

# Conjunctival leiomyosarcoma: A fairly common tumour in an uncommon site

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## Abstract

**Background:** Leiomyosarcomas of soft tissue are malignant tumours that are not infrequently encountered in clinical medicine and histopathology. Such sarcomas of the eye are, however, a rare occurrence.

**Purpose:** Herein, the histopathological features of a case of conjunctival leiomyosarcoma are described. A 38-year-old HIV-positive male, who was otherwise fit and healthy, presented with redness of his right eye and a mass of the conjunctiva. Clinically, he did not have any soft-tissue masses elsewhere in the body.

**Method:** He underwent monoblock excision of the conjunctival mass which was confirmed histologically to be a leiomyosarcoma. Unfortunately, the patient had not returned for follow-up examination.

**Conclusion:** The differential diagnosis of a conjunctival spindle cell neoplasm is broad. While a spindle cell carcinoma is the most likely tumour, other tumours must be borne in mind so as not to misdiagnose primary sarcomas in this unusual location.

## Keywords

Conjunctiva, leiomyosarcoma

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## Clinical history

A 38-year-old HIV-positive male, who was not on antiretroviral treatment, presented with a right-sided conjunctival mass for an uncertain period of time. On examination, he was in good health and did not have any soft-tissue masses elsewhere. Ophthalmic examination revealed right eye hyperaemia together with a raised conjunctival lesion noted on the medial aspect, extending on to the cornea. He was found to have normal vision. The clinical assessment was that of an invasive squamous cell carcinoma.

The patient underwent a monoblock excision of the mass with cryotherapy applied to the base. Clinically, the margins were thought to be free of tumour. The tissue was submitted for histopathological evaluation. The patient had not returned for his follow-up appointment.

## Pathology

The excised specimen submitted for histopathological examination consisted of a single, unorientated fragment of tissue measuring 7 mm × 4 mm × 3 mm. The specimen was processed in its entirety.

Microscopic examination revealed a single portion of tissue surfaced by intact squamous mucosa. At one edge of the surface mucosa, mild dysplasia was noted. Within the underlying

tissue, however, a spindle cell proliferation was present. This proliferation consisted of fascicles of spindle cells displaying varying degrees of atypia. The cells were large and hyperchromatic. Focally, tumour cells contained perinuclear vacuoles. Mitotic activity was apparent with up to 14 mitotic figures noted in 10 high-powered fields (Figure 1). Definitive lymphovascular and perineural infiltration was not documented in the submitted specimen. The tumour measured 2 mm in thickness and was clear of the peripheral surgical resection margins.

Immunohistochemistry for cytokeratins (AE1/3, MNF116, 34BE12, CK5/6) and a p63 stain were negative, thus excluding the most likely diagnosis of a spindle cell carcinoma. Melanocytic markers (S100, MiTF, Melan-A and HMB-45) were negative and excluded a diagnosis of a malignant melanoma. Kaposi sarcoma was excluded with negative staining

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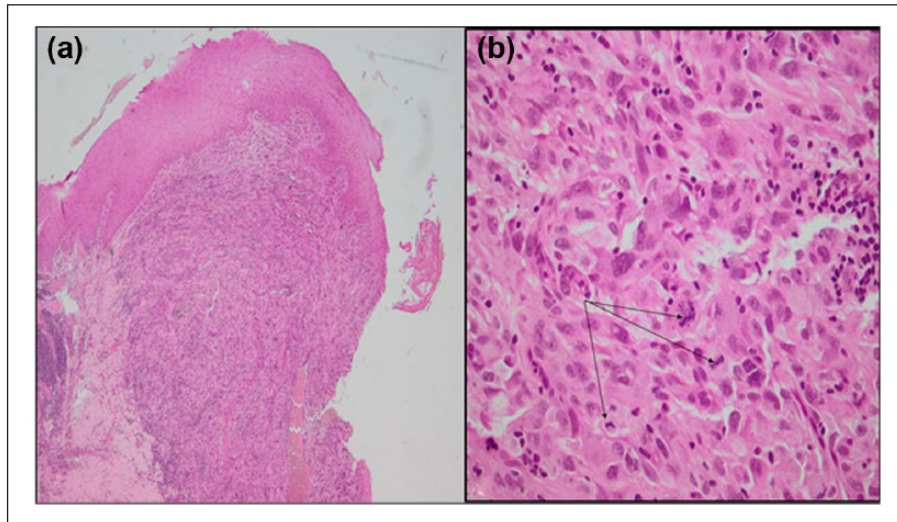
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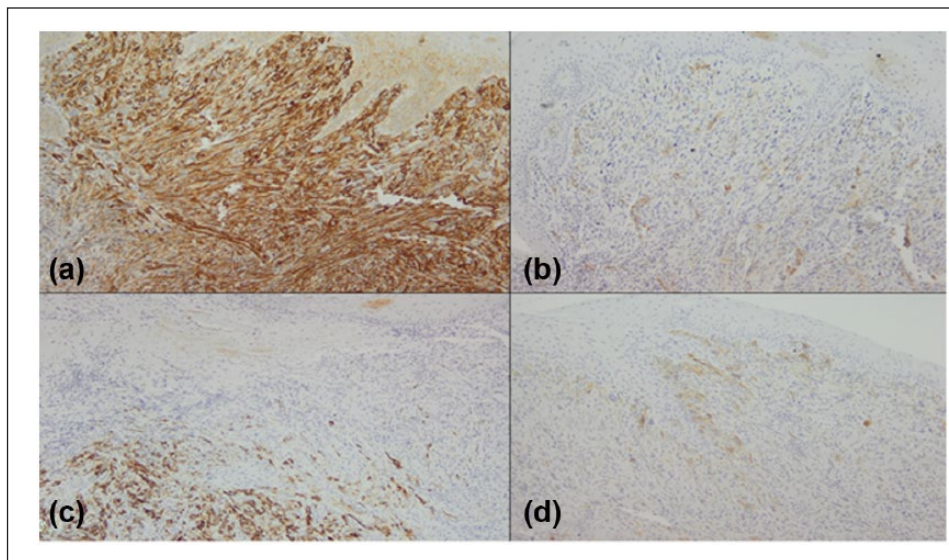
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**Figure 1.** (a) A low-power photomicrograph showing conjunctival squamous mucosa at the surface with the underlying leiomyosarcoma. (b) High-power magnification of the atypical spindle cells. Arrows highlight mitotic figures. H&E 2  $\mu$ m sections. Original magnification: 40x (a) and 400x (b).



