

# Metastatic spindle cell melanoma on cytology – a diagnostic challenge

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## ABSTRACT

Spindle cell melanoma is a rare variant of malignant melanoma. The diagnosis on fine needle aspiration cytology can be challenging. An accurate cytological diagnosis is important owing to the prognostic and therapeutic implications. It also directs staging, treatment and prognosis. Spindle cell melanoma may mimic other spindle cell lesions because of the lack of characteristic features of conventional melanoma, spindle cell melanoma can be often mistaken for various other spindle cell lesions. Fine needle aspiration cytology is often used to document recurrent or metastatic disease and thus plays a very important role. We present a case of a 61-year-old male with spindle cell melanoma.

**Key words:** Melanoma; Spindle cell; Desmoplastic; Cytology

## INTRODUCTION

Spindle cell melanoma is a rare variant of malignant melanoma and the diagnosis on fine needle aspiration cytology (FNAC) can be extremely difficult [1,2]. An accurate cytological diagnosis is important owing to the prognostic and therapeutic implications. It also directs staging, treatment and prognosis. The incidence of spindle cell melanoma varies from 3%-14%. Spindle cell melanoma can occur anywhere on the body. Typically, it often presents with widespread metastatic disease [2,3]. However, some melanomas may present as a metastasis of unknown primary origin while others may take several decades to develop metastasis [4].

## CASE REPORT

A 61-year-old male came with a history of a mole over the right foot since 4 months. It was insidious in onset and rapidly progressive in size. He had also noticed a swelling in the right thigh. There was no history of fever or chills, loss of weight or appetite. On examination

there was a greyish plaque present over the right foot and right inguinal lymphadenopathy. Ultrasonography of the abdomen revealed few enlarged right external iliac lymph nodes and right inguinal lymph nodes. FNAC of the inguinal node was done, followed by wide local excision of the lesion over the right foot followed by right inguinal block dissection.

FNA smears showed clusters & fascicles of spindle cells with slender elongated nuclei and scant cytoplasm, in a background of macrophages, lymphocytes, few neutrophils and necrosis. The nuclei displayed a bland morphology. Occasional cells showed mild pleomorphism. Macronucleoli and melanin pigment were absent (Fig. 1 and 2). A diagnosis of spindle cell lesion was rendered and in view of the history, a possibility of metastatic spindle cell melanoma was suggested. Grossly, the wide local excision biopsy specimen showed a surface ulcer measuring 2.5 x 2 cm and the cut section showing grey brown areas. 18 lymph nodes were isolated from the right inguinal block dissection specimen. A diagnosis of spindle cell variant of malignant melanoma (Clark's level IV) with

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lymph node metastasis was finally rendered (Figs. 3 and 4). Radiation oncology consultation was sought and the patient was advised computerized tomography of thorax, abdomen and pelvis.

## DISCUSSION

Cytological features of spindle cell melanoma include predominantly dyscohesive spindle cell cluster, interlacing fascicles and whorls of slender spindle cells with illdefined cell borders, variable amount of cytoplasm, often showing bipolar long cytoplasmic projections which may have curved or twisted ends [5-7]. The presence of epithelioid cells has also been noted, few of which display classical cytological features of conventional melanoma. Cytoplasmic melanin pigments are variably observed [2,7]. The nuclei of the spindle cells vary from oval to slender, with occasionally folded nuclear membrane. Intranuclear

pseudoinclusions are also variably noted. The chromatin is usually granular and delicate, nucleolus being inconspicuous and occasionally prominent [6,8].

The spindle cells can also show varying degrees of cytological atypia, ranging from pleomorphic cells seen in high grade sarcomas to deceptively bland cells which resemble reactive fibroblasts [9,10]. The classic cytologic features of conventional melanoma which include predominantly dyscohesive clusters of cells, melanin pigments, intranuclear pseudoinclusions, eosinophilic macronucleoli, and binucleation or multinucleation are not frequently noted in spindle cell melanomas making the diagnosis more challenging and difficult (Table 1).

