The Curative Effect of PTCD and PTGD in Obstructive Jaundice Patients

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Research article

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Abstract

Background: Both percutaneous transhepatic gallbladder drainage (PTGD) and percutaneous transhepatic cholangial drainage (PTCD) can reduce jaundice in patients with obstructive jaundice, and recover of liver function. However, is there difference in effectiveness. No studies have confirmed that. We retrospectively investigated the change rate of jaundice and transaminase change rate in patients underwent PTCD and PTGD surgery. The incidence of complications was also studied.

Methods: Retrospective analysis 106 patients with obstructive jaundice admitted to the First Hospital of Jilin University. 55 patients were treated with PTGD. 51 patients were treated with PTCD. Compared the serum TBil (total bilirubin), DBil (direct bilirubin), IBil (indirect bilirubin), ALT (alanine aminotransferase), AST (aspartate aminotransferase) levels 1 day before and 7 days after surgery, the decrease rate of jaundice was obtained. And compare the incidence of postoperative complications, such as infection, bleeding, and bile leakage, etc.

Results: Reduction was observed in most patients, but elevation was still observed in a few patients. The change rate of jaundice and aminotransferase of PTGD and PTCD group have no significant difference ($P > 0.05$), the incidence of complications have no significant difference between the two groups ($P > 0.05$).

Conclusions: There was no significant difference between PTGD and PTCD in treatment of obstructive jaundice and incidence of postoperative complications. The appropriate puncture method can be selected according to the specific situation of the patient.

Background

Obstructive jaundice is a common disease in clinical, obstructive jaundice is the obstruction of bile outflow tract caused by occupation of the hepatobiliary and pancreatic systems, Malignant tumors are the main cause of obstructive jaundice. The common sites of obstruction include the high obstruction of the hilar and above and the low obstruction of the ampulla.

Percutaneous transhepatic gallbladder drainage (PTGD) and percutaneous transhepatic cholangial drainage (PTCD) has become a common treatment for obstructive jaundice. High obstructive jaundice is usually treated by PTCD, because the obstruction is in the hilar and above. Bile cannot be discharged smoothly into the gallbladder, so the effect of gallbladder drainage is not good. In low obstructive jaundice patients, PTCD and PTGD are both applicable. Both of them can alleviate the jaundice of malignant and improve liver function of obstructive jaundice patients. To enable the patient to perform the operation smoothly. Some operators think that PTGD has the advantages of simple operation, low bleeding risk and difficulty in catheter shedding. Is there difference between PTCD and PTGD efficiency for obstructive jaundice. This is exactly the purpose of this study. The incidence of complications was also studied.

Material And Methods

Retrospective analysis 106 patients with obstructive jaundice admitted to the First Hospital of Jilin University from July 2017 to July 2018. 55 patients were treated with PTGD to reduce jaundice. 51 patients were treated with PTCD to reduce jaundice. The analysis showed that there were no statistically significant differences between the two groups in terms of age, gender, surgical method, pathological type, total bilirubin and transaminase before puncture.

Serum bilirubin levels were recorded 1 day before and 7 days after puncture. The difference of serum bilirubin between the two groups before and after puncture was calculated according to the test results, and the change rate of jaundice was calculated according to the difference of serum bilirubin and transaminase between the two groups and compared statistically. Postoperative complications were recorded and compared, the complications with high incidence are infection, bleeding, and bile leakage.

Puncture methods

8Fr pigtail drainage tube was inserted under real-time ultrasound-guided puncture for drainage in both groups. The specific method was the patient's supine position, the puncture site was usually disinfected, the towel was laid, and the optimal puncture site was located under ultrasound. Generally, choose 7 ~ 9 intercostal midaxillary line or anterior axillary line or ensisternum as insertion point. Local anesthesia of 2% lidocaine to the liver capsule. The skin at the insertion point was cut for about 2–3 mm incision, and 18G of interventional puncture needle was used for percutaneous transhepatic puncture of the gallbladder or target dilated bile duct. 8Fr external drainage tube was placed by Seldinger method, and the drainage tube was fixed on the skin.

Statistical analysis

Statistical analysis was performed using the variance test. Statistical significance was defined as $P < 0.05$. All data were processed with SPSS 18.0 software.

