



Worsening jaundice induced by biliary drainage

To the Editor,

The external drainage of the common bile duct by the placement of a T-tube is a common practice after choledocholithotomy for patients with choledocholithiasis (1,2); however, its routine use is controversial (3-5). We have managed hundreds of patients with choledocholithiasis who required T-tube drainage after laparoscopic choledocholithotomy in recent years. We unexpectedly observed 15 patients with more severe jaundice induced by biliary drainage after the operation. Fortunately, this serious complication was resolved by bile retransfusion through the nasojejunal feeding tube in 11 patients.

One of recent patient is a 71-year-old man who underwent cholecystectomy and blood transfusion 30 years ago. The patient was diagnosed with chronic hepatitis C and choledocholithiasis on admission in 2015. He had jaundice, severe pruritus, nausea, and anorexia for 4 months. His total bilirubin, alanine aminotransferase, and HCV RNA levels were 140.3 $\mu\text{mol/L}$, 84 U/L, and 1,750 IU/mL on admission, respectively. After comprehensive consideration, we performed laparoscopic choledocholithotomy with external drainage via a T-tube and intended to proceed with antiviral therapy using direct-acting antiviral agents after the resolution of choledocholithiasis. The volume of drainage was approximately 3,300 mL daily, which is greater than normal bile production. Total bilirubin levels decreased to 90.7 $\mu\text{mol/L}$ on day 3 after operation (Figure 1). They then gradually climbed to 440.9 $\mu\text{mol/L}$ on day 21 after surgery. During the jaundice-increasing period, symptoms and signs were more severe. In addition, electrolyte levels, coagulation, and renal function deteriorated. However, no evidence of infection was noted, and the bile duct was unobstructed. At this point of the evaluation for liver transplantation, we consider that jaundice may attribute to the excessive loss of bile. Thus, retransfusion of the drainage bile with 800 to 1000 mL daily via a nasojejunal feeding tube is recommended. Surprisingly, the total bilirubin levels started to decrease from day 3 after the placement of the nasojejunal tube. The

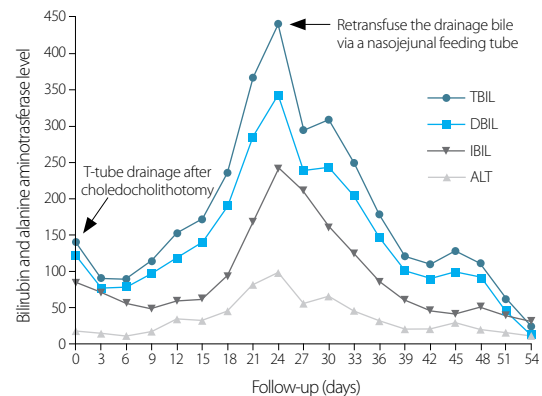


Figure 1. Dynamic changes in bilirubin and alanine aminotransferase levels

The upper limits of the normal total bilirubin (TBIL), direct bilirubin (DBIL), indirect bilirubin (IBIL), and alanine aminotransferase (ALT) levels are 25 $\mu\text{mol/L}$, 10 $\mu\text{mol/L}$, 14 $\mu\text{mol/L}$, and 40 U/L, respectively.

patient recovered and was discharged from the hospital after the removal of the two tubes on day 30.

This clinical phenomenon "jaundice induced by biliary drainage" has rarely been reported and might be considered as a new complication of T-tube drainage; however, the underlying mechanism is unclear. We wish to bring this situation to the attention of our colleagues not only as an example of the powerful management of this condition but also to note the potential existence of "jaundice induced by the in vivo excessive loss of bile in the absence of T-tube drainage."

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Ethics Committee Approval: N/A.

Informed Consent: N/A.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept - H.X.L., Z.J.Y., Q.L.Z.; Design - Q.L.Z.; Supervision - H.X.L., Z.J.Y., Q.L.Z.; Materials - H.X.L., Z.J.Y.; Data Collection and/or Processing - H.X.L., Z.J.Y.; Analysis and/or Interpretation - Q.L.Z., H.X.L.; Writer Q.L.Z.

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Acknowledgements: Authors would like to thank the pa-

tients and their families. Authors appreciate Dr. Xiao-Bo Hu (Department of Interventional Radiology, The First Affiliated Hospital of Zhengzhou University) that helped to perform the operations.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: Authors declared that this study has received financial support from The Key Scientific Research Project of Henan Higher Education Institutions of China (No: 15A320083), and The National Natural Science Foundation of China (No: 81302593).

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Received: May 10, 2016

Accepted: May 20, 2016

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