



Case Report

## Metastatic Carcinoma in Skeletal Muscle - A Rare Presentation

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### ABSTRACT

Metastatic carcinoma to subcutaneous tissue or skeletal muscle is relatively rare. It can be a source of confusion. We present a case of 30 year female with thigh lump, later proved to be a metastatic deposits from carcinoma of unknown origin. Use of a basic panel of immunohistochemical stains is recommended for defining the cell type and arriving at the correct diagnosis.

**Key words:** soft tissue; neoplasms; metastasis; immunohistochemistry.

### INTRODUCTION

Metastasis to soft tissues is rare and can be easily misdiagnosed histologically for a primary soft-tissue sarcoma. [1] The clinical distinction between a metastatic neoplasm to soft tissue and a primary soft-tissue sarcoma is critical because treatment and prognosis are markedly different for these conditions. Metastatic neoplasm to soft tissue can also present as the initial manifestation of an occult primary malignancy. We reported a case of metastasis of unknown primary in skeletal muscle.

### CASE REPORT

60 years old female presented to surgical department in our medical college with history of a swelling on the middle part of left thigh for 3 months with gradual onset. History of local trauma was absent. Local

examination showed an ill-defined non-tender mass of approximate 6x 5.5 cms with firm to hard consistency. Overlying skin was free. Other physical and systemic examinations were in normal limits.

MRI imaging was done of thigh swelling showed large relatively well defined lobulated heterogenous mass lesion measuring approximate 78x99x71 mm in mid thigh in medial/ adductor muscular compartment [Fig 1]. Few thin internal septation are seen within it. This lesion was considered malignant on radiological examination.

Fine needle aspiration smears shows numerous clusters and tissue bits comprises of round to ovoid to spindle shaped cells having almost uniform size round to oval nuclei with open nuclear chromatin an small prominent nucleoli. These cytological features are suggested malignant

mesenchymal neoplasm possibly of fibrous/synovial origin. However biopsy was suggested for exact nature of lesion and categorization.



Fig 1: MRI Findings of thigh mass



Fig 2: Gross view of thigh mass

Lump was excised and sent to our department [Fig 2]. Mass was partially skin covered with firm to hard consistency. Cut sections showed grey white to grey brown areas almost reaching upto resected base and 0.5 cms away from skin [Fig 3]. Histopathological examination show

metastatic deposits from carcinoma with focal papillary formation [fig 4a,b]. Immunohistochemistry of tumor didn't define the exact nature of primary expect carcinomatous origin (CK +) [Fig 5].



Fig 3: Cut section of thigh mass

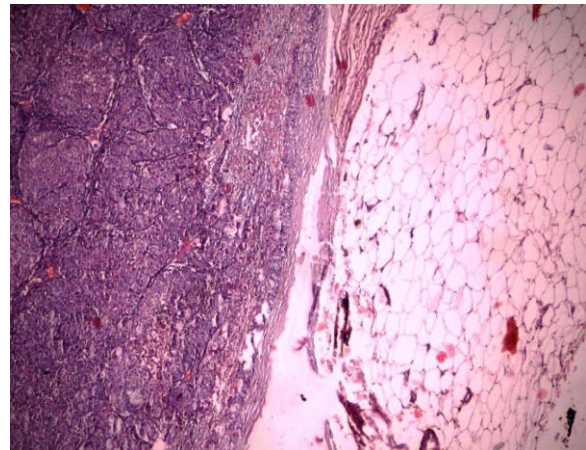


Fig 4a: Microscopic view of carcinoma metastases (H&E,40x)

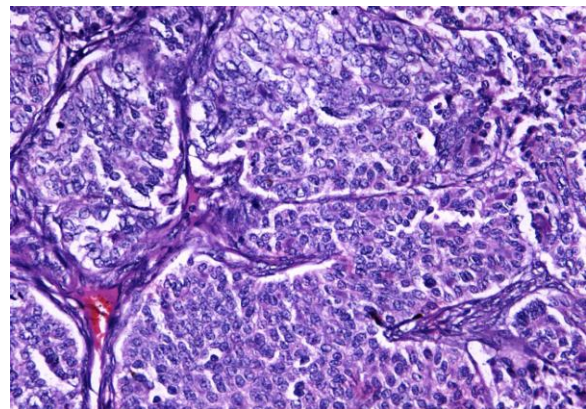


Fig 4b: Microscopic view of carcinoma metastases (H&E, 400x)

