A rare case of subconjunctival nerve sheath myxoma presenting as orbital fat prolapse

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surveillance of these patients is warranted given the potential for local recurrence or metastases.

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A Rare Case of Subconjunctival Nerve Sheath Myxoma Presenting as Orbital Fat Prolapse

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Abstract: **Nerve sheath myxomas are extremely rare myxoid peripheral nerve sheath tumors with a predilection for the distal extremities, particularly common in the fingers and knees. Here, the authors report a 60-year-old male patient with a subconjunctival epibulbar nerve sheath myxoma, which was clinically diagnosed as an orbital fat prolapse. The lesion was successfully debulked without clinical recurrence over more than 3 years. To the authors' knowledge, this is the first case with subconjunctival presentation and fourth orbital reported case.**

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Nerve sheath myxoma (NSM) is an extremely rare myxoid peripheral nerve sheath tumor with a predilection for the extremities, particularly common in the fingers and knees. Only 14% has been found around the rest of the body.[1] The local recurrence rate is high and it has a peak incidence in the fourth decade of life.[1] There are no characteristic clinical features of NSM, which is why pathological examination is paramount for diagnosis.[2] To our knowledge, only a few cases of NSMs around the eye have been reported in the literature of which only 3 are located in the orbit[3] and 4 in the eyelid.[2,4–6] Up until recently, NSM was thought to be a myxoid type of neurothekeoma.[7] At present, there is a consensus that both are separate entities based on their immunohistochemical characteristics.[7] Written informed consent was obtained from the patient for publication of this case report, in accordance with the Declaration of Helsinki.

CASE PRESENTATION

A 60-year-old male presented at the outpatient clinic with a 10- to 15-year history of a painless superotemporal epibulbar swelling in the OS, which had drastically increased in size the past year. The patient had a medical history of obesity, gout, rheumatism, and hypertension. There was no history of a previous malignancy nor was there a family history suspect of *NF1*. He had been referred to us by his rheumatologist for evaluation of the epibulbar mass. The patient had no symptoms and on initial examination, visual acuity was 1.20 and 1.00 in the OD and OS, respectively. There were no physical signs of *NF1* and slit lamp examination did not show Lisch nodules of the iris. The painless, subconjunctival mass was palpable in the superior temporal region of the OS, which had a soft cystic aspect and was yellow/pink in color (Fig. 1A). The differential diagnosis was orbital fat prolapse, epibulbar dermoid, lymphoma, and amyloid. The lesion could be pushed back into the orbit using a cotton tip, which argued against a diagnosis of epibulbar dermoid. The patient was treated with subtotal debulking through a transconjunctival approach.[8] Upon preliminary inspection, the color was not typical of a fat prolapse and looked more cystic than fat. It was not a firm lesion like lymphoma or an epibulbar dermoid. The lesion was well-circumscribed but difficult to grasp with forceps. There was no post excision measurement taken of the lesion but after debulking only a little tissue was left in place. The lesion was sent for histologic examination. The patient was seen 3 weeks postoperatively at the outpatient clinic (Fig. 1B). There was no postoperative reduction in visual acuity or other complications or symptoms. On examination, there was a quiet conjunctival scar without evidence of a residual subconjunctival mass. Histopathology was most conclusive for an NSM. Microscopy showed a multinodular myxomatous spindle cell lesion with dispersed, somewhat fragmented coarse collagen fiber bundles and scattered mast cells (Fig. 2A). Strong positive staining of myxoid stroma was observed with Alcian blue staining. Additional immunohistochemical analysis showed that the lesional spindle cells uniformly stained positive for S100, SOX9, SOX10, and CD34 (Fig. 2C, D). There was no positive staining for MITF, SMA, MUC4, STAT-6, EMA, or Glut 1 (Fig. 2B). There were no axons detectable with neurofilament and no positive staining of cell nuclei for ki-67. Further, molecular investigation showed no mutations in genes of interest, *NF1* (99% coding sequence coverage) and *NF2* (100% coding sequence coverage). Altogether, conjunctival NSM was proposed as the final diagnosis. The patient was followed up every 6 months as it is known that NSMs often recur. To date, 41 months after excision, no signs of recurrence have been detected.

