

Epidural metastatic melanoma

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Section: Neuroradiology

Area of Interest: Thorax Neuroradiology spine

Procedure: Contrast agent-intravenous

Procedure: Localisation

Imaging Technique: CT

Imaging Technique: MR

Special Focus: Metastases Neoplasia Tissue

characterisation Case Type: Clinical Cases

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Patient: 66 years, female

Clinical History:

A 66-year-old woman presented with progressive gait abnormality for several weeks.

In 2001, she was diagnosed with cutaneous melanoma at the back, which was successfully treated by local surgery.

Imaging Findings:

MRI of the spine shows a well-delineated lesion isointense to muscle on T1-weighted image (WI) and T2-WI (Fig. 1, 2), located posteriorly in the spinal canal at the level of Th3, extramedullary in the epidural space. Contrast-enhanced (CE) T1-WI shows a moderate homogeneous enhancement (Fig. 3). Subtraction images before and after contrast show a marked enhancement of a tail-like structure adjacent to the lesion, superior and inferior of the lesion (Fig. 4).

Additionally, enlarged mediastinal lymph nodes are seen (Fig. 5 a, b).

The patient had an intramuscular lipoma in the right erector spinae muscle as an incidental finding (Fig. 5 c).

Subsequent CE CT of the chest confirms enlarged lymph nodes (Fig. 6 a, b) as well as multifocal bilateral lung nodules (Fig. 6 c, d).

During surgery, an extradural mass in close contact with the dura but without obvious dural involvement was removed. Histopathological examination revealed metastasis of malignant melanoma.

Discussion:

Melanoma is a malignant tumour originating from melanocytes, pigment cells derived from the neural crest. Although the skin is by far the most commonly affected organ, melanoma can arise from any organ containing melanocytes (skin, oral and genital mucosa, oesophagus, bowel and eye). The annual incidence in Europe is 11.1 per 100 000 [1]. Melanoma is usually diagnosed in adults over the age of 50. The most common risk factors include white race, sun sensitivity, history of severe sunburns, many moles, freckles and a family history of skin cancer.

Tumour extension occurs via local invasion, lymphatic or haematologic spread. The most common site of metastases are lymph nodes, lungs, liver and brain. Risk factors for distant metastasis include a tumour thickness of 0.76-1.5 mm and primary lesion in the head and neck [2]. Spinal metastases are most commonly located in the vertebra, intradural extramedullary or intramedullary. Epidural metastases are extremely rare.

Melanin has a paramagnetic effect resulting in a decrease of the T1 and T2 relaxation time, therefore usually appearing as hyperintense on T1-WI and hypointense on T2-WI. Intralesional haemorrhage (subacute blood) is another cause of T1 hyperintensity in metastatic melanoma.

Twelve percent of melanomas are amelanotic, showing non-specific signal intensity on T1-WI and are moderate

hyperintense on T2-WI. On CE T1-WI the lesions generally display a mild, homogeneous enhancement [3, 4]. The main differential diagnosis of epidural metastatic melanoma includes meningioma, followed by lymphoma and primary melanoma originating from the meninges.

Meningiomas typically present in female patients in the 5th or 6th decade. Spinal meningioma presents typically as an extramedullary, intradural lesion. It appears isointense to muscle on T1-WI and T2-WI. It shows a marked, diffuse enhancement on CE T1-WI and is usually accompanied by a dural tail sign [5].

A dural tail sign is, however, not absolutely pathognomonic for meningioma and may be seen in other tumours in close contact with the dura. In our patient, the age, gender and imaging features mimic an extradural meningioma, if the extradural location, the history of the patient and the presence of extraspinal metastases are not taken into account.

Differential Diagnosis List: Spinal epidural metastatic melanoma, Meningioma, Lymphoma, Primary melanoma

