

Introduction

Transfusion-associated lung injury (TRALI) is an infrequent but serious complication that can be seen in patients receiving blood products. TRALI occurs either during or within 6 hours of receiving blood or blood products and presents as respiratory insufficiency and hypoxemia. Imaging is notable for bilateral fluffy infiltrates consistent with pulmonary edema. Albumin is used in various clinical settings to increase intravascular volume and oncotic pressure. Non-cardiogenic pulmonary edema may develop following albumin treatments especially in albumin deficient patients due to the rapid expansion of intravascular volume and oncotic and hydrostatic pressure causing fluid leakage into the alveolar spaces. To date, there have been no documented cases of TRALI resulting from albumin treatments.

Case Presentation

We present a case of a 41-year-old male with alcoholic liver disease who developed acute hypoxic respiratory failure after receiving an albumin transfusion. He was admitted for increasing abdominal pain and distension as well as 3 weeks of worsening lower extremity swelling. He was jaundiced, had tense ascites, and decreased breath sounds at the lung bases. Imaging showed possible small pleural effusions. The patient received increasing doses of furosemide with minimal improvement. To encourage diuresis, albumin infusions were initiated on the second day. He underwent paracentesis and a transthoracic echocardiogram revealed normal cardiac function. On the third day, 30 minutes into an albumin infusion, the patient was noted to be in respiratory distress with elevated blood pressure, increased respiratory rate, and hypoxia that improved with supplemental oxygen. Repeat labs showed a serum albumin of 4.2 g/dL increased from 1.9 g/dL on admission. Imaging showed pleural effusions and interstitial and airspace abnormalities consistent with pulmonary edema.

Discussion

Albumin is a common treatment for complications related to liver cirrhosis including spontaneous bacterial peritonitis, large-volume paracentesis, and diuretic-refractory ascites. Albumin's effect is derived from its ability to maintain colloid osmotic pressure. Patients with impaired hepatic function may present with signs and symptoms associated with albumin deficiency. In albumin-deficient patients, treatment with albumin may affect various organ's hemodynamics. For example, pulmonary capillaries seem to be permeable to albumin as compared to other capillaries. Thus, this may result in undesirable effects with acute alterations in serum albumin.

