

CASE REPORT

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Cetrimide-Chlorhexidine-Induced acute hepatic failure

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Abstract

Hydatid cysts are frequently found in the liver and may be asymptomatic until growth occurs. Scolicidal agents, such as cetrimide-chlorhexidine, have been used safely in hydatid cyst surgery for many years. Here we present a case of acute hepatic failure after the usage of the cetrimide-chlorhexidine solution during hepatic hydatid cyst surgery. To the best of our knowledge, this is the first such report in the literature.

Keywords: Hydatid cyst, cetrimide-chlorhexidine, hepatic failure

Introduction

The scolicidal agent Savlon (0.5% cetrimide-0.05% chlorhexidine) is used in hydatid cyst surgery [1]. Although it is a low-toxic, fast-acting agent, there is no consensus on the appropriate dose and concentration. Here, we present a case of acute hepatic failure after using cetrimide-chlorhexidine solution during hepatic hydatid cyst surgery.

Case Presentation

A 28-year-old female patient was admitted to the clinic complaining of a palpable abdominal mass and swelling. Ultrasonography revealed five hydatid cysts, the largest of which was 180mm. Magnetic resonance imaging (MRI) showed a cystic lesion 56x38x49mm in the left lobe lateral segment, a 110x95x78mm cyst in the left lobe medial segment, 110x80x95mm, and 105x85x75mm cysts in the right lobe segment 5-6, and a 60x40x38mm cyst in the right lobe posterior segment adjacent to the inferior vena cava (Figure 1). Cysts in segments 5-6 compressed the right kidney and cause partial hydronephrosis. All laboratory tests were normal at admission except the echinococcal hemagglutination inhibition test with a rate of 1/2560 (positive). The patient was advised to take oral albendazole 400 mg twice a day for 21 days preoperatively. After written informed consent was obtained from the patient, she underwent surgery in June 2018. The abdomen was explored through a right subcostal incision.

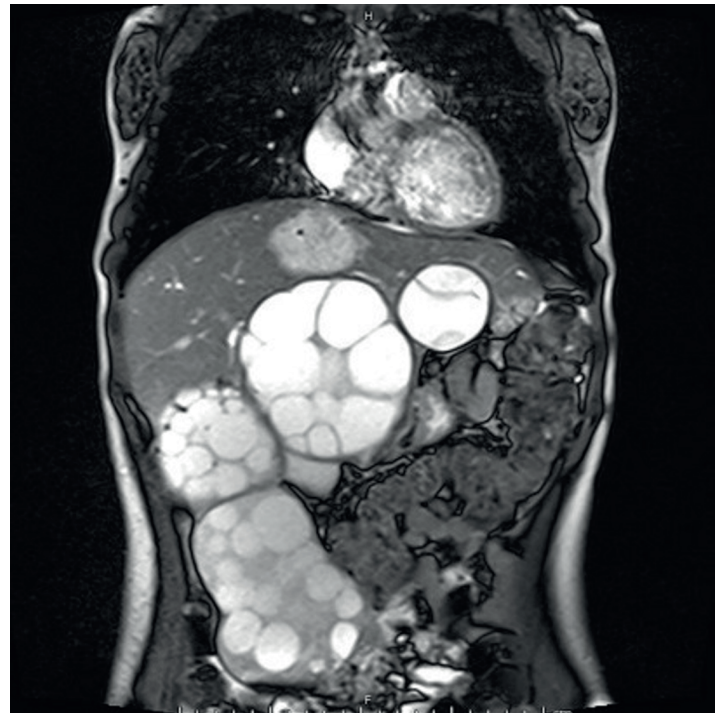


Figure 1. Preoperative radiological image of the hydatid cyst

To prevent possible contamination, cetrimide-chlorhexidine soaked compresses were placed around the cysts. The solution was diluted with isotonic saline at a 1:1 ratio and injected into each cyst. After five minutes, the cysts were aspirated. This procedure was repeated three times after which the cyst roof was opened, and the contents discharged. Cystectomies were performed to remove the cysts, except for the one that was located in the right lobe

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posterior segment because of its adjacency to the inferior vena cava. Cystectomy-drainage-omentopexy was performed to this cyst. Blood tests revealed the following results: ALT, 651 U/L (normal = 0-34); AST, 655 U/L (normal = 0-31); GGT, 9 U/L (normal = 0-40); ALP, 35 U/L (normal = 35-104); Total bilirubin, 0.65 mg/dL (normal = 0-1.2); WBC count, 18.8×10^3 (normal = 3.98-10.04); INR, 1.77 (normal = 0.8-1.2); PT, 20.5s (normal = 12-16.3). Other parameters were normal. In the first postoperative day, ALT, INR, and PT increased to 3014 U/L, 2.7, and 30s, respectively. Due to a deficiency in hemostasis, drainage was hemorrhagic during the first day at 800ml/day. Her hemoglobin level decreased to 8.5g/dL from 13.5g/dL and was replaced with the required erythrocyte suspension. Despite everything, blood gas parameters were normal. Vitamin K, tranexamic acid infusion, fresh frozen plasma, and intravenous

N-acetyl cysteine 1800 mg/day were provided to improve hemostasis parameters and support the liver. On the second postoperative day, the following values were detected: ALT, 1373 U/L (decreasing); AST, 723 U/L; total bilirubin, 1.46mg/dL; direct bilirubin, 0.86 mg/dL (increasing). The patient was started on Silymarin (Leagalon®) to support the liver and ursodeoxycholic acid for the prevention of bile stasis. Liver test results continued to gradually decrease. The patient underwent MRI scanning of the abdomen due to back pain and suspicion of an abscess on the fifth postoperative day. No intra-abdominal pathology was observed (Figure 2). On the 10th postoperative day, the following results were observed: ALT, 153 U/L; AST, 15 U/L; INR, 1.3. During this period, the patient did not require admittance to the intensive care unit.

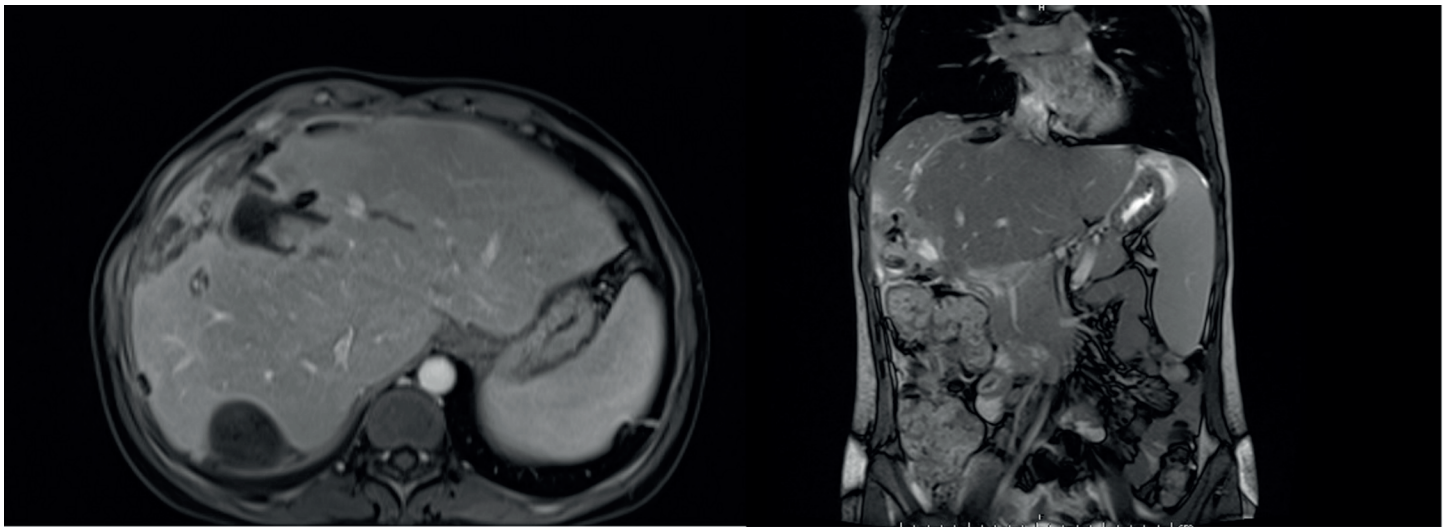


Figure 2. Post-operative 5th-day images of the patient

Discussion

Here we report a case of hepatic failure after cetrimide-chlorhexidine usage. There are many known scollicidal agents such as formalin, hypertonic saline, ethanol, hydrogen peroxide, silver nitrate, and cetrimide-chlorhexidine [1]. An ideal scollicidal agent should be effective and have minimal adverse effects. After the use of a cetrimide-chlorhexidine solution, despite its powerful effects, there are a few reports in the literature of toxicity resulting in pulmonary dysfunction, renal failure, metabolic acidosis, and chemical peritonitis [2-5]. Previous studies have investigated the impact of cetrimide-chlorhexidine on the hepatobiliary system. While some reports indicated the solution was safe to use, some indicated that it should not be used if there is communication between the cyst and biliary duct. It was observed that damage can occur resulting in sclerosing cholangitis and liver cirrhosis [6,7].

Viral hepatitis, toxic hepatitis, and ischemic hepatitis should be considered in cases with aminotransferases elevations of >1000 U/L [8]. In this case, a second possible mechanism may have

been ischemic hepatitis caused by the operative procedure; however, no image of a hypoperfused area suggesting ischemic hepatitis was observed on the MRI.

Performing an indocyanine green retention test in the preoperative period is important to evaluate the remaining liver reserve, especially in patients scheduled for hepatic resection. In this case, hepatic resection was not performed, and cysts were removed by enucleation.

Our patient's liver toxicity may be related to the fact that some of the cysts were linked to bile ducts. Larger and older cysts are particularly more likely to be associated with bile ducts. In such circumstances, monitoring the patient closely and acting expediently can be life-saving.

Conclusion

Acute hepatic failure caused by a cetrimide-chlorhexidine solution is a rare and life-threatening condition associated with hepatic hydatid cyst surgery.

Conflict of interests

The authors declare that they have no competing interest

Financial Disclosure

All authors declare no financial support.

Informed Consent

The patients included in the study signed the informed consent form.

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