

Clear Cell Sarcoma in an Elderly Man

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Introduction

Clear Cell Sarcoma of Soft Tissue (CCSST) is a rare, aggressive tumour with melanocytic differentiation, often referred to as "malignant melanoma of soft parts." First described by Enzinger in 1965, it accounts for < 1% of soft tissue sarcomas and characterised by an EWSR1–ATF1 gene fusion resulting from a t(12;22) translocation. CCSST typically affects young adults (20–40 years) and arises deep in the extremities, often near tendons or aponeuroses. Its close histological and immunohistochemical resemblance to melanoma makes diagnosis challenging, particularly in atypical sites or older patients. Molecular confirmation using FISH or next-generation sequencing is now essential. Surgical resection remains the primary treatment for localised disease, though options for metastatic CCSST are limited.

This case aims to raise awareness that CCSST can occur outside its classical age range and anatomical sites, and should be considered in the differential diagnosis of deep soft tissue tumours, even in elderly patients.

Case Report

Clinical Summary:

A 68-year-old man presented with progressive, painless swelling in the right thigh for five months. Examination revealed a firm, non-tender mass measuring 15 × 15 cm. X-ray showed no bone involvement, while MRI revealed an aggressive tumour in the proximal right thigh. Preliminary differential diagnoses included soft tissue sarcoma and malignant peripheral nerve sheath tumour (MPNST).

Gross:

Excised mass measured 130 × 120 × 90 mm, covered with skin ellipse devoid of surface lesions. Sectioning revealed a greyish-tan, lobulated tumour with <50% necrosis, enclosed in a fibrous capsule without evidence of capsular breach (**Figure 1**).

Microscopy:

The tumour is composed of epithelioid to spindle cells arranged in short fascicles. The tumour cells displayed pleomorphic vesicular nuclei with prominent eosinophilic nucleoli and pale eosinophilic cytoplasm (**Figure 2**). Melanin pigment was observed focally (**Figure 3**). Mitoses were 5/10 hpf. Lymphovascular invasion was not evident, and surgical margins were clear. The tumour cells are positive for S100, HMB45 and Melan A.



Figure 1. Lobulated tumour exhibiting pale tan to yellow surface, with central areas of necrosis and haemorrhage.

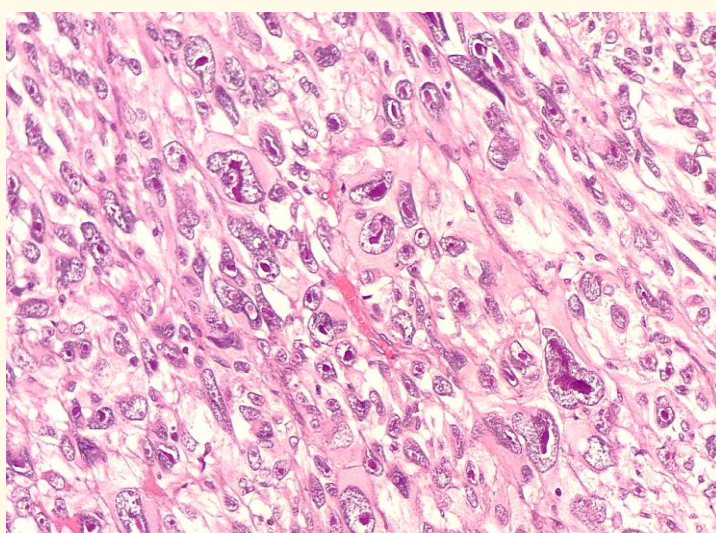


Figure 2. Epithelioid to spindle cells with pleomorphic vesicular nuclei and prominent nucleoli.

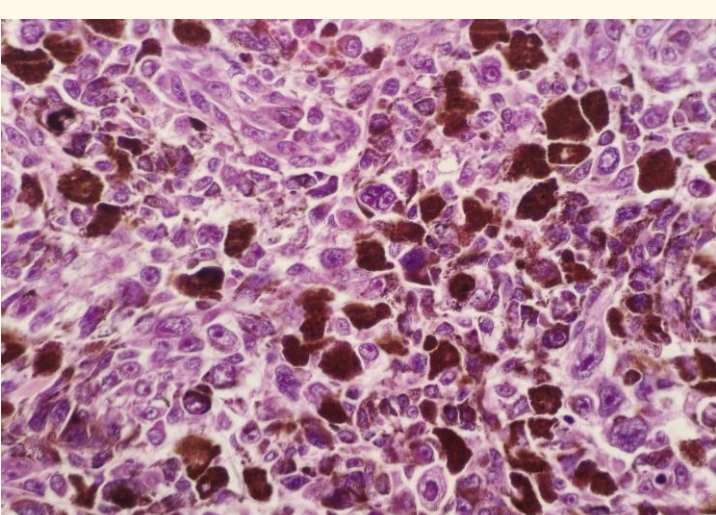


Figure 3. Tumour cells contain abundant brown melanin pigment, supporting melanocytic differentiation.

Discussion

Clear Cell Sarcoma of Soft Tissue (CCSST) remains a diagnostic challenge even for experienced pathologists. Often dubbed as "Malignant melanoma of soft parts", its histologic similarity to melanoma combined with its rarity beyond young adults adds to the diagnostic difficulty.

This case of a 68-year-old man with CCSST of the thigh broadens the recognised age spectrum of this disease. The majority of CCSSTs occur in the 2nd to 4th decades with a preference for the extremities, and in particular the foot and ankle¹. The unusual age and thigh location in this case reflect a growing number of reports encouraging clinicians to consider CCSST in elderly patients and atypical sites².

Clinically, CCSST presents as a painless, deep-seated mass with a tan-grey necrotic surface, often mimicking other sarcomas or metastatic melanoma. Histologically, the fascicular growth of epithelioid to spindle cells with prominent nucleoli and focal melanin pigment resembles melanoma. Similarly, immunohistochemistry confirms the melanocytic differentiation (S100+, HMB45+, Melan-A+)³.

Therapeutically, CCSST is refractory to conventional chemotherapy. Total surgical resection with wide margins remains the standard of treatment for localised disease. Radiotherapy is considered in some high-risk cases. New treatments targeting the EWSR1 fusion proteins are under study, but strong evidence of their effectiveness is still lacking⁴.

Conclusion

Recognising CCSST in atypical age groups and location is crucial. Pathologists should maintain a high index of suspicion for CCSST across age groups and sites to avoid misdiagnosis and improve outcomes.

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