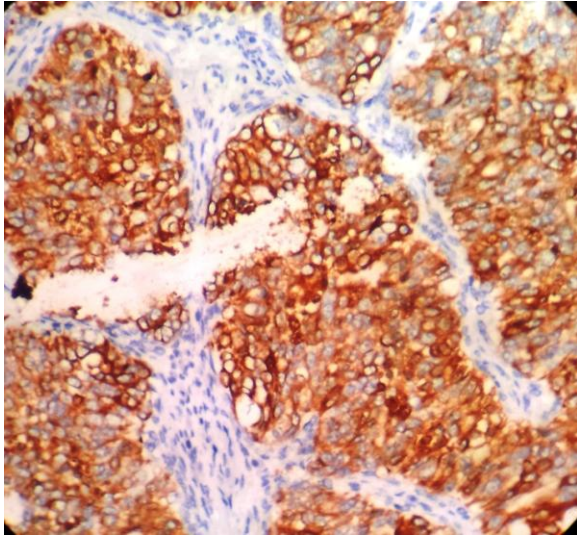


Fig 5: IHC shows CK positivity (IHC,400x)

## DISCUSSION

Despite the finding that soft tissue comprises approximately 55% of our body mass, hematogenous metastases to these areas are rare. Direct extension of a primary tumor to soft tissue is a much more common event than distant soft tissue metastases. Metastatic tumors presenting as soft tissue masses can be the source of diagnostic confusion both clinically and pathologically. [1] Only limited information is available in the literature on this phenomenon and has been mostly reported as single cases, with only a few small series available on this topic.

Metastatic neoplasms to soft tissue can also present as the initial manifestation of an occult primary malignancy, and their histologic recognition is of extreme importance. The clinical distinction between a metastatic neoplasm to soft tissue and a primary soft-tissue sarcoma is critical because treatment and prognosis are markedly different. [1]

Plaza et al studied cases related to metastasis in different soft tissue including skeletal muscles. The tumors presented as the initial symptom from an occult tumor, as

a solitary late metastasis and as disseminated metastases. The primary tumor was in the skin, lung, kidney, colon and rectum, breast, uterus, ovary, head and neck, esophagus, stomach, cervix, small bowel, bone, adrenal gland, eye, testis, urinary bladder, and salivary gland. [1] In few cases the primary site of origin could not be identified. The histologic classification of the tumors included carcinoma, malignant melanoma, sarcoma and carcinosarcoma, malignant mixed Mullerian tumor, seminoma, malignant teratoma, malignant gastrointestinal stromal tumor, and neuroblastoma. [1]

Several factors have been implicated in the rarity of this phenomenon such as changes in pH, accumulation of metabolites, and the local temperature at soft tissue sites. In addition, organs with a high predisposition for metastatic carcinomas, such as the liver or lung, are rich in capillary vessels and have a constant blood flow, whereas in soft tissues such as skeletal muscle, the blood flow is variable and is influenced by adrenergic receptors and subject to variations in tissue pressure affecting tumor implantation. Studies have been conducted regarding whether traumatic injury to soft tissue can play a role in attracting cancer metastases. [1] Protease inhibitors in the muscle extracellular matrix may resist invasion by tumor cells. Under these unfavorable conditions, particular circumstances may be needed for soft tissue metastases to occur. [2]

In other case series, most commonly reported malignancies in the literature to result in distant soft tissue metastases are lung, kidney, and colon carcinoma. The most common histologic diagnosis reported in the literature on distant soft tissue metastases is adenocarcinoma, followed by renal cell carcinoma of clear cell type, squamous cell carcinoma and melanoma, but

many other histologic types have also been reported. [1-7]

Many of the tumors displayed histologic features that created difficulties for diagnosis and could be easily mistaken on routine histopathologic examination for a variety of primary soft-tissue sarcomas. Use of a panel of markers that includes cytokeratins 7 and 20, and markers associated with either pulmonary (TTF1) or gastrointestinal differentiation (CDX2), may be of help in further defining the exact site of origin of the tumor. [3]

The lower extremity was the most common metastatic site. The skeletal muscle of the thigh and the calf became the most common anatomical sites. [2-4]

The clinical features of a metastatic carcinoma to soft tissue can mimic a soft tissue sarcoma in many respects, but a painful soft tissue mass is more commonly noted in patients with soft tissue metastasis than in primary sarcomas. [1,3]

Differentiation between primary soft tissue sarcoma and metastatic carcinoma is often difficult at presentation for diagnosis, needle biopsy is mandatory. [2,3]

Tuoheti suggested that the extensive peritumoral enhancement associated with central necrosis, which was detected on 92% of MR images, is a characteristic feature of skeletal muscle metastasis together with the findings of poorly circumscribed high-intensity lesions around the tumor on T2-weighted images and irregular peritumoral enhancement on T1-weighted images with intravenous gadolinium enhancement. [2] Although these findings are not specific for soft tissue metastasis of carcinoma, MR imaging should be performed at presentation to decide the biopsy site and to obtain valuable information with regard to the differentiation between primary soft tissue sarcoma and metastatic carcinoma to soft tissue. [3]

Here we presented a case with unknown primary which metastasize to soft tissue as occult primary. For any malignant soft tissue swelling metastasis from other site should included in differential diagnosis Use of a basic panel of immunohistochemical stains is recommended for defining the cell type and arriving at the correct diagnosis.

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