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RESEARCH SNAPSHOT THEATER: PULMONARY IV

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TPN-INDUCED EXCIPIENT LUNG DISEASE

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INTRODUCTION: Patient is a 73 year old female with past medical history of colon cancer status post colectomy/ileostomy with ileal conduit on chronic total parenteral nutrition (TPN) who presented to the hospital for fatigue and hypotension. She reported that the night prior, she had an 8 hour lapse in her memory and a sensation of dyspnea. In the ED, she was hypotensive and hypoxic. CTA of the chest was notable for a small and nonocclusive right lower lobe embolism, massive right heart strain with RV/LV 1.5 as well as innumerable bilateral centrilobular micronodules. The above findings were not present on a scan done one month prior and neither was the echocardiograph finding of sudden onset pulmonary hypertension with RVSP 55. In the setting of central venous access used for TPN and no signs of infection, consideration was given to crystalline induced microemboli. A bronchoscopy was performed which showed polarizable material with occlusive granulomatous inflammation along the vessel walls and confirmed the diagnosis of excipient lung disease.

DESCRIPTION: Excipient lung disease is classically associated with IV injection of crushed oral tablets such as narcotics and stimulants. Excipients such as microcrystalline cellulose and talc consist of inert filler materials which aid in the binding of the active particles of the medications. When these agents are deposited in the pulmonary vasculature, there is an angiogranulomatous reaction resulting in micronodules and microemboli which can potentiate cor pulmonale and sudden cardiac arrest.

DISCUSSION: Excipient lung is a rare and often missed diagnosis. When the disease process is considered, it is typically attributed to injection of illicit drugs or controlled substances, yet this case illustrates the importance of recognizing TPN as a potential cause. Although most formulations of TPN have microcrystalline cellulose which do not cause any adverse reactions, this patient's infusion resulted in acute pulmonary hypertension, cor pulmonale and diffuse occlusive pulmonary granulomatous micronodules. This etiology is crucial to keep in the differential because although uncommon, it can cause pulmonary fibrosis and pulmonary hypertension which can result in poor functional status, decreased lung compliance, heart failure and possible cardiac arrest.

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RARE CASE OF ANTISYNTHETASE SYNDROME MANIFESTING AS ACUTE RESPIRATORY DISTRESS SYNDROME

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INTRODUCTION: AS is an autoimmune condition, characterized by antibodies directed against an aminoacyl transfer RNA synthetase. AS has a highly heterogenous disease pattern due to different organ involvement. The initial clinical presentation can be variable. We present an atypical case of AS with ARDS.

DESCRIPTION: A 72-year-old female, retired teacher, with no significant past medical history presented to the emergency department with complaints of progressively worsening shortness of breath for 3 to 4 weeks, associated with fever, nausea, vomiting, and diarrhea. Otherwise review of symptoms was negative. Patient was hypotensive, tachycardic and hypoxic requiring hi-flow nasal canula (FiO2 90%). A chest CT was negative for thromboembolic disease but did show bilateral patchy ground glass opacities with traction bronchiectasis and confluent consolidation in both upper lobes. Patient was admitted to the medical intensive care unit and initiated on antibiotics, but her hypoxemia progressively worsened requiring mechanical ventilation for ARDS. She required multiple proning sessions. Her bronchoscopy with bronchoalveolar lavage was negative for infectious etiology including COVID test. Given her persistent hypoxia, patient was started on methylprednisolone due to concerns for interstitial lung disease (ILD). Patient's oxygenation significantly improved, and she was extubated 10 days later. Further investigations revealed positive anti-PL-7 directed against threonyl t-RNA synthetase. Case was discussed in the ILD multidisciplinary conference with pulmonary and thoracic surgery. In the light of her ongoing oxygen requirements, there was high suspicion of rapidly progressive form of anti-synthetase syndrome. Therefore, she was started on 60 mg prednisone, tacrolimus, and cyclophosphamide. Patient was discharged to a skilled-nursing facility.

DISCUSSION: AS can be a challenging diagnosis, especially in patients without any muscular or rheumatological symptoms that present with ARDS. It is critical to have a broad differential for patients with non-resolving ARDS. ILD as the initial presentation of AS is a major cause of mortality. Currently there is limited evidence-based recommendations to guide therapy. Additional randomized clinical trials would be needed to support guidelines directing the management of AS ILD flare.