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Comparison of the Therapeutic Effects of Polycinnamol and Anhydrous Alcohol in the Treatment of Hepatic Cysts with Puncture and Sclerosis under the Guidance of Ultrasound

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Abstract. Objective: Through comparing and analyzing the clinical effect, adverse reaction rate, changes of postoperative hepatic function and blood routine examination polycinnamol and anhydrous alcohol in the treatment of hepatic cyst by percutaneous puncture sclerosing under the guidance of ultrasound, evaluate the advantages and disadvantages of two sclerosing agents in the treatment of simple hepatic cysts. Methods: Eighty-six patients with hepatic cyst collected from Department of Ultrasonic Puncture and Sclerosing Agent of Third Hospital of Jilin University during April, 2015 to April, 2017 were randomly divided into polycinnamol group and anhydrous alcohol group They will separately receive two kinds of sclerosing treatment under the guidance of ultrasound to compare the adverse reaction rate , the cure rate, the changes of TBil, ALT and AST before and after treatment, and the changes of blood routine 24 hours after operation. T test was used among the data groups, and the comparison between the count data groups was compared with the X2 test. Results: The concentration of blood ethanol in polycinnamol group was significantly lower than that in anhydrous alcohol group ($P < 0.05$). There was no significant difference between the two groups in the cure rate (1 month after operation and 6 months after operation), the changes of blood routine at 24 h after operation and the occurrence of adverse reactions (Average $P > 0.05$). There was no significant difference in ALT and AST between the poly-cinnamol group and the anhydrous alcohol group 1 week after operation. Conclusion: Ultrasound-guided polycinnamol and anhydrous ethanol sclerosing for simple hepatic cysts are safe, effective, less injured and have a higher clinical cure rate, but the adverse reactions caused by polycinnamol are less than those caused by anhydrous ethanol. The adverse effects on liver function were also lighter than that of anhydrous ethanol. The appropriate sclerosing agent should be selected in combination with the clinical data of the patients.

Key words: Hepatic Cyst; Puncture Sclerosis; Polycinnamol; Anhydrous Ethanol; Comparative Study.

INTRODUCTION

Congenital hepatic cysts (i.e. simple hepatic cysts) are the most common [1], and a few patients may suffer from acute abdomen due to rupture, bleeding and infection of the cysts. The traditional fenestration of abdominal cyst, laparoscopic cyst removal and decompression, cystectomy have many shortcomings, such as trauma, bleeding, high cost, long postoperative recovery time, etc., which limit the effect of alcohol therapy on hepatic cysts [2]. At present, ultrasound guided injection of sclerosing agent has become the first choice in the treatment of hepatic cysts [3]. Anhydrous B has high adverse reactions, such as hypersensitivity, toxic reaction, tissue necrosis, sensory nerve and motor nerve dysfunction [4]. At present, as a new sclerosing agent, polycinnamol has been widely used in the field of cyst sclerosis, and there are a certain number of related reports. However, there are fewer reports on the comparative analysis and evaluation of polycinnamol and anhydrous alcohol in the treatment of hepatic cysts. Now, through comparatively studying the effect of percutaneous transhepatic sclerosing with polycinnamol and anhydrous alcohol under the guidance of ultrasound, this paper analyzes and evaluates the advantages and disadvantages of two sclerosing agents in the treatment of simple hepatic cysts.

DATA AND METHODS

Research object: 86 patients involving in the treatment of hepatic cysts from Department of ultrasound in the Third Hospital of Jilin University Hospital. All patients' hepatic cyst diameter greater than or equal to 5 centimeters.

Entry criteria: (1) be diagnosed Simple hepatic cyst by ultrasound, CT or MRI.

(2) Symptoms: Abdominal compression, jaundice, abdominal distension, abdominal pain and dyspnea;

(3) Those who strongly request ultrasound interventional therapy and refuse surgery;

No serious complications, complications or other absolute contraindications;

(5) Good compliance.

