further examination has been made for the development of liver cancer. At the same time, the statistical analysis and related component analysis of antibacterial drugs used by all patients during the period of liver cancer were also made. The selected patients can communicate normally, and the relevant contents and purposes of the investigation are also further explained for the selected patients and their families. The research party shall be responsible for the sudden situation in the investigation process, and the patients and their families have signed the right to know consent. In order to be able to better explain the effect of antibacterial drugs used in patients with liver cancer, the corresponding investigation and statistics were made for the commonly used antibiotics and their effects in medicine, and the antibacterial drugs that should be used by patients with liver cancer were recorded from the previous research cases.

3.7. Process of Using Antibiotics in Patients with Liver Cancer

4-2 hours before operation. If the operation time is more than 4 hours, or the blood loss is more than 1800 ml, a second dose of preventive medicine can be given during the operation, and the amount of solvent should not exceed 120 ml [15].

Administration should be done in 35 minutes.

3.8. Deficiencies of Investigation

This survey is to study the prophylactic use of antibiotics in the microscope during the operation period of liver cancer in general surgery. Due to the limited sample provided by the hospital, and many liver cancer patients do not meet the survey standards, the base number of the investigation is relatively small, and the data recorded is not very representative. There are many kinds of antibiotics and complex, there are a lot of antibacterial drugs in different diseases in the use of

different conditions, cannot correctly get its use effect. In short, the results of this survey should be somewhat biased and should be further strengthened and improved.

4. Results and Discussion

4.1. Gender and Age Distribution of Liver Cancer Patients in General Surgery Department

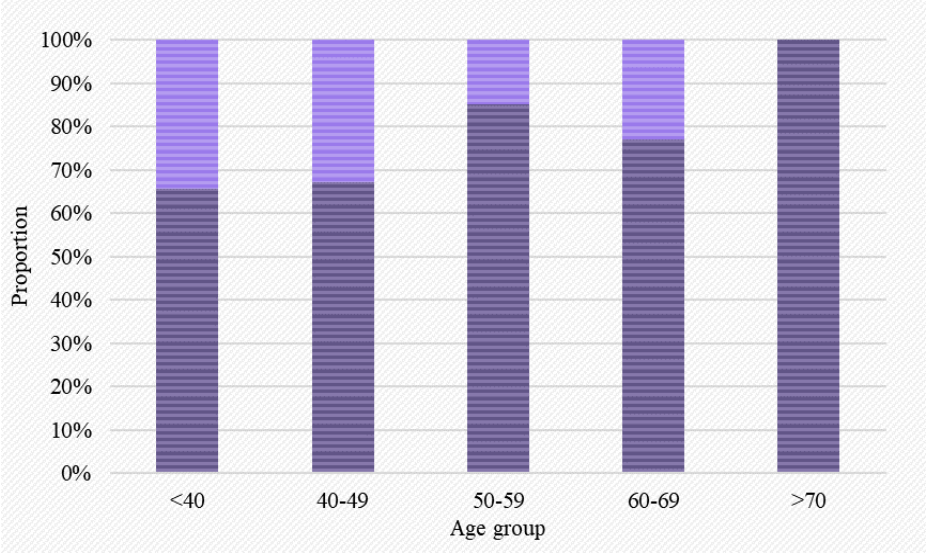

Figure 1. Gender and age (years old)

Shown as Figure 1, the average age of liver cancer patients in general surgery is 42.57 ± 6.51, and the age range is between 30 and 80 years old, and 87% of the patients are over 45 years old. As the liver is the metabolic organ of the human body, with the growth of age, the function of the human body will decline, which makes the metabolic function of the liver lower. Therefore, most patients with liver cancer are older, which is caused by the abnormal metabolism of their liver [16]. The majority of patients with HCC were males (n = 152), while females were less (n = 88). Most of the causes of liver cancer are caused by smoking and drinking, and most of them are men. Therefore, male liver cancer patients are much more than female liver cancer patients. Therefore, we should actively advocate less smoking and less drinking to prevent the occurrence of liver cancer.

4.2. Use of Antibiotics before Operation

Shown as Figure 2, the use of second-generation cephalosporins in patients with liver cancer is the most in 3-4 hours, but the most effective use time of second-generation cephalosporins is within 2 hours; the most use of ceftriaxone is in 1-2 hours, although most patients use the time range is very effective, there are still a few patients with wrong use of time; patients use cefoperazone more frequently Most of the time of sulbactam was 2-3 hours, which was one hour later than the best time of this kind of antibiotics. According to the analysis, it can be concluded that patients with liver cancer do not have a good understanding of the correct use time of antibiotics and the best time to play their efficacy. It is suggested that doctors can mark the time range of antibiotics used by patients clearly, so that these antibiotics can play a better role.