**Figure 2.** Positive immunohistochemical stains. The tumour cells are stained brown in these sections: (a) SMA, (b) MSA, (c) desmin and (d) h-Caldesmon. 4  $\mu$ m sections. Original magnification: 100 $\times$ .

for Human Herpes Virus-8 (HHV8) and CD31. A desmin stain was positive in the neoplastic cells. Smooth muscle actin (SMA), muscle-specific actin (MSA) and h-Caldesmon stains were positive in tumour cells (Figure 2). Myogenin and Myo-D1 stains were both negative, thus excluding a rhabdomyosarcoma. Epstein–Barr encoding region (EBER) in-situ hybridisation was negative. A final diagnosis of a conjunctival leiomyosarcoma was rendered.

### Discussion and differential diagnosis

Leiomyosarcomas are malignant smooth muscle tumours that tend to occur in soft tissues, especially in a retroperitoneal

location.<sup>1</sup> Leiomyosarcomas of the eye, either primary or metastatic, are, however, a rare occurrence, with only a handful of cases having been reported to date.<sup>2–9</sup> Leiomyosarcomas are tumours composed of spindle cells arranged in fascicles. The individual cells have nuclei that are ‘cigar-shaped’ or blunt ended with variable pleomorphism. The surrounding cytoplasm is generally eosinophilic. Mitotic activity is apparent with atypical forms often being encountered. Immunohistochemically, most of these neoplasms stain positively with SMA, MSA, desmin and h-Caldesmon. Soft-tissue sarcomas may recur locally or may metastasise to distant sites. Both tumour size and anatomical site are important prognostic indicators.<sup>1</sup>

Squamous cell carcinoma and spindle cell carcinoma, a variant of the former, are the most likely epithelial tumours occurring in the conjunctiva. Neoplastic cells in a squamous cell carcinoma have intercellular bridges with varying amounts of keratinisation. Spindle cell carcinoma, however, is as the name suggests composed of spindle cells often with pale cytoplasm and no obvious keratinisation. Both tumours stain positively with pan-cytokeratin stains (MNFI16 and AE1/3) together with markers of squamous differentiation, namely Cytokeratin 5/6 and p63. Excision of early lesions results in adequate control. Conversely, more extensive management is required for advanced tumours.<sup>10</sup>

Malignant melanomas of the conjunctiva, while not common, are not unheard of. The tumour cells may have a spindled or epithelioid morphology and may or may not contain melanin granules within the surrounding cytoplasm. The epithelioid variant contains cells that have large, distinct macronucleoli and mitotic activity is conspicuous. Melanomas with a spindle cell morphology have elongated, fusiform nuclei with indistinct nucleoli and pale staining cytoplasm. Immunoreactivity for the following melanocytic markers is seen: S100 protein, Microphthalmia transcription factor-1 (Mitf-1), Melan-A and HMB-45.<sup>10</sup>

Spindle cell/sclerosing rhabdomyosarcoma is a variant of rhabdomyosarcoma in which the tumour is composed of spindle cells.<sup>11</sup> The neoplastic cells have elongated to oval nuclei with nucleoli that are indistinct. Scattered rhabdomyoblasts containing peripherally placed nuclei may be seen. Cross striations may be seen in rhabdomyoblasts. Nuclear positivity with MyoD1 and/or myogenin is required for the diagnosis.

In the HIV-positive patient, Kaposi sarcoma and Epstein-Barr virus (EBV)-associated smooth muscle tumours should be considered. Kaposi sarcoma is a vasoformative lesion composed of a proliferation of spindle cells and slit-like vascular channels.<sup>12</sup> There is often associated red cell extravasation, an admixed inflammatory infiltrate and hyaline globules. Vascular markers such as CD31 and CD34 together with a HHV8 immunohistochemical stain are positive. EBV-associated smooth muscle tumours comprise a spindle cell proliferation which may be cytologically bland. The number of mitotic figures is variable. These tumours are positive with SMA and EBER in-situ hybridisation.<sup>12</sup> These tumours are not uncommonly seen in the HIV-positive population.<sup>13</sup> However, to the best of the author's knowledge following a literature search, an increase in conjunctival leiomyosarcomas in HIV-positive patients has not been established.

## Conclusion

It may be seen that many tumours form part of the differential diagnosis of a conjunctival spindle cell neoplasm. While a spindle cell carcinoma is the most likely tumour,<sup>5</sup> other tumours must be borne in mind so as not to misdiagnose primary sarcomas in this location.

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## Ethical approval

Our institution does not require ethical approval for reporting individual cases.

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## Informed consent

Written informed consent was obtained from the patient for anonymized information to be published in this article.

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