

Thoracic myelolipoma diagnosed by endoscopic ultrasonography and fine-needle aspiration cytology

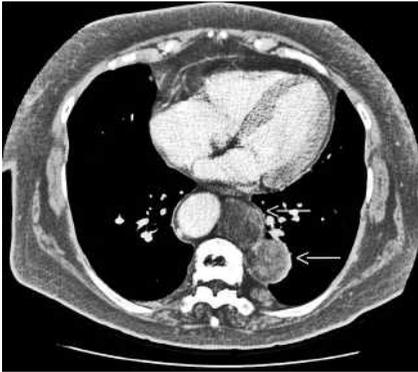


Figure 1 A computed tomographic scan showing a 7-cm, bi-lobed paravertebral mass in the posterior mediastinum (arrows).

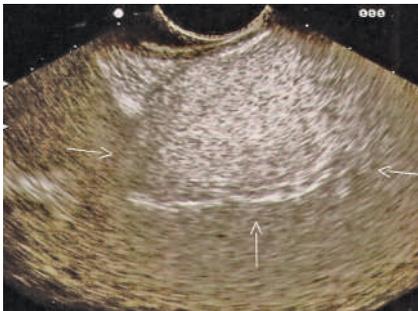


Figure 2 Ultrasonographic view of an echo-rich, homogeneous paraesophageal mass with regular and well-demarcated borders (arrows).

Myelolipomas are rare, benign, unilateral tumors of the adrenal gland, and are usually asymptomatic [1,2]. Extra-adrenal myelolipomas are most commonly found in the presacral or other retroperitoneal regions; only 3% of these tumors are found in the thorax [3].

A 73-year-old woman was referred to our division after a computed tomographic scan had revealed a bi-lobed mass, 7 cm in diameter, in the posterior mediastinum (● **Figure 1**). Routine laboratory tests and positron emission tomography showed no abnormalities. Endoscopic ultrasonography was performed (FG38UX; Pentax, Tokyo, Japan) and the lesion appeared as an echo-rich, homogeneous mass with regular and well-demarcated borders (● **Figure 2**). The mass did not appear to be associated with any nearby structures. Two passages with a fine needle (EUSN-3,

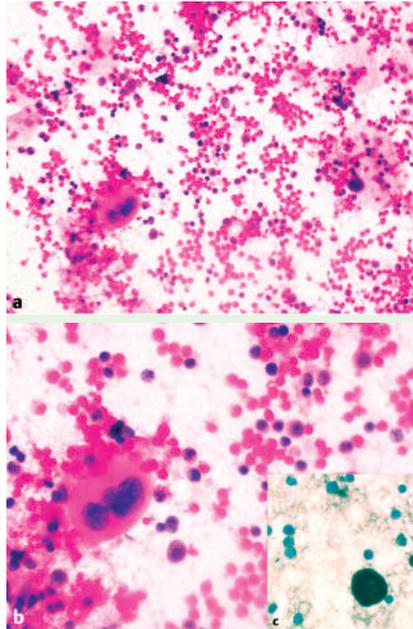


Figure 3 The cytologic smear showed numerous monocyte precursors, granulocytes, and erythrocytes in various phases of maturity, accompanied by giant multinucleated megakaryocytes (evident under high-power magnification). **a** A low-power view (hematoxylin and eosin [H&E] stain, original magnification $\times 200$). **b** A high-power view (H&E stain, original magnification $\times 400$). **c** View after immunostaining, showing immunoreactivity of the megakaryocytes for factor VIII (original magnification $\times 400$).

22 gauge; Cook, Limerick, Ireland) were performed without any complications. Fine-needle aspiration cytology (FNAC) showed the aspirate to be highly cellular, with erythroid and myeloid precursor cells intermixed with megakaryocytes, and immunoreactive for factor VIII. The cytologic diagnosis was consistent with extramedullary hematopoiesis (● **Figure 3**). At surgery the lesion appeared soft, oval, smooth, and reddish, with yellow spots (● **Figure 4**). The biopsy specimen showed mature adipose tissue intermixed with bone marrow elements (● **Figure 5**), an appearance consistent with a histologic diagnosis of extra-adrenal myelolipoma.

The differential diagnosis of extra-adrenal myelolipoma and extramedullary he-

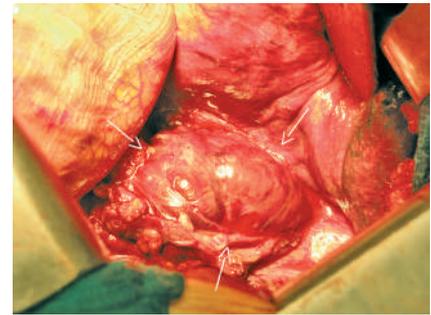


Figure 4 Surgical exploration revealed a soft, oval, smooth lesion which appeared reddish with yellow spots (arrows).

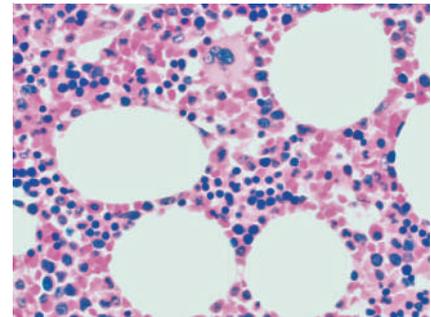


Figure 5 Histologic section showing adipocytes surrounded by hematopoietic elements in various stages of maturity, including monocytes, granulocytes, and erythrocytes, and associated megakaryocytes (H&E stain, original magnification $\times 200$).

matopoiesis cannot be made purely on a cytologic basis, because these conditions both feature hematopoietic elements and adipose tissue [4]. However, extramedullary hematopoiesis occurs at multiple sites as a lobulated lesion in the thoracic paravertebral area that nestles against the costovertebral angle; extra-adrenal myelolipoma is usually a solitary lesion with a round or oval shape. Finally, extramedullary hematopoiesis is associated with anemia, usually in the patients with hemoglobinopathies, whereas anemia and other hematological disorders are not observed in extra-adrenal myelolipoma.

In conclusion, EUS-guided FNAC allowed us to exclude the presence of malignant cells in this patient, enabling us to plan an adequate surgical approach. EUS-guided FNAC proved to be effective and safe, even in the setting of extra-adrenal myelolipoma.

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