A rare case of gangrene of cystic duct due to the insertion of endoscopic nasobiliary drainage (ENBD) tube into the cystic duct by mistake

Key words: Endoscopic nasobiliary drainage. Endoscopic retrograde cholangiopancreatography. Gangrenous cholecystitis.

Dear Editor,

Severe biliary complications after endoscopic retrograde cholangiopancreatography (ERCP) are rare. To the best of our knowledge, this is the first case report of gangrenous cholecystitis caused by mistaken insertion of an endoscopic nasobiliary drainage (ENBD) tube into the cystic duct.

Case report

A 64-year-old female patient received ERCP for common bile duct stones and obstruction. Her preoperative total bilirubin level was 321.5 μmol/l. We confirmed stones and obstruction in the lower bile duct, and performed endoscopic biliary sphincterotomy and ENBD (Fig. 1A). Since the patient had severe jaundice before surgery, the stones were not removed during ERCP (planned for treatment at the second stage). The ENBD volume was 500 ml on postoperative day 1 and 200 ml on postoperative day 2. However, no bile was drained on postoperative day 3. Then, the patient began to experience right upper quadrant pain, along with fever, shivering, hypotension, jaundice and leukocytosis. Magnetic resonance cholangiopancreatography showed: gallbladder shrinkage, gallbladder wall thickening, common bile duct stones, absence of the ENBD tube, and abnormal signals at the common hepatic duct, which were considered to be caused by air bubbles (Fig. 1B). Erect abdominal plain film showed that the ENBD tube was located in the bile duct (Fig. 1C).

We urgently performed laparoscopic common bile duct exploration plus laparoscopic cholecystectomy and T-tube drainage performed under general anesthesia, during which the gallbladder was found to be edematous and shrunked, Calot’s triangle was difficult to identify, and gangrenous changes were identified in the cystic duct. After subtotal cholecystectomy, we found
that the ENBD tube had entered into the gallbladder through
the cystic duct (Fig. 1D). No suppurative bile was found after
incision of the bile duct, and the ENBD tube entered the cystic
duct retrogradely. The surgery went smoothly, and postoperative
recovery was good.

Discussion

Cotton et al. were the first to use an ENBD catheter for several
days in the common bile duct after endoscopic biliary sphincter-
otomy (1). ENBD has become a key approach for clinical biliary
drainage during ERCP (2,3); however, gangrenous cholecystitis
caused by mistaken insertion of an ENBD tube into the cystic
duct is rarely seen in clinical practice. The specific mechanisms
remain unclear. In our current case, we initially suspected that
the acute obstructive suppurative cholangitis was caused by
non-patent drainage or ENBD tube prolapse. Fortunately, we
did not perform a second ERCP. Emergency surgical exploration
was performed instead, during which the septic shock was found
to be caused by acute gangrenous cholecystitis. Therefore, for
ERCP operators, the location of the ENBD tube must be repeat-
edly checked upon completion of the operation. In particular,
whether the ENBD tube is located in the right hepatic duct or in

the gallbladder should be carefully distinguished. In our case, the
head of the ENBD tube was mistakenly regarded as being in the
right hepatic duct, and then postoperative fever and abdominal
pain were mistakenly thought to have been caused by bile duct
obstruction and infection.

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