Novel treatment (new drug/intervention; established drug/procedure in new situation)

Use of Tunneled Pleural Catheters for the management of Refractory Hepatic Hydrothorax

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Summary

Hepatic hydrothorax is a complication seen in up to 10% of patients with advanced liver disease, which typically presents with recurrent pleural effusions. Current available therapeutic options are limited. We demonstrate this condition in a 52-year-old female, and discuss the diagnostic and management difficulties we encountered. Through introducing an intrapleural catheter we successfully enabled resolution of symptoms, reduced hospital admissions and significantly improved our patient's quality of life, with no recurrence of an effusion at 9-month follow-up.

BACKGROUND

Hepatic hydrothorax is a complication commonly seen in up to 10% of patients with advanced liver disease.¹ The management of hepatic hydrothorax poses great difficulties to physicians with current treatment options limited.

We present a case where an intrapleural catheter (IPC) was successfully used in the management of a hepatic hydrothorax, improving quality of life and allowing medical management to take effect. There are very few reports of the use of IPC for this indication and we feel others would benefit from consideration of this therapy.

CASE PRESENTATION

A 52-year-old Caucasian female, with a background of systemic lupus erythematosus, hypothyroidism and splenic lymphoma (managed by splenectomy in 2006), presented with multiple episodes of shortness of breath over a period of 5 months. She was a life-long smoker, with minimal alcohol consumption and no significant family history to note. The patient lives at home with her husband, daughter and newly born grand daughter. Frequent hospital admissions imposed additional social difficulties upon the family.

Figure 1 Chest CT scan demonstrating a large right-sided pleural effusion and segmental collapse of the right lower lobe.

Figure 2 Chest radiograph demonstrating a large right-sided pleural effusion, with no significant mediastinal shift. The recurrent hepatic hydrothoraces present with similar radiological features.

Figure 3 Chest radiograph demonstrating a large right-sided pleural effusion, previously managed through insertion of a chest drain.

Of note, 3 years previously the patient had developed ascites. An abdominal ultrasound scan revealed obstruction of the portal vein secondary to thrombosis, with extensive collaterals. An incidental chest radiograph demonstrated a small right-sided pleural effusion. This episode was managed with salt restriction and spironolactone therapy.

INVESTIGATIONS

Laboratory tests were unremarkable, with normal liver function tests, rheumatoid factor, double-stranded DNA (1.10) and complement levels (C3 1.06, C4 0.17).

Abdominal ultrasound revealed a simple 2 mm cyst in the left lobe of the liver, with a hyperechoic lesion consistent with a haemangioma. Doppler waveform imaging showed obstruction of the portal vein secondary to thrombosis, with extensive collateral formation.

Chest CT (figure 1) displayed a large right-sided pleural effusion and segmental collapse of the right lower lobe, and positron emission tomography scan excluded a lymphoma recurrence. Pleural fluid analysis was consistent with a transudative process (protein <30 g/dl) and cytology showed the presence of normal mesothelial cells.

Figure 4 Chest radiograph demonstrating a large right-sided pleural effusion, now managed successfully through insertion of an intrapleural catheter.

Figure 5 Chest radiograph demonstrating resolution of the right-sided effusion prior to elective removal of intrapleural catheter at 12-weeks postinsertion.

Collectively, these investigations supported a unifying diagnosis of hepatic hydrothorax.

TREATMENT

Each time the pleural effusion recurred, drainage was performed either through a therapeutic aspiration or chest drain insertion (figures 2 and 3). A total of six pleural procedures were carried out, on both an in and outpatient basis.

Once it became clear that the underlying cause was a hepatic hydrothorax, therapy was recommended with salt restriction and spironolactone, 100 mg once a day.

Despite medical treatment, fluid continued to reaccumulate so a decision to insert an IPC was made (figure 4). This was performed at thoracoscopy. The patient was educated on ambulatory long-term self-drainage techniques by our respiratory nurse specialist.

OUTCOME AND FOLLOW-UP

The use of the IPC greatly improved the patient's quality of life as it provided a resolution of respiratory symptoms, which subsequently prevented frequent hospital admissions.

Figure 6 (A,B) Chest radiograph demonstrating no recurrence of hepatic hydrothorax at 6- and 9-months postremoval of intrapleural catheter.

The IPC remained in-situ for a total of 12 weeks. During this period we arranged our patient to attend the ambulatory care clinic to determine the frequency and volume of fluid self-drained, and assess any change in blood parameters on a monthly basis.

During the initial 4 weeks, our patient was draining a maximum of 500 mls three times a week. Thereafter, self-drainage of approximately 250 mls once weekly was sufficient enough to control her symptoms. Towards the latter 2 weeks no drainage was required as our patient was asymptomatic.

Throughout this 12-week period, no deterioration in renal function had been noted (preprocedure creatinine 54 $\mu\text{mol/l}$; postprocedure creatinine 58 $\mu\text{mol/l}$) and serum albumin had remained stable at 35 g/l.

With the rate of fluid accumulation significantly diminished, the catheter was electively removed (figure 5).

Our patient continues to remain under close surveillance. Subsequent follow-up has revealed that there has been no recurrence of the effusion over a 9-month period following elective removal of the IPC (figure 6A,B). Management with salt restriction and spironolactone continues.

DISCUSSION

We show how an IPC can improve morbidity in a patient with hepatic hydrothorax. It allowed time for medical therapy to be initiated and take effect. Very few cases have been documented where IPC's have been considered in the management of pleural effusions, more specifically in hepatic hydrothorax.

Putman et al (The Annals of Thoracic Surgery 2000) retrospectively reviewed 100 patients with malignant pleural effusions, and found that outpatient management through insertion of an indwelling pleural catheter can be used effectively and safely.²

Mercky *et al* (Respiration 2010) described a 48-year-old patient with hepatic hydrothorax who continued to relapse despite sodium-restriction, optimal diuretic therapy and transjugular intrahepatic portosystemic shunting. The patient was successfully managed with use of an indwelling pleural catheter. Subsequent follow-up revealed spontaneous pleurodesis with no recurrence in symptoms over a 6-month period.³

Learning points

- Introduction of an IPC may be used in the management of a hepatic hydrothorax.
- Medical therapy failed to control recurrence of pleural effusions. Here we demonstrate how patient education in the self-drainage technique with an IPC can significantly improve quality of life.
- Hepatic hydrothorax is a complication seen in 10% of patients with alcohol-induced liver cirrhosis. Portal vein thrombosis was, unusually, found to be the underlying pathology in this case.

Competing interests None.

Patient consent Obtained.

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