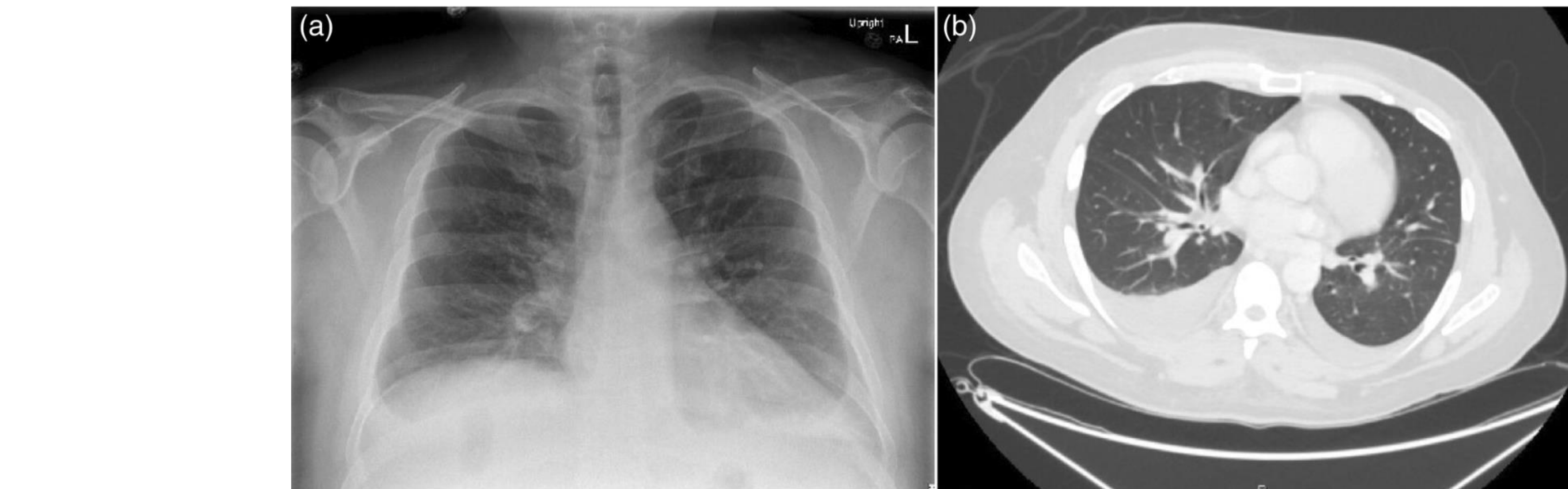


Figure 1: Chest x-ray (a) and computerized tomography (b) on presentation showed small effusions and underlying atelectasis at the lung bases. The cardio-mediastinal silhouette is normal.

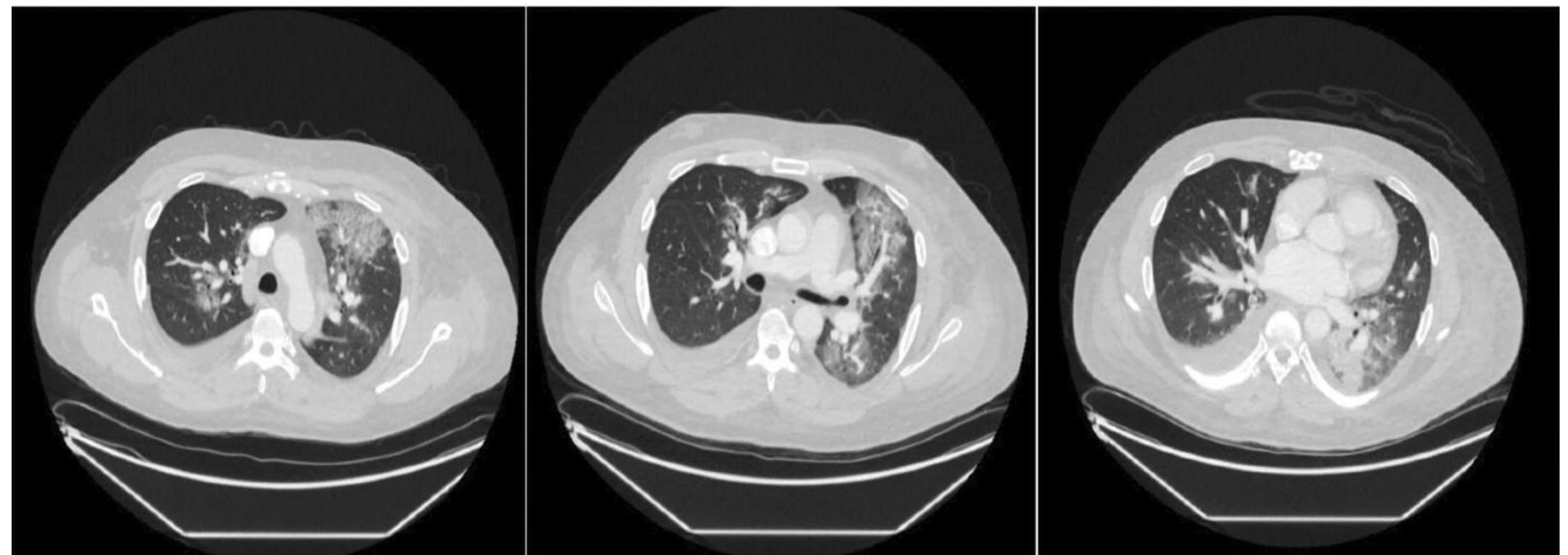


Figure 2: Computerized tomography of the chest showed no evidence of acute pulmonary embolus—widespread Interstitial and airspace opacities with pleural effusions. The constellation of findings suggests pulmonary oedema with asymmetric distribution of airspace oedema anasarca with subcutaneous oedema.

Conclusions

While albumin is a commonly used treatment in patients with liver disease, it does have its own risks, including TRALI. This is the first reported case of this complication to our knowledge. Unlike transfusion-associated circulatory overload (TACO), TRALI is a result of increased capillary permeability, whereas TACO results from increased capillary hydrostatic pressure. Our aim is to increase awareness of this potential adverse side effect and encourage further studies to ensure its safe clinical use.

References

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