A rare cause of sudden chest pain in an elite soccer player: from diagnosis to return to play

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History

On July 19th, 2022, a previously healthy seventeen-year-old professional soccer player (height 167 cm, weight 63 kg) suddenly fell on the field during a regular training session. He was performing goal shooting and did not have any contact with other players. He reported having left-sided chest pain, weakness, and shortness of breath that occurred during body twisting movement. The pain was worse on breathing and did not radiate anywhere. He was hospitalized for further evaluation and treatment.

Physical Examination

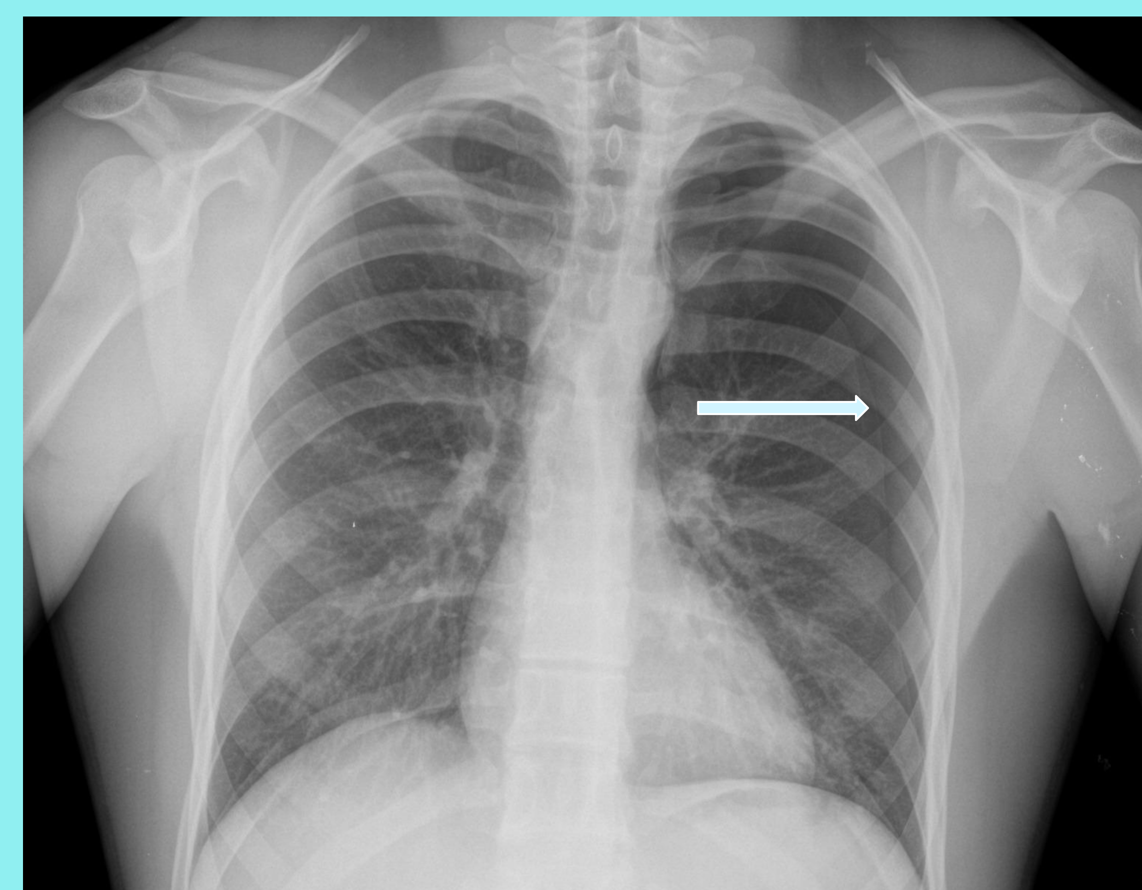
The patient was A&Ox3. Respiratory rate was 24, SpO2 99%, heart rate 90, BP 130/80 mmHg, and temperature 37 degrees C. He did not have any focal neurologic signs and had excellent strength and sensation throughout the body. There was no chest wall deformity or signs of injury. Chest pain was located on the left side in the 4th-5th intercostal spaces, moderate in intensity and sharp in quality. Making deep breaths worsen the chest pain. Chest wall palpation did not reproduce the pain. Lung auscultation revealed decreased respiratory sounds on the left, but normal on the right. Heart auscultation revealed normal S1-S2 with a regular rhythm, with no murmur, rubs, or gallops.