Exclusion criteria:(1) Patients with alcohol allergy; (2) Polycystic liver disease; (3) Cystic dilatation of intrahepatic bile duct;(4) Communication cysts; (5) Malignant or parasitic cysts; (6) Complicated with many serious internal diseases; (7) Patients with poor coagulation mechanism and without modification after treatment; (8) Patients with severe heart disease; (9) Patients who were intolerant or retreated from treatment during operation (10) People with poor compliance. According to the random digital table, the patients were randomly divided into two groups: the polycinnamol sclerosing group (43 cases) and the anhydrous ethanol sclerosing group (43 cases). Blood routine examination, coagulation function, electrocardiogram, liver and kidney function were performed before operation to confirm that there was no history of drug allergy such as alcohol and lidocaine. Explain the purpose of treatment, possible risks and complications to the patients and their families, and sign the consent to the treatment.

Ultrasound interventional therapy based on intrahepatic position of focus of infection, patients can choose supine position, oblique position or left supine position, mainly supine position. Before operation, confirm again the location and diameter of the lesion, the relationship between the lesion and the surrounding organs, blood vessels and bile duct was determined, the best puncture point and puncture direction, angle and depth were determined, and the puncture path was marked (the cyst was close to the skin on the surface of the body as far as possible through a certain thickness of normal liver tissue, the puncture passage without injury to the liver may be important). The surgical area was sterilized by iodophor, and the soft tissue near the puncture point to the liver capsule was given to 2% lidocaine by layer by layer. Under the real-time guidance of ultrasound, the needle was punctured with 16G cannula needle (BDN). The puncture needle was inserted into the capsule cavity at 3 / 4 to 4 / 5. Pull out the needle core and then connect the 20ml syringe, suck the fluid for the sample for biochemical and bacterial cultivation. Conventional exfoliative cell examination excluded the possibility of tumorous lesions. At the same time, it is necessary to exclude communication cysts (linked to the intrahepatic bile duct) before sclerosis treatment. Polycinnamol group: After removing the sac fluid, the drug was injected with the ratio of 50ml capsule fluid per polycinnamol injection and kept in place. After 20 minutes of injection, the patient was told to have a small lateral posture in order to make the polycinnamol fully contact with the epithelium of the capsule wall. Anhydrous ethanol group: after extraction of the capsule fluid, the ethanol was injected with anhydrous alcohol. The injection amount was 1 / 4 to 1 / 3 of the capsule fluid, and the liquid was pumped repeatedly several times until the washing fluid was clear. Pull out puncture needle quickly, and carry out local pressure bandage. At the end of the operation, all the patients were examined by ultrasound for 30 min to observe the adverse reactions during and after operation, and to compare the changes of the total number of white blood cells and the percentage of neutrophils in the two groups 24 hours after operation. All patients took abdominal ultrasonography in 1 month and 6 months after the operation to observe the change of cyst diameter and volume, to compare the effective rate and cure rate between the two groups, and to compare the changes of TBil, ALT and AST before and after 1 week and 6 months after operation. 86 Cases of intrahepatic cysts were punctured successfully and treated with polycinnamol or anhydrous alcohol sclerosing. All patients were followed up to 6 months after the last operation.

Therapeutic effect judgment according to the changes of liver cysts after treatment [6]: (1) ineffective: the volume of cysts had no obvious change or had no significant change compared with before treatment (2) effective: the volume of cysts was smaller than that before treatment ($< 1 / 3$); (3) significant: Cysts were smaller than that before the operation by one third to two third;(4) curative: cysts disappeared completely or almost disappeared (cystic cavity diameter < 0.5 cm). Efficiency = (effective number + effective cured cases) / total number of cases; cure rate = cure number / total number.

The statistical method was analyzed by SPSS19.0 software. Measurement data were mean standard deviation $\bar{x} \pm s$. T test was used to compare the two groups. The count data were expressed by the rate, and the χ^2 test was used for the comparison between the groups. $P < 0.05$ was statistically significant.

RESULTS

General data of 86 patients included 40 males and 46 females aged 25 to 79 years old. There was no significant difference in sex, average age, drinking history and cyst type between the two groups ($P > 0.05$).

Comparison of the results of blood routine of the two groups 24 hours after operation. The total number of blood leukocytes in the polycinnamol group was $8.28 \pm 3.69 \times 10^9 / L$, and the control group was $8.17 \pm 4.26 \times 10^9 / L$. The two groups had no statistically significant difference ($t = -0.548, P = 0.581$); There were 25 cases with their neutrophil more than 70% in the polycinnamol group while 28 cases in anhydrous alcohol group. There was no significant difference between two groups ($\chi^2 = 2.931, P > 0.05$). Among all the patients with single hepatic cyst, there were 18 patients with their percentage of neutrophils being more than 70%. Among all the patients with multiple hepatic cysts, there were 27 patients with their percentage of neutrophils being more than 70%. The differences were statistically significant ($\chi^2 = 4.732, P < 0.05$).

Comparison of the incidence of adverse reactions and blood ethanol concentration between the two groups. The incidence of partial adverse reactions (abdominal distension, nausea, vomiting and drunken reaction) and the difference of blood ethanol concentration between the two groups were statistically significant (average $P < 0.05$), but all adverse reactions were mild and disappeared after treatment.

There was no significant difference in response rate and cure rate between two groups of patients. There was no significant difference in healing rate between 1 months after operation, and the difference between two groups was not statistically significant ($\chi^2 = 0.023, P > 0.05$). There was no significant difference between the 6 months after the operation of the polycinnamol group and the anhydrous ethanol group ($\chi^2 = 0.120, P > 0.05$).

Discussion Percutaneous transhepatic drainage was one of the commonly used methods for the treatment of hepatic cyst, but the effect of simple puncture drainage was not satisfactory and easy to recur [7]. The main mechanism of polycinnamol in the treatment of hepatic and renal cysts is to destroy the fine cells of the endothelial wall, produce aseptic inflammation to make the endothelial tissue atrophy and close the capsule cavity, and at the same time have certain analgesic, astringent and anti-inflammatory effects [8]. The key to the treatment of hepatic cysts with anhydrous alcohol is to keep sufficient and high concentration of ethanol in the cyst cavity, but the concentration of ethanol is decreased due to the continuous exudation and residual in the capsule fluid, thus affecting the therapeutic effect. The incidence rate of anhydrous alcohol complicating disease is high, considering that it is related to its strong irritation, high volatility, easy to infiltrate into the liver cells leading to liver cell injury, and then the increase of transaminase, and also related to the increase of plasma ethanol concentration caused by entering the blood circulation. In addition, it is easy to cause abdominal membrane irritation, abdominal pain or chemical peritonitis through puncture site overflow or infiltration. This study showed that some liver function indexes in the anhydrous alcohol group were worse than those in the polycinnamol group at 1 week postoperatively, indicating that the liver cells were damaged less by polycinnamol. At the same time, the change of liver function in patients with multiple hepatic cysts was more obvious than that in patients with single hepatic cysts at 1 week after sclerosis, which was related to poor liver reserve function in patients with multiple hepatic cysts. Therefore, for patients with multiple hepatic cysts and poor liver function reserve, polycinnamol has more advantages than anhydrous ethanol. In conclusion, ultrasound guided percutaneous transhepatic puncture of polycinnamol and anhydrous ethanol-sclerosing for the treatment of simple hepatic cysts is safe and effective, with little damage and high cure rate. It is a better prescription for non-operative treatment of simple hepatic cysts. However, anhydrous ethanol caused more adverse reactions than polycinnamol, and had more adverse effects on liver function than polycinnamol. Therefore, for patients with multiple hepatic cysts and poor liver function reserve, polycinnamol had a significant advantage and should be the first choice for treatment.

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