There are two distinct subtypes of malignant melanoma that differ clinic-pathologically and with respect to prognostic features. These include the spindle cell variant and desmoplastic melanoma [2,3,11]. Both these tumors show atypical, spindle malignant

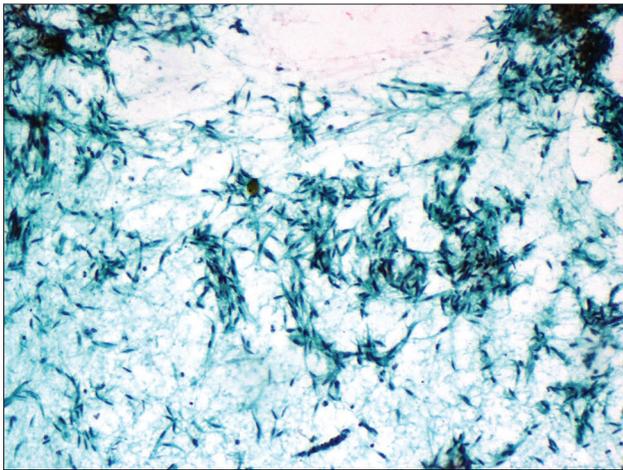


Figure 1: Clusters, fascicles and singly scattered spindle cells [Pap x40].

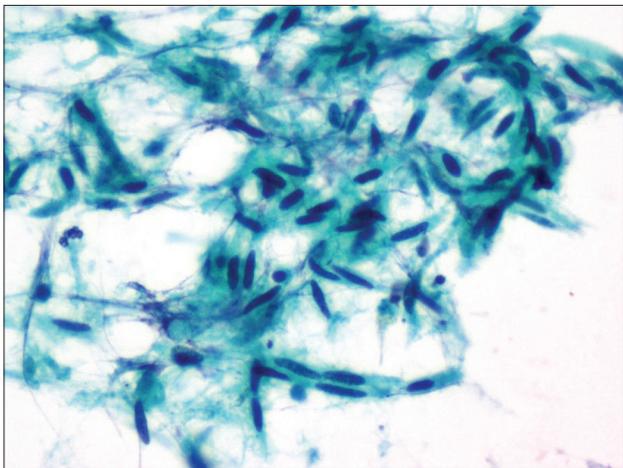


Figure 2: Spindle cells with elongated nuclei and scant cytoplasm [Pap x200].

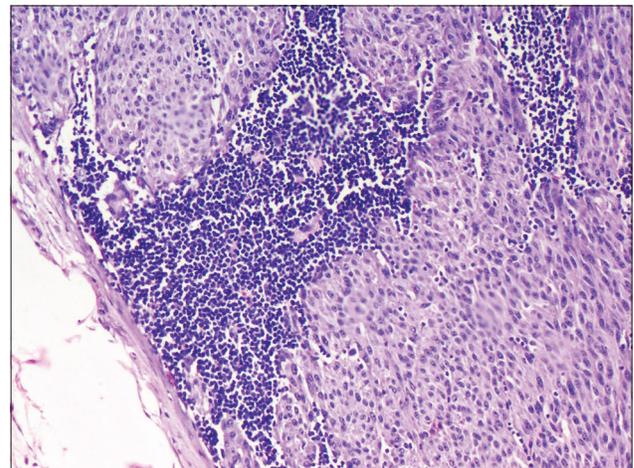


Figure 3: Lymphnode biopsy showing metastatic spindle cell melanoma [H & E x40].

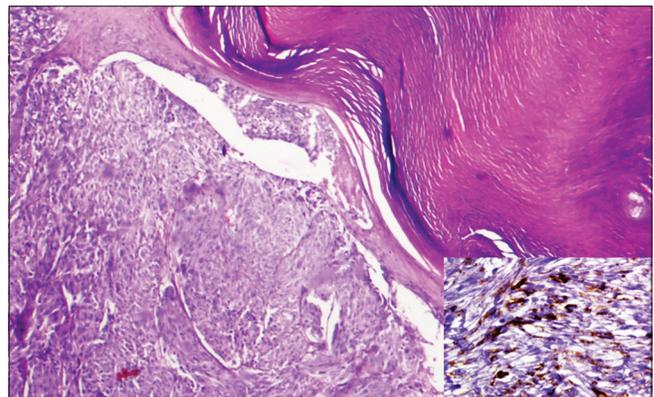


Figure 4: Skin lesion showing spindle cell melanoma. [H & E x40]. Inset shows HMB 45 positivity.

