Skeletal muscle metastasis from malignant melanoma
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Authors: Parchi P, Paolicchi A, Barattini M, Ruschi F, Rossi M, Caramella D, Lisanti M
Patient: 50 years, female

Clinical History:

The patient presented with pain localised in the anterior part of the leg. She had a history of metastatic melanoma.

Imaging Findings:

The patient, a 50-year-old woman, had a history of malignant melanoma diagnosed four years before. The lesion was localised under the Scapula and there was a metastasis in a lymph node of the axillary region. The two lesions were resected. After two years a pulmonary metastasis was found and it was treated surgically (VATS).

The patient presented at our department because of pain localised in her right leg without previous history of direct trauma.

The patient underwent an X-ray of the right leg which showed a focal osteolytic lesion within the musculus Tibialis Anterior [Figure 1]. A US examination was also performed: it showed the presence of a solid hyporeflective lesion within the muscle. Erosion of the cortical bone of the Tibia was also visible [Figure 2].

The MRI study included SE T1 and STIR images and it confirmed the presence of a solid lesion, which was hyperintense on all sequences. The lesion was localised within the musculus Tibialis Anterior; there was erosion of the cortical bone and thickening and infiltration of the periosteum around the lesion. No bone marrow oedema was visible [Figure 3].

These radiological features were compatible with metastasis of malignant melanoma and the open biopsy of the lesion confirmed this diagnosis.

Discussion:

Cutaneous melanoma is a highly malignant tumour. Its incidence is rapidly rising worldwide. There is strong evidence that increased exposure of white-skinned people to the ultraviolet radiation of the sun is the main cause of the rising incidence. Risk factors for development of melanoma include also multiple atypical naevi, freckles and history of severe sunburn. Other factors include the presence of familial melanoma and disorders of DNA repair. Melanoma more commonly affects women and although incidence rises with age, it is the third most common cancer in 15-40 years old people.

Cutaneous melanoma, which may be located anywhere on the skin, have an irregular raised surface and an irregular border with ulcerations of the surface epithelium. They also typically change in colour, size and configuration.

It is essential to confirm the clinical diagnosis of melanoma histologically. An excisional biopsy with a narrow margin of normal-appearing skin is recommended for any suspicious lesion.

Surgical treatment at the early stages of melanoma is usually curative. Surgery is the treatment of choice when melanoma is confined to the site of origin and does not extend beyond the regional lymph nodes. The regional lymph nodes are the most common site of melanoma metastases. The detection of micrometastasis in the sentinel
Lymph node biopsy is the most important prognostic factor; if positive, it is associated with a much worse prognosis. After sentinel lymph node biopsy and radical lymphadenectomy, early locoregional recurrences are prevented. Imaging techniques are used to stage patients with melanoma; on US, it appears as hypoechoic focal lesions. Melanin is a major determinant of high signal intensity on T1-weighted MR images. CT and PET are used to study metastases in the chest, abdomen and pelvis.

Melanomas can metastasise to any organ. The first sign of spread is usually in the distant skin, subcutaneous sites and lymph nodes followed by lungs, liver, brain, bone and intestine. Multiple organ metastases are reported in 95% of patients. The incidence of metastatic melanoma in muscle is low. Intramuscular metastasis from malignant melanoma show high intensity on T1-weighted images, because of the paramagnetic effect of stable free radicals present in melanin. Differential diagnosis mostly includes subacute haemorrhage (which is connected to a history of trauma or intense exercise) and clear cell sarcoma. The differentiation between metastasis from melanoma and sarcoma is important, as the treatment and prognosis are different. Clear cell sarcoma is a rare soft tissue sarcoma that occurs in tendon and aponeuroses of extremities in most cases. It is also called "malignant melanoma of soft parts", because of the presence of melanin and melanosomes: as well as for the superficial melanoma, shortening of the T1-relaxation time depends on the amount of melanine within the lesion (some of these tumors are even amelanotic). Therefore, it is not possible to distinguish between clear cell sarcoma and metastatic melanoma from the signal intensity pattern. Open biopsy is used for a certain diagnosis.

**Differential Diagnosis List:** Skeletal muscle metastasis from malignant melanoma.

**Final Diagnosis:** Skeletal muscle metastasis from malignant melanoma.

**References:**


Description: Hyporeflective lesion having a diameter of 2 cm and localised within the musculus Tibialis Anterior. The cortical bone shows irregular reflectivity, compatible with bone erosion. Origin:
Description: SE T1: axial plane - Focal (hyperintense) solid lesion, with a diameter of 2 cm, localised within the musculus Tibialis Anterior. There is erosion of the cortical bone. Origin:
Description: STIR - Thickening and infiltration of the periosteum around the lesion. No bone marrow edema is visible. Origin:
Description: SE T1: sagittal plane - Focal (hyperintense) solid lesion localised within the musculus Tibialis Anterior. Erosion of the cortical bone is visible. There is no alteration of muscle around the lesion. Origin:
Figure 3

Description: Focal osteolytic lesion within the musculus Tibialis Anterior. Origin: