Pleural effusion in advanced liver disease

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ABSTRACT

We present the case of a decompensated cirrhotic in whom localized pleural effusion was managed on the lines of tubercular effusion inadvertently, with use of catheter drainage, leading to fatal complications. Pleural effusion in advanced cirrhosis must be evaluated in a step wise manner to minimize interventional treatments.

Key words: cirrhosis, portal hypertension, pleural effusion, emphysema, pneumomediastinum

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INTRODUCTION

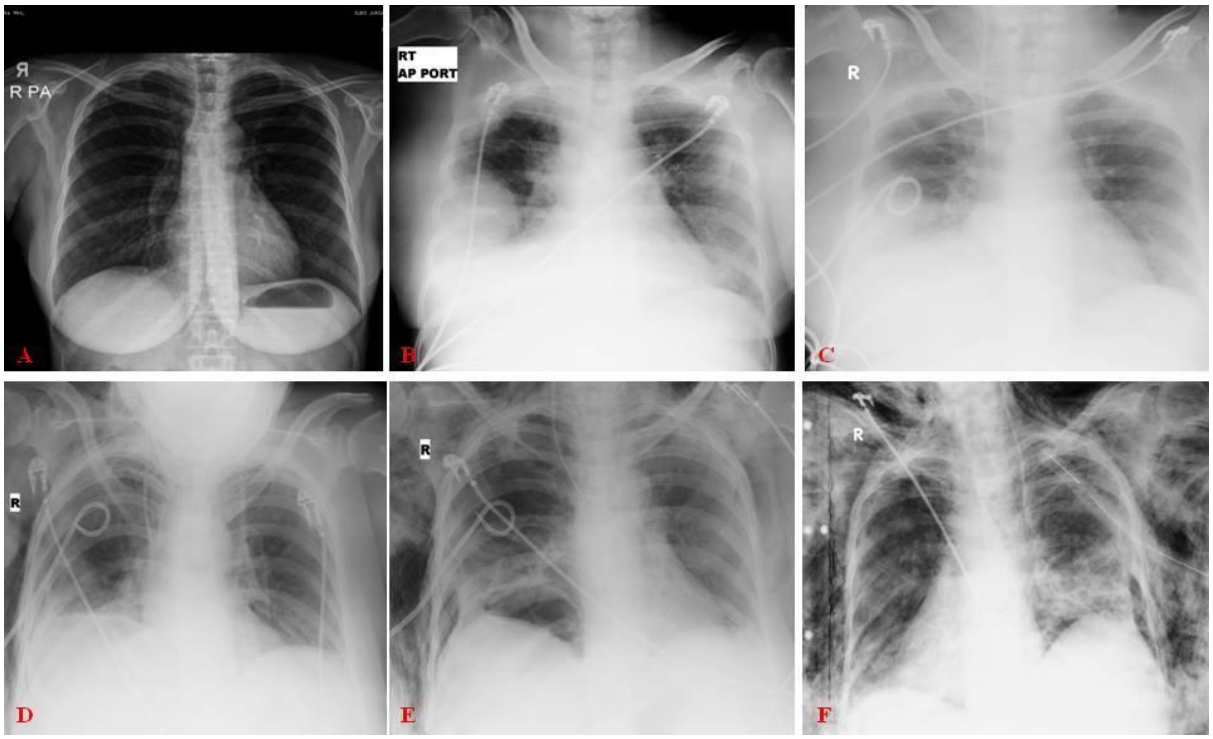
Pleural effusions in advanced cirrhosis are not uncommon. In areas areas endemic for tuberculosis, such as India, the differentiation of hepatic hydrothorax as against tubercular effusion is of utmost importance. Imaging features can lead to false positive diagnosis of tubercular pleural disease and simple interventional investigations can help delineate the cause in such circumstances, thereby preventing unwanted and interventions that could prove fatal.