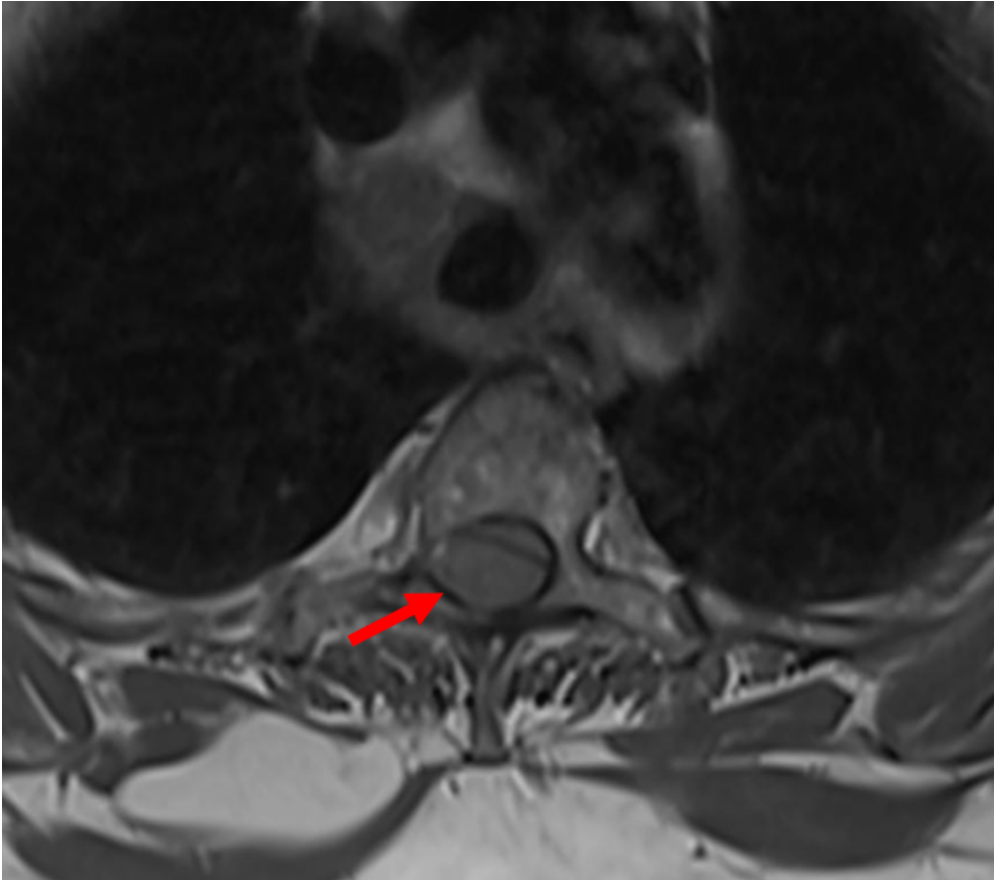
Final Diagnosis: Spinal epidural metastatic melanoma

References:

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Figure 1

a



Description: T1-WI of the spine shows a well-delineated lesion isointense to muscle, posterior in the spinal canal at the level of Th3, located within the posterior epidural space (red arrow). **Origin:** Image origin: Vanhoenacker FM, Department of Radiology, AZ Sint-Maarten, Mechelen-Duffel, Belgium