Results

Both PTCD and PTGD have definite effects on reducing jaundice and improving liver function. Reduction was observed in most patients, but elevation was still observed in a few patients. The change rate of jaundice and aminotransferase of PTGD and PTCD group have no significant difference ($P > 0.05$). There was no significant difference in ALT group ($p = 0.40$), AST group ($p = 0.29$), TBil group ($p = 0.06$), DBil group ($p = 0.13$) and IBil group ($p = 0.91$), and there was no significant difference in the complications ($p = 0.93$, $p = 0.71$, $p = 0.91$) (Table 1–2).

Discussion

Malignant obstructive jaundice can lead to hyperbilirubinemia, endotoxemia, decreased intestinal mucosal barrier function, intestinal bacterial translocation, and even heart and renal failure and other

critical symptoms, increasing the risk of surgery and complications. Studies have confirmed that preoperative jaundice reduction in patients with malignant obstructive jaundice can effectively reduce perioperative risks and postoperative complications.

For patients with high malignant obstructive jaundice, there are two commonly used clinical prescription for reducing jaundice: PTCD and endoscopic nasobiliary drainage (ENBD). ENBD is difficult to operate and has many complications, so its clinical application is limited. PTCD reduces jaundice faster and is more economical and safe than ENBD[1]. Although these patients can also choose endoscopic retrograde cholangiopancreatography(ERCP). Studies have shown that PTCD may have more advantages than ERCP in the treatment of obstructive jaundice[2].

For patients with low obstructive jaundice, pancreaticoduodenectomy is the fundamental method to remove obstruction of ampulla[3]. In order to improve the perioperative safety of this type of surgery, preoperative biliary drainage is particularly important[4]. Both PTCD and PTGD had good preoperative jaundice reduction effect. Because the bile duct and blood vessel accompany, PTCD may cause bleeding, bile leakage, drainage tube falling off and other complications. PTGD can be punctured directly into the gallbladder through the avascular area of the liver. So there are fewer complications. Therefore, many operators prefer PTGD. But for patients with cholecystectomy and other gallbladder diseases not suitable for PTGD, PTCD is appropriate. This study has confirmed that there is no significant difference between PTCD and PTGD in alleviating jaundice and improving liver function in patients with obstructive jaundice. Therefore, PTCD can still be selected to reduce jaundice for patients who cannot perform PTGD, so as to facilitate subsequent surgery. For jaundice caused by acute gallbladder inflammation, the patients are not suitable for immediate surgery, puncture treatment can well reduce jaundice, drain bile, and promote the regression of inflammation in patients, so as to facilitate subsequent surgical treatment. For these patients with inflammation, preoperative puncture and jaundice reduction therapy is very important[5]. In most cases, PTCD is selected for the drainage of patients with gallbladder inflammation. The complication incidence of both treatments were low, consistent with literature reports, and there was no significant difference in the complication incidence of the two treatments[6].

Conclusion

PTCD and PTGD are effective methods to reduce jaundice, and there is no statistical difference in the improvement of jaundice and liver function, postoperative complications. Therefore, appropriate puncture method can be selected according to the specific patient condition.

Abbreviations

PTGD: percutaneous transhepatic gallbladder drainage

PTCD: percutaneous transhepatic cholangial drainage

TBil: total bilirubin

DBil: direct bilirubin

IBil: indirect bilirubin

ALT: alanine aminotransferase

AST: aspartate aminotransferase

ENBD: endoscopic nasobiliary drainage

ERCP: endoscopic retrograde cholangiopancreatography

Declarations

Ethics approval and consent to participate

The study was approved by the Ethics Committee of the First Hospital of Jilin University. Consent to participate was waived by the institutional review board due to the retrospective nature of this study and the fact that patients were deidentified.

Consent for publication

Not applicable.

Availability of data and materials

The datasets generated during and/or analyzed during the current study are not publicly available due to confidentiality of human subjects but are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

Mingwei Sui conceived of the study and its design, collected the data, performed the statistical analysis and drafted the manuscript. Lei Liu participated in data acquisition and helped to draft the manuscript. Xiukun Li helped in interpretation of data and to draft the manuscript. Yanan Zhou participated in data acquisition. All authors read and approved the final manuscript.

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Tables

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