Clinical Vignette: A Case of Successful Surgical Decortication for Empyema with Trapped Lung, in A Patient with Decompensated Cirrhosis

TR Chopade[1], SY Wong[1], DA Sass[1], SW Cowan[2], JM Civan[1]

1. Division of Gastroenterology & Hepatology; 2. Division of Cardiothoracic Surgery, Thomas Jefferson University, Philadelphia, PA

Introduction

Hepatic hydrothorax (HH) is a difficult-to-control complication of cirrhosis. Chest tube (CT) drainage is an option for management of HH, but is associated with a high rate of secondary infection and other complications.

Clinical Case

A 35 year old male with hepatitis C cirrhosis was transferred to our hospital for management of HH. Prior to transfer, a pleurex catheter was placed because he required serial thoracenteses.

At our hospital, a trial of aggressive diuresis was unsuccessful, so he underwent transjugular intrahepatic portosystemic shunt (TIPS). However, drainage from the catheter continued at 1 to 1.5 liters daily, and further diuresis was limited by hyponatremia. With a MELD score of 24 and refractory HH, liver transplant (OLT) was clearly indicated. However, shortly after TIPS, pleural fluid culture grew methicillin-resistant S. aureus. He was treated with antibiotics, and his pleurex catheter was removed, but chest computed tomography showed multifocal pneumonia, persistent multiloculated effusion, and trapped lung(fig. 1).

He was treated with tissue plasminogen activator infusion via new CTs, but his trapped lung did not resolve.

Clinical Case (continued)

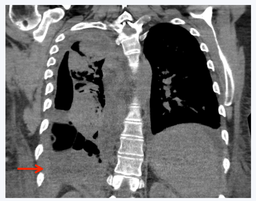

Figure 1. Initial Coronal CT Chest reconstruction demonstrating right sided empyema with thickened pleura (arrow) with trapped lung.

Figure 2. Post decortication Coronal CT Chest reconstruction demonstrating improvement in lung aeration.

Bacterial culture of further pleural fluid samples remained without growth, and he was discharged with a plan to complete a 6-week course of vancomycin, with his CTs in place.

Less than two weeks later, the patient was re-admitted with encephalopathy. Repeat diagnostic thoracentesis yielded a new culture growing E. coli. Consensus after extensive multidisciplinary discussion was that resolution of his infection and trapped lung was no longer realistic, and OLT impossible, without surgical intervention. Therefore, he underwent open thoracotomy with decortication. A repeat chest computerized tomography at 3 weeks post-procedure showed that the empyema had resolved and lung aeration improved (Fig.**2).**

Clinical Case (continued)

Persistently high post-operative CT output combined with hyponatremia made it very difficult to remove his four CTs, the final CT being removed on post-op day 56. He was discharged with a plan to complete an outpatient OLT evaluation.

Unfortunately, the patient resumed using illicit drugs, precluding further consideration for OLT. He was later readmitted with renal failure, and died approximately 6 months after his initial presentation. However, his empyema was ultimately not what limited his survival.

Discussion

The initial management of hepatic hydrothorax should focus on dietary sodium restriction and medical therapy with diuretics. Serial thoracentesis is an effective method for controlling hepatic hydrothorax when medical therapy with diuretics is insufficient.

For selected candidates, trans-hepatic porto-systemic shunt (TIPS) placement may be an alternative to serial thoracentesis. However, not all patients are candidates for TIPS with contra-indications to the procedure including renal failure, right heart failure, and advanced liver failure with model for end-stage liver disease (MELD) score >15.

Ultimately, liver transplantation is the definitive intervention which reverses the underlying liver disease and portal hypertension which lead to the development of hepatic hydrothorax.

Discussion (continued)

In some cases of hepatic hydrothorax, chest tubes or pleurex catheters are placed to provide long-term access for draining the pleural fluid. The presence of an indwelling tube carries significant risks. Orman & Lok reported a retrospective analysis of patient outcomes after chest tube placement in this context, and found that 29% developed empyema as a complication. Current guidelines issued by the American Society for the Study of Liver Disease consider chest tube placement contra-indicated for the purpose of chronic management of hepatic hydrothorax.

When empyema does develop as a complication of either spontaneous bacterial empyema or as a complication secondary to indwelling chest tube placement, management is challenging. Patients developing this complication by definition have advanced liver disease, which in turn places them at high risk for surgical interventions in general, and decortication in particular. Although data are limited, Chen et al reported a series of 32 cirrhotic patients undergoing thoracoscopy for management of empyema, and observed mortality in 21%. Kim et al reported a smaller case series of 4 patients, with the more severe clinical presentation matching that of the case reported here, of cirrhotic patients with empyema, further complicated by trapped lung. In this case series, one of the two patients undergoing surgical decortication died.

Conclusion

This case highlights the risk of managing hepatic hydrothorax with drainage catheters. Additionally, the case demonstrates that successful surgical decortication of empyema is possible even in a decompensated cirrhotic, and this high-risk procedure may be the critical factor deciding OLT candidacy and long-term survival.

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Disclosures

None of the authors have any relevant disclosures to report.