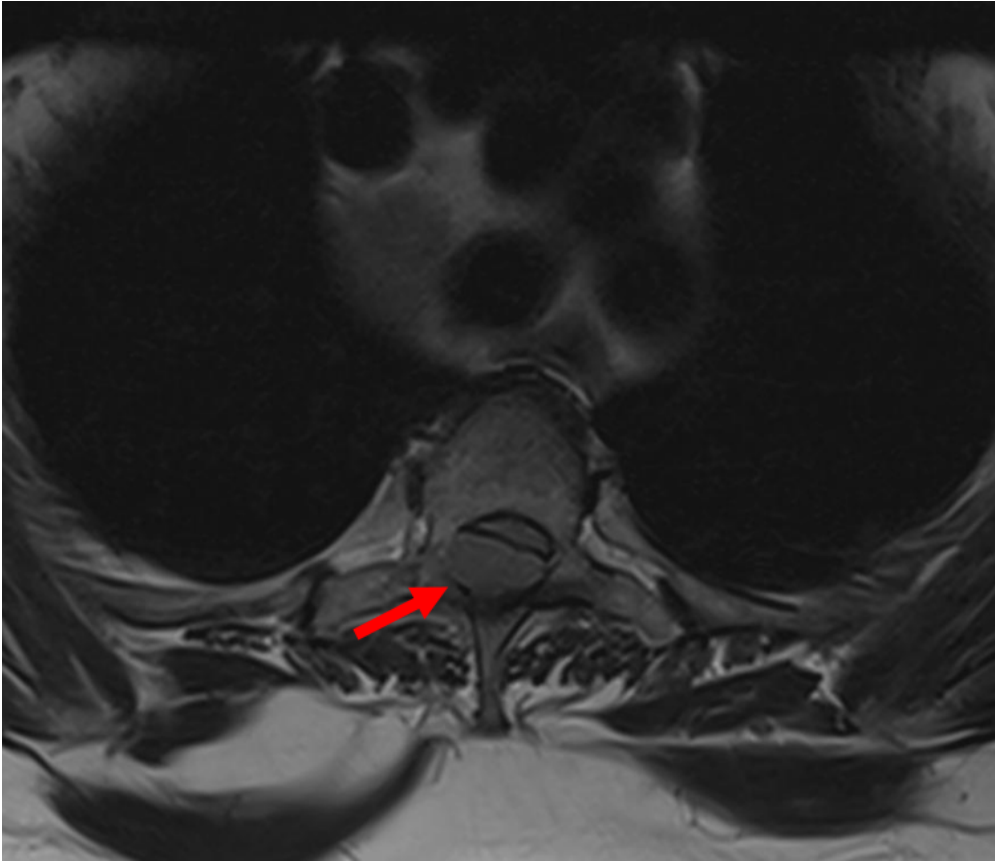
b



Description: T1-WI of the spine shows a well-delineated lesion isointense to muscle, posterior in the spinal canal at the level of Th3, located within the posterior epidural space (red arrow). **Origin:** Image origin: Vanhoenacker FM, Department of Radiology, AZ Sint-Maarten, Mechelen-Duffel, Belgium

Figure 2

a



Description: T2-WI of the spine shows a well-delineated lesion isointense to muscle, posterior in the spinal canal at the level of Th3 (red arrow). **Origin:** testImage origin: Image origin: Vanhoenacker FM, Department of Radiology, AZ Sint-Maarten, Mechelen-Duffel, Belgium

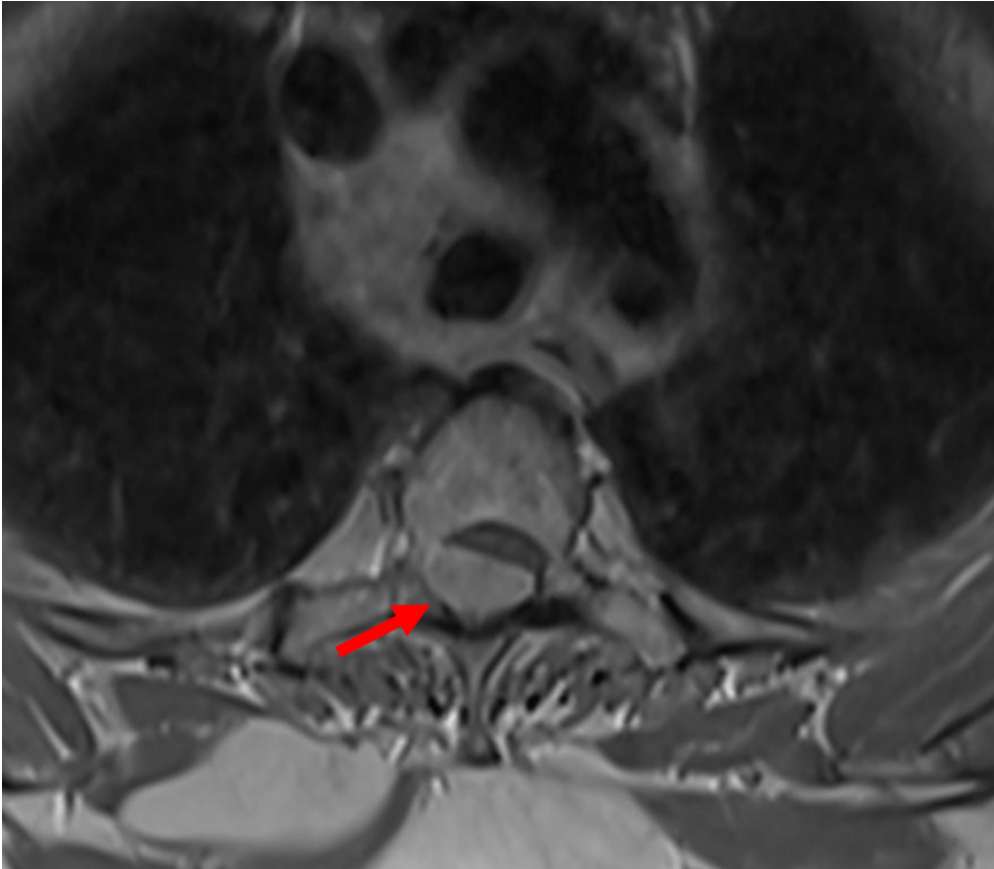
b



Description: T2-WI of the spine shows a well-delineated lesion isointense to muscle, posterior in the spinal canal at the level of Th3 (red arrow). **Origin:** Image origin: Image origin: Vanhoenacker FM, Department of Radiology, AZ Sint-Maarten, Mechelen-Duffel, Belgium

Figure 3

a



Description: CE T1-WI shows a moderate homogeneous enhancement of the lesion (red arrow).

Origin: Image origin: Image origin: Image origin: Vanhoenacker FM, Department of Radiology, AZ Sint-Maarten, Mechelen-Duffel, Belgium

b

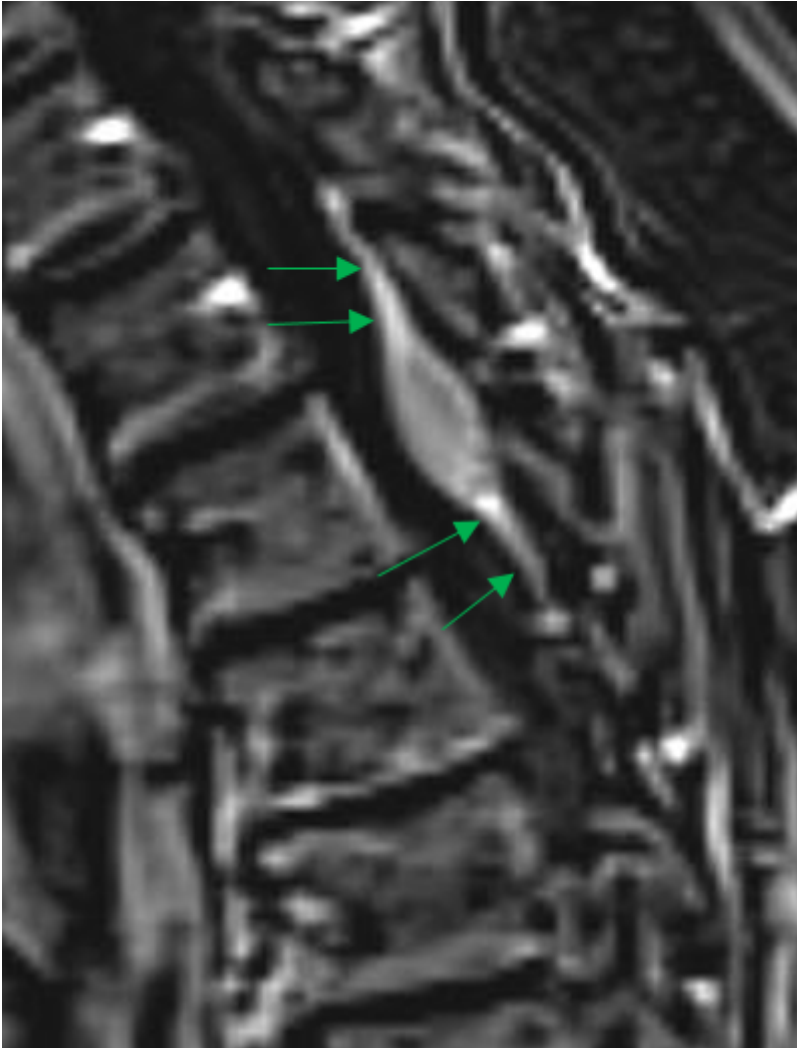


Description: CE T1-WI shows a moderate homogeneous enhancement of the lesion (red arrow).