Differential Diagnosis

1. Pneumothorax
2. Pulmonary embolism
3. Thoracic wall muscle spasm, injury, or tear
4. Hypertrophic cardiomyopathy
5. Myocardial infarction

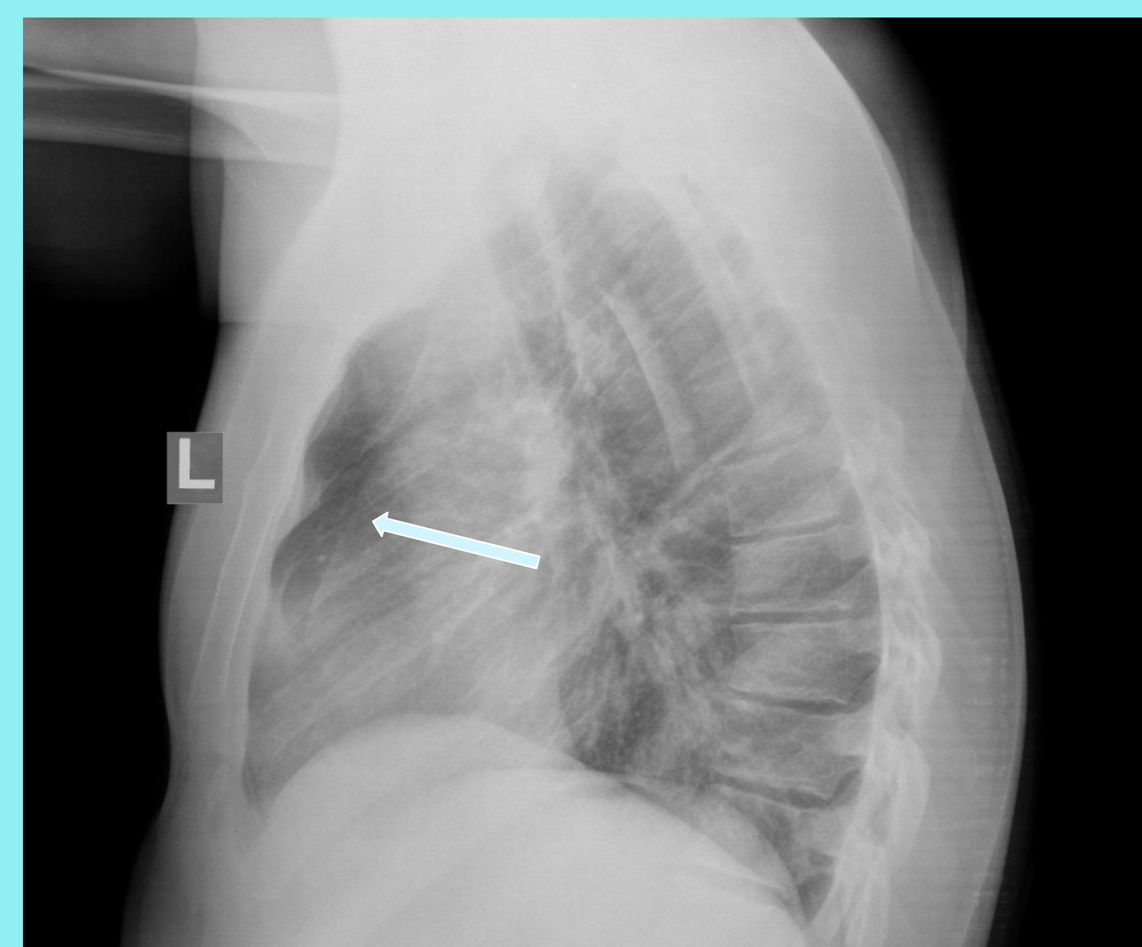
Tests & Results

CBC and BMP were normal with exception of WBC of 14000 per µl. EKG showed normal sinus rhythm with a ventricular rate of 62 with incomplete right bundle branch block and early repolarization pattern. Chest x-ray showed bilateral pneumothorax, left more than right. A CT scan of the chest confirmed bilateral pneumothorax and showed centrilobular and paraseptal emphysematous changes, left more than right. The echocardiogram was normal with a left ventricular ejection fraction of 60%.



Final/Working Diagnosis

Bilateral primary spontaneous pneumothorax



Discussion

Primary spontaneous pneumothorax (PSP) is rare in athletes and is classically seen in thin-built, tall young male smokers who have lung blebs or bullae. The classic presentation includes sudden dyspnea, sharp chest pain, and tachycardia. Almost always PSP occurs at rest, with only less than 10% occurring during exercise. There are several case reports of non-traumatic PSP among athletes. One of cases described a 34-year-old recreational male athlete who developed PSP six weeks after completing an ultra-marathon. Another case described a 19-year-old NCAA track athlete who returned to full competition 3 weeks after injury. PSP is usually treated conservatively and carries a good prognosis.

Outcome

A chest tube was placed and connected to continuous suction. The air started to drain immediately. This led to the resolution of pneumothorax, later confirmed on repeat imaging on June 25th, 2022. The patient was offered surgical treatment to prevent a potential recurrence but refused it. The chest tube was removed on June 27th, 2022.

Return to Activity and Follow-Up

On August 2nd, 2022, 2 weeks after the injury, the athlete began a rehabilitation program. He returned to regular training activity 41 days after the injury and played his first game 47 days after the initial presentation. He scored his first goal 60 days after injury. He was recognized as player of the match 3 times after the injury. Currently, he does not have any complaints.