Case 15218

Mediastinal granulocytic sarcoma
(ECR 2017 Case of the Day)
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Section: Chest imaging
Area of Interest: Mediastinum
Procedure: Diagnostic procedure
Procedure: Molecular imaging
Procedure: Biopsy
Imaging Technique: CT
Imaging Technique: PET-CT
Special Focus: Leukaemia Case Type: Clinical Cases
Authors: Gregor Sommer
Patient: 48 years, male

Clinical History:
A 48-year-old male patient suffered from chest pain (localised behind the sternum) for three days after a long distance flight. He underwent CT of the chest to rule out pulmonary embolism. The patient had a history of acute myelogenous leukaemia, diagnosed and treated 5 years before.

Imaging Findings:
There was no pulmonary embolism seen on CT. A soft-tissue mass was found in the lower anterior mediastinum between the sternum and the heart, abutting the contour of the mediastinum towards the right lung and the pericardium (Fig. 1 and 2). This lesion had not been present in a previous examination that had been performed one year before. In 18F-FDG-PET/CT performed two weeks later, the lesion showed increased uptake of FDG (Fig. 3). CT-guided biopsy (Fig. 4) finally revealed the diagnosis.

Discussion:
Granulocytic sarcoma, also known as chloroma, myeloid sarcoma or extramedullary myeloblastoma, is a rare solid tumour originating from primitive precursors of the granulocytic series of white blood cells. It can involve any part of the body. Granulocytic sarcoma is most commonly observed in patients with acute myelogenous leukaemia and less frequently with chronic myelogenous leukaemia or other myeloproliferative disorders [1, 2]. The mediastinum is the most common intrathoracic site of involvement [3].

Patients with granulocytic sarcomas are frequently asymptomatic. The imaging appearance of mediastinal granulocytic sarcomas is not specific with a wide differential diagnosis including lymphoma, thymoma, teratoma, infection/mediastinitis/abscess and haematoma. Therefore, the history of myelogenous leukaemia is an important hint towards the correct diagnosis in this case. However, even in patients with acute myelogenous leukaemia, granulocytic sarcoma is still rare (2.5-9.1% according to the literature [1]). Thus, the mediastinal soft-tissue mass found in the presented case may have other causes, such as infection or haematoma, and biopsy is required to establish the diagnosis.

The presence of granulocytic sarcomas has no prognostic significance in acute leukaemia, but may be a sign of acute transformation in patients with chronic leukaemia or other myeloproliferative disorders [1]. Granulocytic
sarcomas are highly sensitive to radiation and also chemotherapy, and commonly resolve after few months of treatment. Recurrence is seen in around 23% of cases [2].

Imaging with CT, MR and PET is useful in identifying granulocytic sarcomas, planning needle biopsy or radiation therapy, and evaluating therapeutic response [1, 4].

**Differential Diagnosis List:** Mediastinal granulocytic sarcoma, Lymphoma, Thymoma, Infection/mediastinitis, Haematoma

**Final Diagnosis:** Mediastinal granulocytic sarcoma

**References:**

Description: CT in soft tissue kernel reconstruction showing a soft-tissue mass in the lower anterior mediastinum between the sternum and the heart, abutting the contour of the mediastinum towards the right lung and the pericardium. Origin: Clinic of Radiology and Nuclear Medicine, University of Basel Hospital, Basel, Switzerland
Figure 2

Description: CT in soft tissue kernel reconstruction showing a soft-tissue mass in the lower anterior mediastinum between the sternum and the heart, abutting the contour of the mediastinum towards the right lung and the pericardium. Origin: Clinic of Radiology and Nuclear Medicine, University of Basel Hospital, Basel, Switzerland
Figure 3

Description: Hybrid 18F-FDG-PET/CT image showing increased uptake of FDG in the mediastinal soft-tissue mass. Origin: Clinic of Radiology and Nuclear Medicine, University of Basel Hospital, Basel, Switzerland
Figure 4

Description: CT-guided biopsy revealing the final diagnosis. Origin: Clinic of Radiology and Nuclear Medicine, University of Basel Hospital, Basel, Switzerland