Origin: Image origin: Image origin: Image origin: Vanhoenacker FM, Department of Radiology, AZ Sint-Maarten, Mechelen-Duffel, Belgium

Figure 4

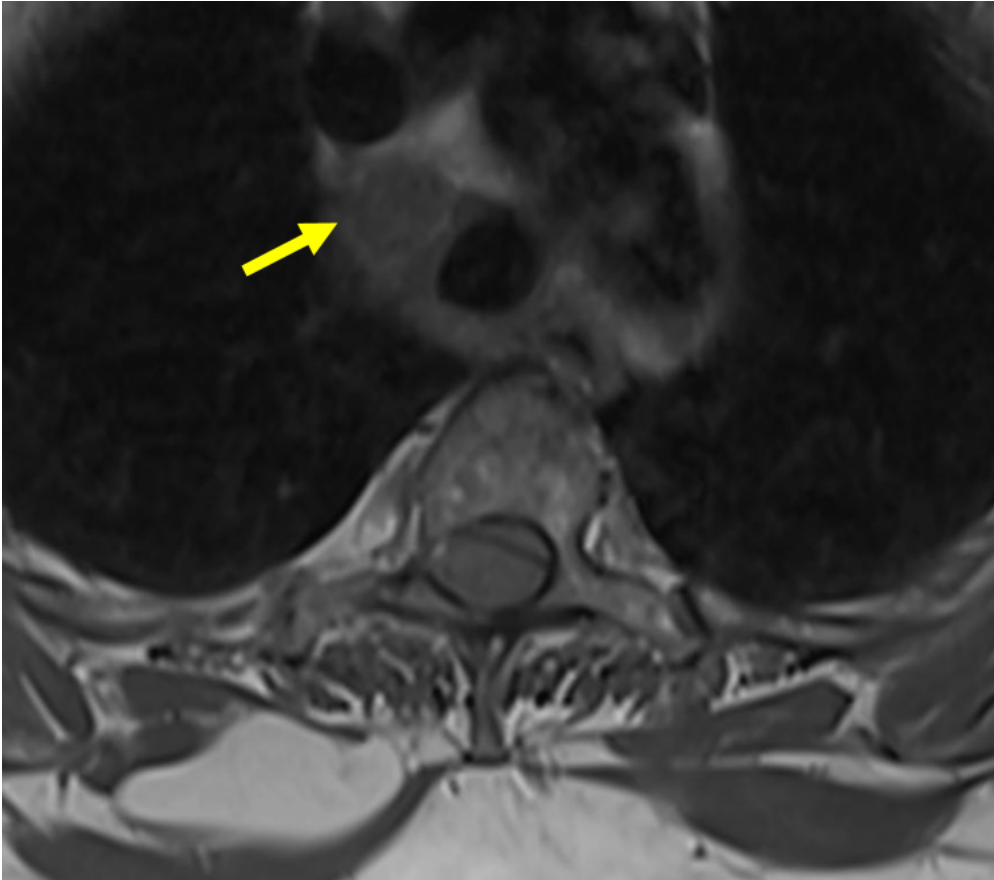
a



Description: Subtraction images before and after contrast show a marked enhancement of a tail-like structure adjacent to the lesion, superior and inferior of the lesion (green arrows). **Origin:** Image origin: Image origin: Image origin: Vanhoenacker FM, Department of Radiology, AZ Sint-Maarten, Mechelen-Duffel, Belgium

