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Multimodality imaging of epipericardial fat necrosis in pediatrics

Imagem multimodal da necrose da gordura epipericárdica em pediatria

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Keypoints

What is known:

- Epipericardial fat necrosis (EFN) is a rare, benign cause of acute chest pain, primarily reported in adult patients.
- Acute pleuritic or epigastric pain accompanied by typical imaging may suggest epipericardial fat necrosis in healthy individuals.
- Recognizing EFN prevents misdiagnosis and avoids unnecessary invasive procedures due to its benign, self-limited nature.

What is added:

- A rare pediatric case of EFN diagnosed with multimodal imaging, only described in 7 other pediatric case reports published in English-language literature. Of these cases, only three, including ours, presented ultrasound examinations.

A 12-year-old male patient presented to the emergency department with a seven-day history of left-sided pleuritic chest pain radiating to the left shoulder that worsened with deep breaths. He denied any recent fever, cough, or chest trauma. The left shoulder's full range of motion was preserved. Pulmonary and cardiac auscultation revealed no significant findings. Electrocardiogram and laboratory results were normal, including inflammatory and cardiac markers.

A thoracic ultrasound (US) was requested and revealed no muscular or soft tissue abnormality. However, an area of intrathoracic fat with increased echogenicity and edema was observed adjacent to the left cardiac border, moving synchronously with cardiac beats, and measuring approximately 25 x 10 mm (Fig. 1). The findings were consistent with the diagnosis of epicardial fat necrosis (EFN).

The radiologist then reviewed the one-view PA thoracic radiograph and a subtle left paracardiac opacity preserving the left cardiac border could be retrospectively identified (Fig. 2).

A chest computer tomography (CT) was requested and confirmed the presence of an oval heterogeneous adipose mass with mild fat stranding (Fig. 3). The patient was discharged from the emergency room with oral pain medications, and subsequent follow-up revealed complete resolution of symptoms.

EFN manifests mainly in adults but can also affect children[1]. To the best of our knowledge, only seven pediatric EFN cases have been reported in the

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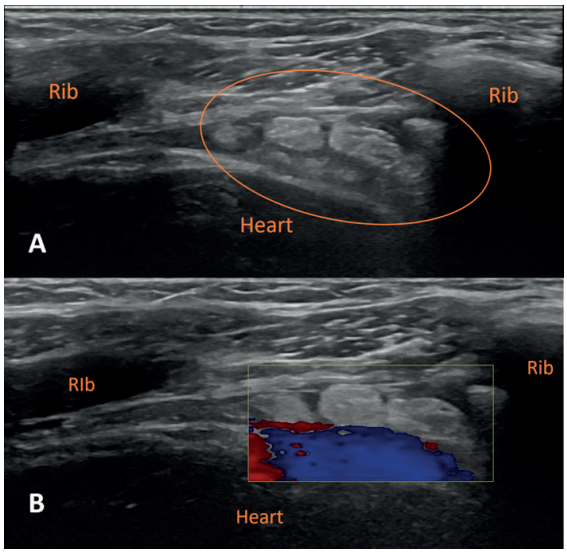

Figure 1. B-mode ultrasound. **A:** shows an area of intrathoracic fat with increased echogenicity and edema adjacent to the left cardiac border (orange circle), moving synchronously with cardiac beats, and measuring approximately 25 x 10 mm. **B:** Color-Doppler ultrasound does not demonstrate lesion vascularization, depicting only adjacent cardiac blood flow.

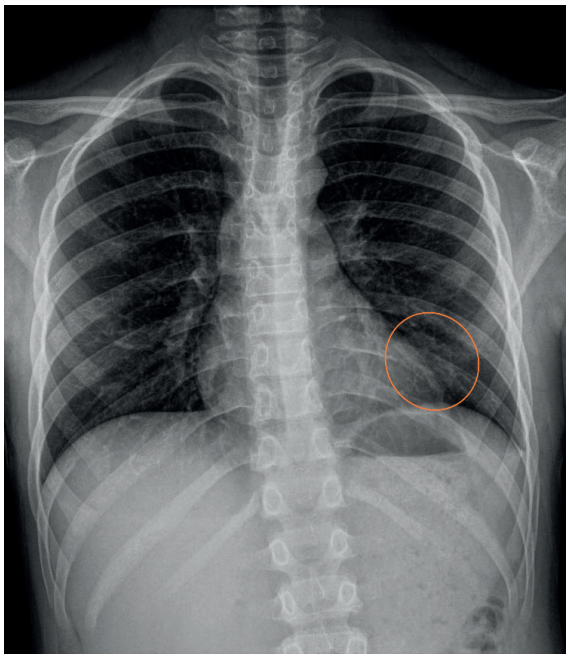

Figure 2. PA chest x-ray revealed subtle left paracardiac opacity while preserving the left cardiac border.

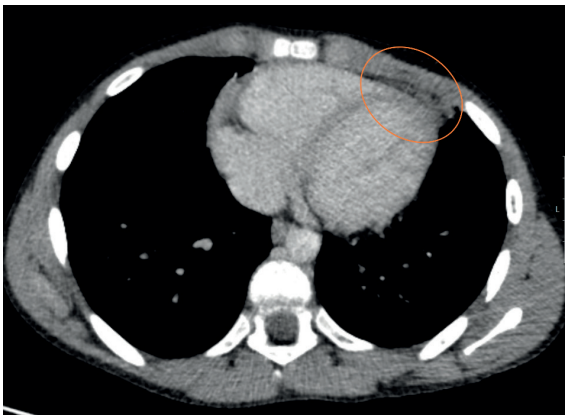

Figure 3. Chest CT confirmed the presence of an ovoid heterogenous adipose mass with mild fat stranding.

English-language literature, and all patients were adolescents. Furthermore, only three cases, including ours, involved ultrasound examinations. When considering EFN, there are some differential diagnoses to consider, such as fatty tumors or Morgani hernia. However, acute pleuritic chest or epigastric pain in a healthy child, combined with specific findings on US or CT, help differentiate EFN from other entities[2,3]. Radiologists should be aware of this condition also in the pediatric group, its ultrasound appearance, and the benign course to avoid misdiagnosis and invasive procedures.

Author contributions

F. Carvalho: conceptualization, writing – original draft, writing – review & editing. Pedro Cardoso: conceptualization, writing – review & editing. Miguel Passos: conceptualization, writing – review & editing. S. Costa Días: conceptualization, writing – original draft, writing – review & editing.

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Conflicts of interest

None.

Ethical considerations

Protection of humans and animals. The authors declare that no experiments involving humans or animals were conducted for this research.

Confidentiality, informed consent, and ethical approval. The authors have followed their institution's confidentiality protocols, obtained informed consent from patients, and received approval from the Ethics Committee. The SAGER guidelines were followed according to the nature of the study.

Declaration on the use of artificial intelligence. The authors declare that no generative artificial intelligence was used in the writing of this manuscript.

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