**Table 1:** Cytological findings of metastatic spindle cell melanoma compared with that of conventional melanoma

Cytological findings	Metastatic spindle cell melanoma	Metastatic conventional melanoma
Cellularity	Cellular	Cellular
Architectural pattern	Predominantly interlacing fascicles and whorls of spindle cells Dyscohesive clusters also may be present Few epitheloid cells clusters may be present	Predominantly dyscohesive clusters of polygonal cells
Cytoplasmic melanin pigment	Variable	Usually present
Nuclear pleomorphism	Bland to highly pleomorphic	Highly pleomorphic
Nuclear pseudoinclusions	Rare	Usually present
Prominent macronucleoli	Rare	Present
Binucleate & multinucleate cells	Absent	Present

**Table 2:** Differential diagnosis of spindle cell lesions

Lesion	Age	Site	Cytological features
Spindle cell squamous cell carcinoma	Elderly patients	Sun exposed surfaces- plaque/ tan to red nodule with ulcerated surface	Malignant spindled cells arranged in clusters or sheets with pleomorphic nuclei, eosinophilic cytoplasm & focal dyskeratotic cells.
Cutaneous, subcutaneous & deep Leiomyosarcoma	Adult patients	Extremities-thigh	Fascicular tissue fragments with moderate to scant cellularity, nuclei may be uniform or pleomorphic, cigar-shaped with abundant acidophilic or cyanophilic cytoplasm, characteristic perinuclear vacuoles, mitotic figures.
Dermatofibrosarcoma protruberans	Young adults	Trunk, proximal extremities, groin	Tight clusters of bland spindle cells embedded in a collagenous/ibrillary and, often, metachromatic matrix along with dissociated, uniform, or slightly atypical spindle cells or bare nuclei.
Fibrosarcoma	Young adults	Head and neck, lower extremities, and the trunk	Spindle cells arranged in bundles, nuclei are round to oval, vesicular, moderate amount of tapering cytoplasm. Mitotic figures may be abundant and may also single cells with pleomorphic nuclei
Synovial sarcoma	Young patients	Around joints	Short, uniform spindle or epithelial cells with uniform vesicular nuclei and micronucleoli. Gland formation in biphasic lesions is a useful diagnostic feature.
Atypical fibroxanthoma	Elderly Young adults	Head or neck (elderly) trunk, extremities (young adults)	Plump spindle shaped cells with vesicular nucleus, arranged in fascicles, large polyhedral cells, few being vacuolated; bizarre giant cells (mononucleate or multinucleate) with hyperchromatic nuclei.

melanocytes. In desmoplastic melanoma, these malignant cells are intimately admixed with ropy and dense collagen fibrils which was absent in the present case.

Other spindle cell lesions that fall into the differential diagnosis include atypical fibroxanthoma, cutaneous leiomyosarcoma, dermatofibrosarcoma protruberans, synovial sarcoma and spindle cell squamous cell carcinoma. However the clinical features of each of these entities differ and must be correlated with cytology findings (Table 2).

The immunohistochemical markers used to confirm a melanocytic nature include S-100, HMB-45, Melan-A, and MART-1, the latter 3 being relatively specific but less sensitive markers for melanomas. Loss of expression of these makers has also been noted in spindle cell melanomas and few of them aberrantly express cytokeratin(10%) and smooth muscle actin [2,3,8]. In the present case HMB-45 was positive in the tumor cells.

## CONCLUSION

Spindle cell melanoma may often be confused with other spindle cell lesions due to the lack of the characteristic features of conventional melanoma. A good clinical history is often helpful. FNAC is often used to document recurrent or metastatic disease and thus plays a very important role. Additional sources of diagnostic challenges, especially in the metastatic setting include varying degrees of cytologic atypia and possible cell type differences from the primary counterpart.

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## CONSENT

The examination of the patient was conducted according to the Declaration of Helsinki principles.

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