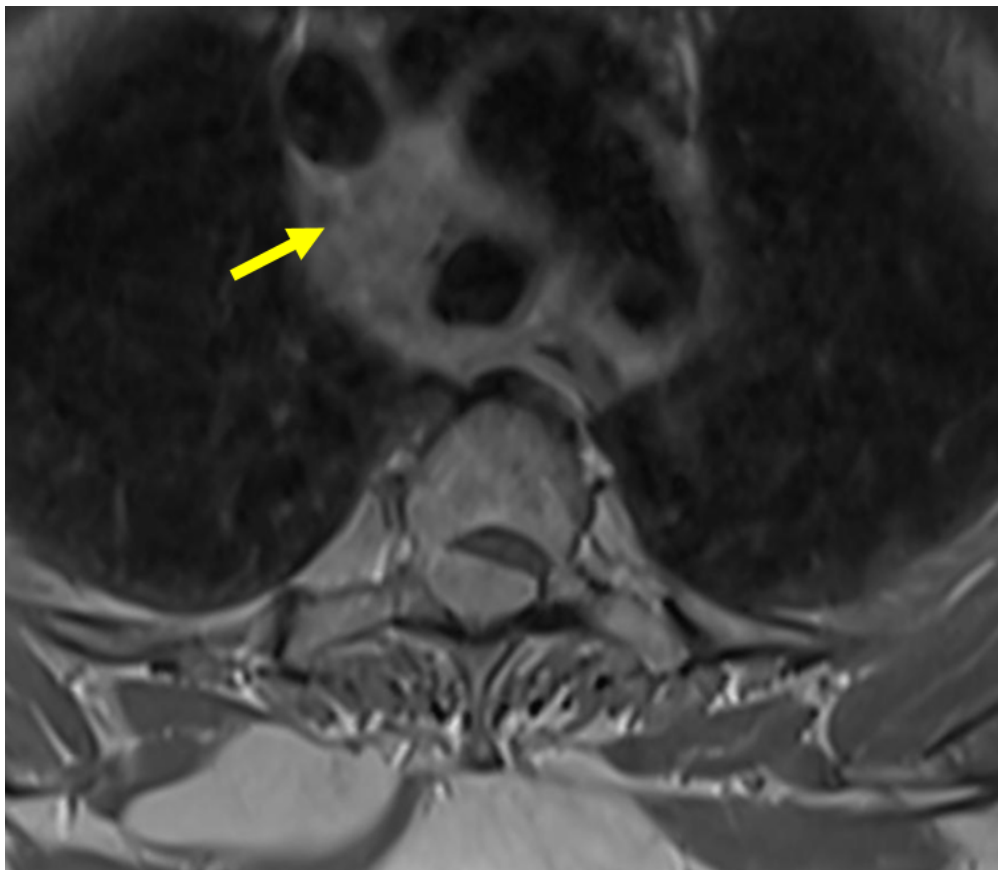
Figure 5

a



Description: T1-WI shows an enlarged mediastinal lymph node (yellow arrow). **Origin:** Image origin: Image origin: Vanhoenacker FM, Department of Radiology, AZ Sint-Maarten, Mechelen-Duffel, Belgium

b



Description: CE T1-WI shows an enlarged mediastinal lymph node (yellow arrow) with moderate homogeneous enhancement. **Origin:** Image origin: Image origin: Image origin: Vanhoenacker FM, Department of Radiology, AZ Sint-Maarten, Mechelen-Duffel, Belgium

c

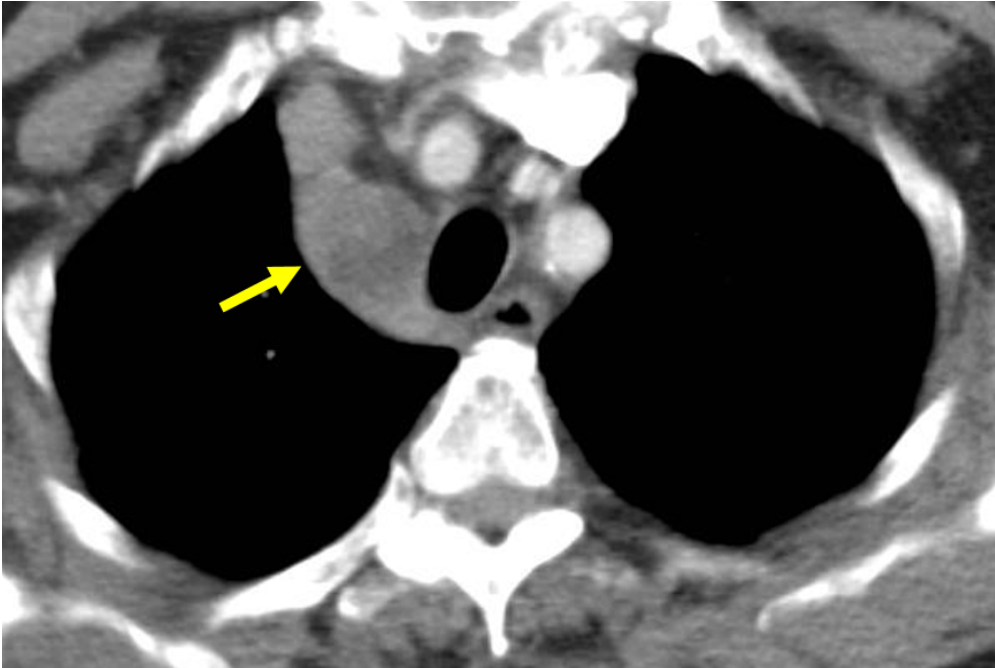


Description: T2-WI shows an intramuscular lipoma (white arrow) in the right erector spinae muscle.