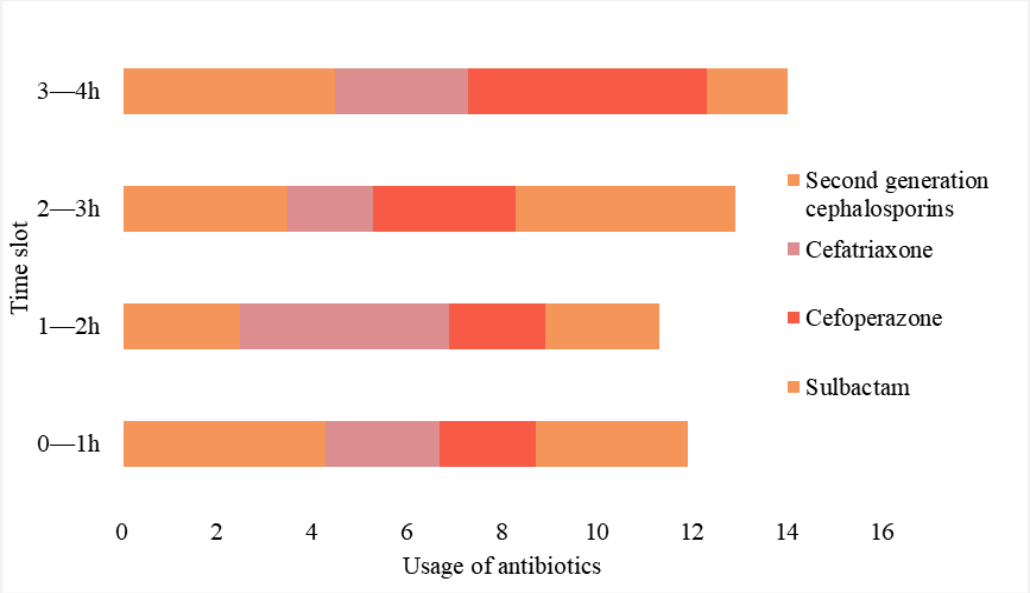

Figure 2. Use of antibiotics

4.3. Use of Antibiotics and Infection after Operation

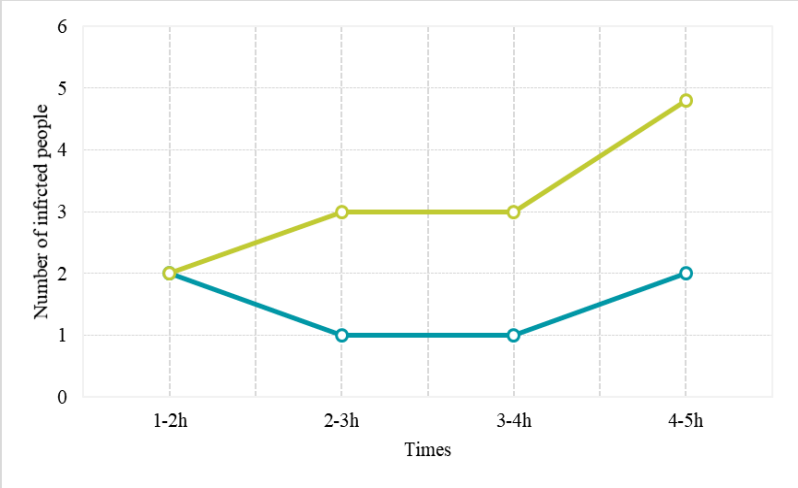

Figure 3. Time of medication and infection rate

Shown as Figure 3, antimicrobial agents can increase the resistance of liver cancer patients to cancer cells, but if the drug is not used according to the effective time range, it will bring the opposite effect. The number of patients with liver cancer who used antibiotics for 1-2 hours was more than those who were not; the number of uninfected patients with liver cancer who used antibiotics for 2.5 hours was more than those who were infected.

4.4. Comparison of Postoperative Recovery Rate between Patients with Liver Cancer Using Antibiotics and Those without Antibiotics

Shown as Figure 4, we can clearly see that the liver cancer patients with antibiotics have faster recovery than those without antibiotics. Therefore, in the treatment of many diseases, the use of antibiotics is still very necessary.

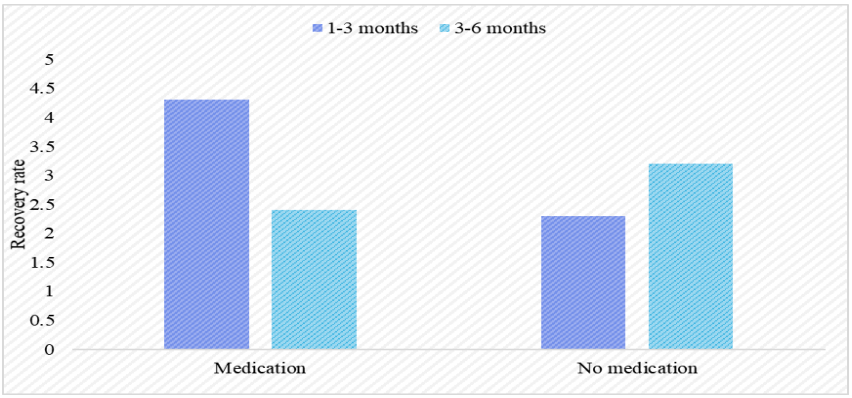

Figure 4. Comparison of recovery rate of patients after operation

5. Conclusion

Liver cancer patients in general surgery are very common in today's society, but the prevention and treatment of liver cancer in general surgery is not very good. In this paper, through the investigation and analysis of many patients with liver cancer in general surgery to understand whether the prophylactic use of antibiotics under microscope can get good effect. First of all, 248 selected patients with liver cancer were investigated by questionnaire to understand their basic information and the use of antibiotics; then, the data obtained were classified for later needs; finally, all the data were analyzed and compared, which showed that most of the liver cancer patients were male, and a small number of female patients with liver cancer, and the etiology was mostly genetic rather than acquired As a result. A large part of the cause of liver cancer is smoking and drinking more, which makes the liver unable to carry out a good metabolism, so that liver cirrhosis eventually becomes liver cancer. The use of antibiotics has a great effect on the recovery of patients with liver cancer, but due to the variety of antibacterial drugs, we should do a good job of consulting before use to ensure that the right medicine can be used. At the same time, the use of antibacterial drugs is required by the time range. Whether it is used before or after operation, the use time of corresponding drugs should be recorded. Therefore, prophylactic use of antibiotics has a good effect on the operation period of liver cancer in general surgery. Antibacterial drugs can not only be used in the operation period of liver cancer, but also can be used in many operations, which is worthy of promotion and use by major hospitals.

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Data Availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

Conflict of Interest

The author states that this article has no conflict of interest.

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