CASE REPORT

A 53 year old woman, diagnosed as a case of decompensated cirrhosis of liver secondary to non alcoholic steatohepatitis presented to our liver intensive unit with progressive severe breathlessness associated with decrease in urine output and worsening of bilateral leg swelling since a period of one week. She is not known to suffer from chronic lung or cardiac diseases (Figure 1A). One week prior, she was admitted to a local hospital for cough and breathlessness associated with right sided heaviness over the chest. She was found to have localized right sided pleural effusion (Figure 1B) for which she underwent pig tail catheter insertion (Figure 1C), the fluid reports of which were suggestive of low protein, high serum

to pleural fluid albumin gradient (SPAG) with leukocyte count of 800 cells, which was lymphocytic predominant. During the course of hospital stay, she developed dull aching chest pain, worsening 2 days after the catheter insertion after which serial chest X rays were performed and manipulation of the drain undertaken (Figure 1D and E). Five days after manipulation, the patient developed severe progressive breathlessness, a rigid and bloated chest wall leading to respiratory embarrassment. She was then shifted to our intensive unit for further management. Evaluation at admission revealed a breathless, cyanotic obese woman with tachycardia and tachypnea in hepatic encephalopathy grade 2. Immediate bedside chest Roentgenogram revealed features shown in Figure 1F.

What Is Your Diagnosis?
Answer: Localized hepatic hydrothorax with iatrogenic severe subcutaneous emphysema



DISCUSSION

The patient was immediately put on mechanical ventilator support and multiple large bore subcutaneous drains underwater seal were placed on either sides of the chest wall and suction pressure increased on the already present chest drain. Investigation send at baseline revealed a Child Pugh score of 10 with Model for end stage liver disease score of 22. Even though there was dramatic reduction in emphysema, the patient developed multiple skin and soft tissue infections, nosocomial pneumonia and secondary bacterial pleuritis in hospital and after a prolonged course in the liver intensive unit; she eventually died due to multi drug resistant infections, multi organ failure and cardiorespiratory arrest.

Pleural effusion (PE) in the presence of underlying cirrhosis commonly occurs on the right side and when typically > 500mL in the absence of cardiopulmonary or parenchymal disease

or malignancy, is known as hepatic hydrothorax (HH), which is seen in 4 to 12 percent of cirrhotics. (1, 2) Patients commonly present with cough, shortness of breath or pleuritic chest pain. It is very uncommon for HH to present as localized PE and such instances, mostly in the left hemithorax points commonly towards an infectious source such as tuberculosis. (3) In our patient, even though the fluid analysis revealed portal hypertensive effusion (low protein, high SPAG) the treating physicians decided for a drain placement in view of the localized nature of the fluid collection prior to fluid analysis reporting. Hepatic hydrothorax is classically managed with salt restriction, diuretics (frusemide and spironolactone) and pleurocentesis in the presence of overt symptoms. Chest drain placement for HH caries significant morbidity and mortality and without benefit. (4) In patients who require repeated pleurocentesis or have diuretic intractable (developing complications on optimal diuretic dosing) or resistant (not responding to optimized diuretic dosing) liver transplantation (LT) is curative for portal hypertension and cirrhosis or in the absence of LT, a transjugular intrahepatic portosystemic shunt becomes useful as bridge to LT. Severe subcutaneous emphysema (SCE) is a well known iatrogenic complication of chest tube placement. End stage cirrhotics have dermopathies leading to extensive friability, poor vasculature and integrity of skin and soft tissues leading to poor healing. Invasive procedures in advanced cirrhotics are to be undertaken with caution. Even though placement of large bore subcutaneous needle drains and increasing catheter suction has been shown to improve SCE drastically, (5) the former modality has not been studied in cirrhotics who behave differently from other patient populations. In dire straits we had to decompress the patient immediately to improve ventilation that eventually led to reduction in SCE, but made way for fatal infectious complications.

CONCLUSION

Cirrhotic patients with pleural effusion should initially undergo pleurocentesis and fluid analysis followed by directed management. Even in the presence of rapidly accumulating trasudative or exudative effusions, invasive measures such as chest drain placements should never be attempted in advanced cirrhotics. This might bring down the already beak natural history down to further morbid levels.

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