Origin: Image origin: Image origin: Image origin: Vanhoenacker FM, Department of Radiology, AZ Sint-Maarten, Mechelen-Duffel, Belgium

Figure 6

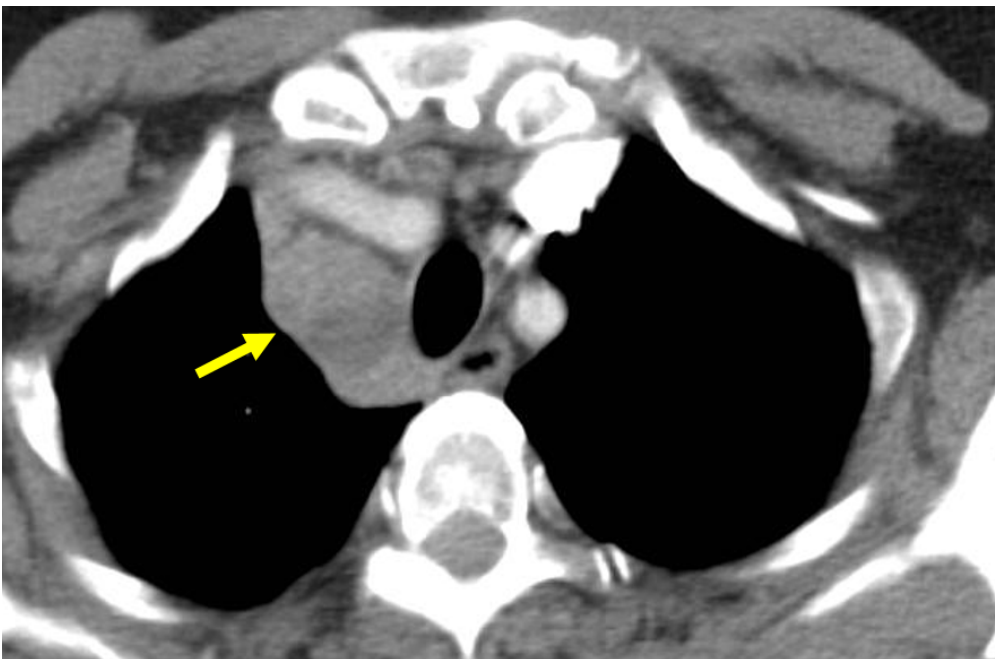
a



Description: CE CT of the chest (mediastinal window) shows enlarged lymph nodes (yellow arrow).

Origin: Image origin: Image origin: Image origin: Image origin: Vanhoenacker FM, Department of Radiology, AZ Sint-Maarten, Mechelen-Duffel, Belgium

