Pulmonary arteries in a fix

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Submitted: 09-Jul-2019 **Accepted:** 08-Sep-2019 **Published:** 27-Feb-2020

CASE SUMMARY

A 70-year-old woman with no comorbidities presented with dyspnea on exertion and chest tightness for the last 4 months. There was no history of cough, wheezing, fever, or chest pain. There was no history of any significant environmental exposures. On examination, pulse rate was 92/min, blood pressure was 126/80 mmHg, respiratory rate was 26/min, and she was maintaining a saturation of 94% on room air. Respiratory system examination was unremarkable. Blood investigations were within normal limits. She was evaluated with a chest radiograph and computed tomography (CT) chest [Figures 1 and 2]. Transthoracic echocardiography was done which showed evidence of mild pulmonary hypertension with a pulmonary artery systolic pressure of 45 mmHg. On further questioning, she gave a history of undergoing spinal decompression and fixation for L5-S1 spondylolisthesis immediately before the onset of dyspnea. Based on this temporal relationship, a diagnosis was suspected which was further reinforced by a lumbosacral radiograph [Figure 3].

QUESTION

What is the diagnosis?

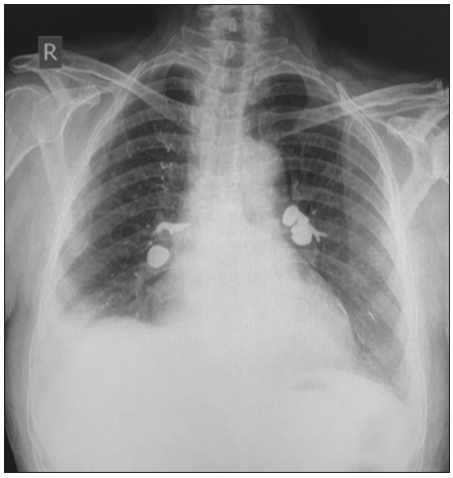

Figure 1: Chest radiograph

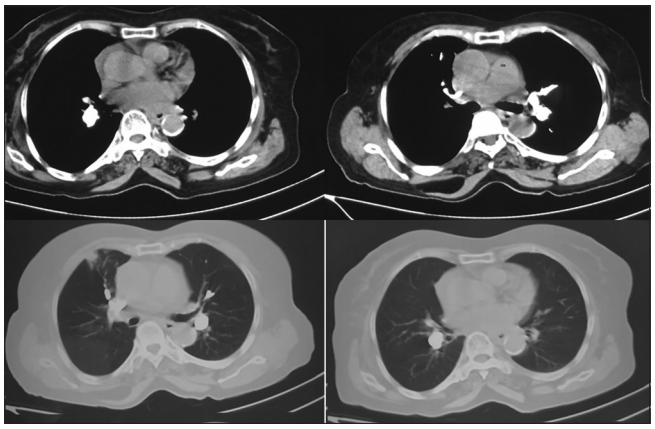

Figure 2: Chest CT scan: Mediastinal (top) and lung window (bottom)

Access this article online

Quick Response Code:

Website: www.lungindia.com

DOI: 10.4103/lungindia.lungindia_309_19

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How to cite this article: Venkatnarayan K, Krishnaswamy UM, Devaraj U, Ramachandran P. Pulmonary arteries in a fix. Lung India 2020;37:167-8.

ANSWER

Pulmonary cement embolism.

The chest radiograph shows hilar and parenchymal linear branching opacities [Figure 1]. The branching pattern raises the suspicion that the opacity is probably in the vessels and not a mediastinal calcification. CT chest shows hyperdense opacities in the bilateral proximal and subsegmental pulmonary arteries. The lung window shows a peripheral parenchymal opacity, probably an infarct [Figure 2]. Lumbosacral radiographs show evidence of bone cement in the vertebral venous plexus [Figure 3].

Figure 3: Lumbosacral radiographs - anteroposterior and lateral views

DISCUSSION

Bone cement (polymethylmethacrylate) is commonly used for vertebroplasty and other spinal surgeries for augmentation of vertebral screws. Pulmonary cement embolism is a potential complication reported in 3.5%–23% based on the diagnostic modality used.[1] However, majority of these are incidentally detected asymptomatic emboli. During instillation, the bone cement can accidentally extravasate into the vertebral venous plexus from where it can enter the pulmonary vessels. Injecting the bone cement in a fluid state leads to distal migration before polymerization can occur.[2] Akin to other pulmonary emboli, the spectrum of clinical presentation ranges from asymptomatic to fatal.[3] The temporal association of symptom onset to surgery hints the diagnosis. Treatment options depending on the severity of symptoms and the proximity of emboli include surgical removal, anticoagulation, and follow-up. Instillation of bone cement in a viscous state and vigilance for any extravasation during the procedure could be effective preventive measures.[4]

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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