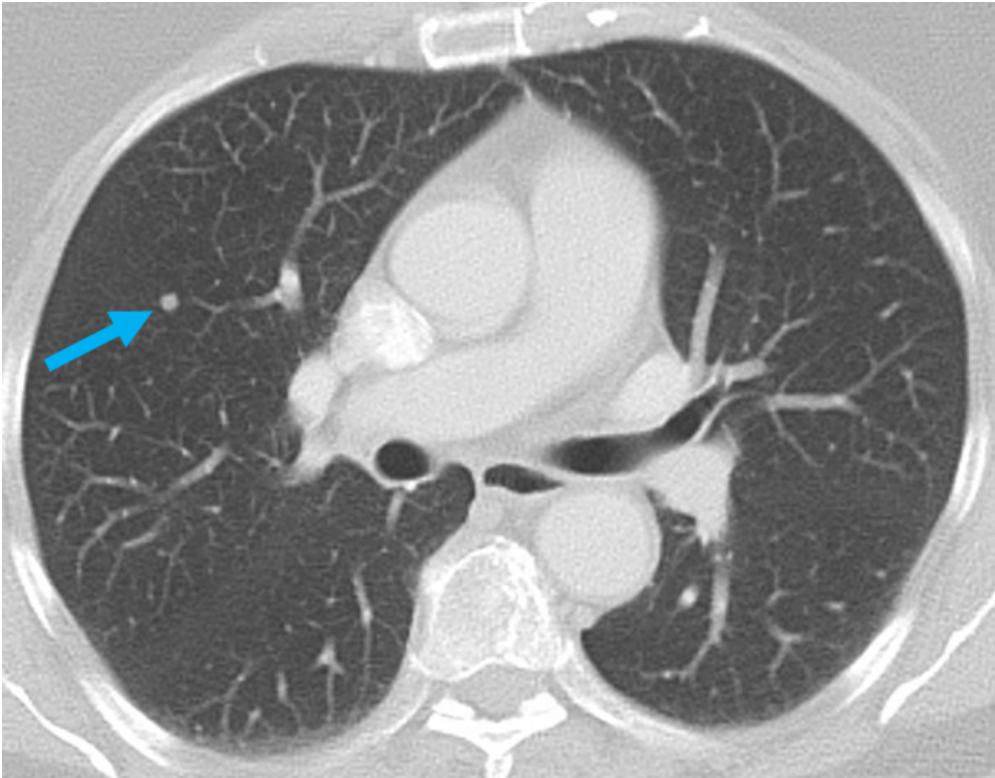
b



Description: CE CT of the chest (mediastinal window) shows enlarged lymph nodes (yellow arrow).

Origin: Image origin: Image origin: Image origin: Image origin: Vanhoenacker FM, Department of Radiology, AZ Sint-Maarten, Mechelen-Duffel, Belgium

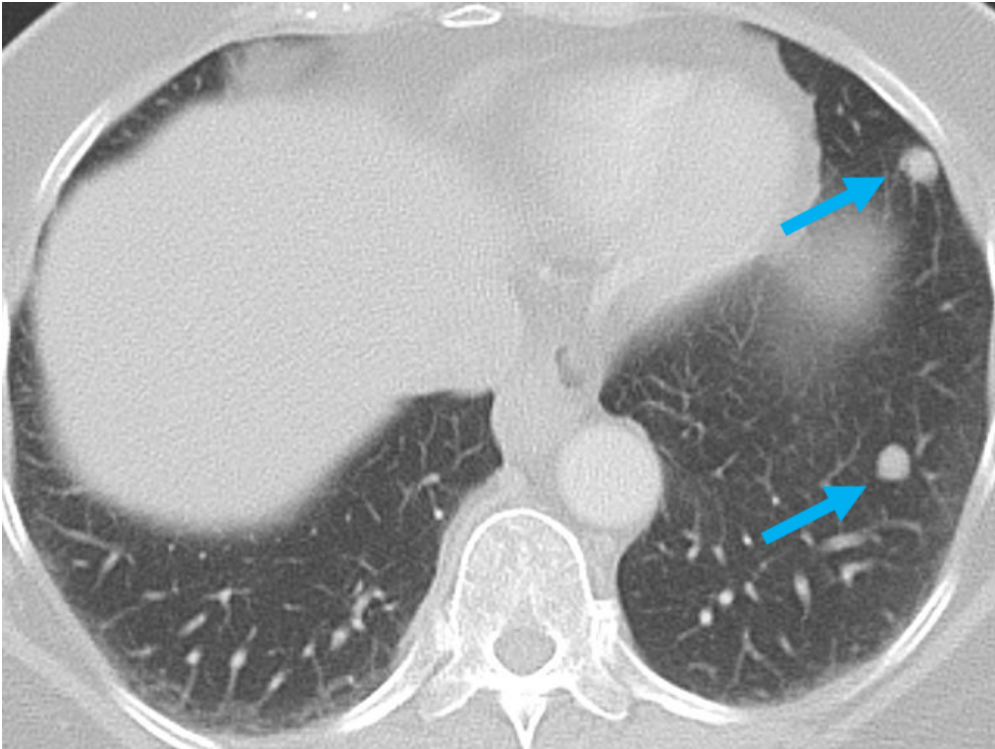
c



Description: CE CT of the chest (lung window) shows multiple bilateral lung nodules (blue arrows).

Origin: Image origin: Image origin: Image origin: Image origin: Vanhoenacker FM, Department of Radiology, AZ Sint-Maarten, Mechelen-Duffel, Belgium

d



Description: CE CT of the chest (lung window) shows multiple bilateral lung nodules (blue arrows).

Origin: Image origin: Image origin: Image origin: Image origin: Vanhoenacker FM, Department of Radiology, AZ Sint-Maarten, Mechelen-Duffel, Belgium