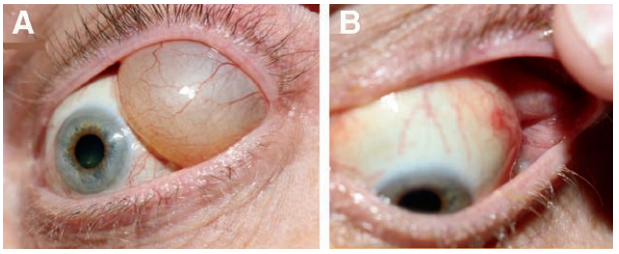

FIG. 1. Preoperative **(A)** and postoperative **(B)** images of the superior temporal mass located subconjunctival inside the orbit.

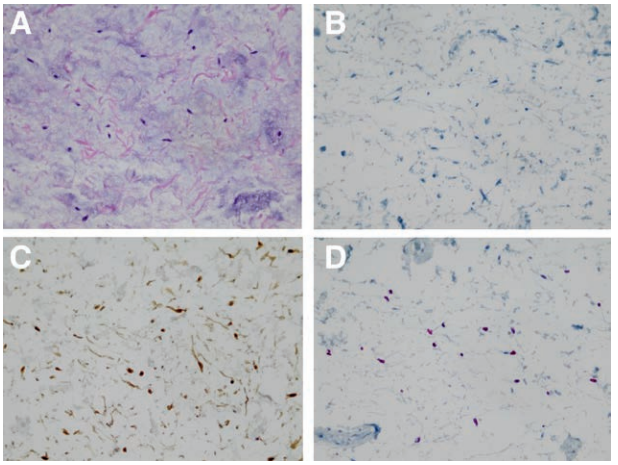

FIG. 2. Immunohistochemical analysis with ×200 magnification showing hematoxylin staining **(A)**; negative MITF **(B)**; positive S100 **(C)**; and positive SOX10 **(D)**.

DISCUSSION

NSM is an extremely rare myxoid peripheral nerve sheath tumor and was first described by Harkin and Reed.[9] Because of its rare incidence, especially in the orbit, NSM is often overlooked and misdiagnosed. Although, in the past interchangeably associated with neurothekeomas, they appear to be unrelated.[1] The older literature should therefore be regarded with some reservation as to the distinction of these 2 entities. NSMs have a well-circumscribed, multilobulated growth pattern with loosely arranged spindle and stellate cells with, in contrast to neurothekeomas, positive staining for S100 protein making them originate from Schwann cells.[7] NSMs appear not to be associated with *NF1*, *NF2*, or schwannomatosis.[10] Little more is known regarding its etiology. The tumor has a peak incidence around the fourth decade of life and males and females tend to be affected equally.[1] The clinical signs of NSM are not distinctive, so immunohistochemical markers such as S100 and SOX10 and the presence of spindle and stellate cells are important to separate them from other entities.[1] Drawing from the literature on NSM elsewhere in the body, the risk for local recurrence must be deemed high, around 50% upon incomplete removal.[1] Fetsch et al.[1] showed that for 5 patients, the time interval for recurrence was 2 years. Furthermore, in the same study, all 14 patients with no recurrence were followed for at least 4 years. Our patient has not had any recurrence for over 3 years. Therefore, our recommendation for monitoring would extend to close follow up every 6 months for at least 3 years. Additionally, as advised by most other published literature, complete resection is the best approach to prevent local recurrence.[4,7,11,12] Matsuo et al.[3] did a literature search on existing cases of orbital myxomas. They found there to be only 21 other cases of orbital myxomas in the published literature, of which

TABLE. Four orbital and 4 eyelid cases of nerve sheath myxoma found in the literature

Study	Patient	Location	Signs and symptoms	Immunohistochemistry	Follow up
This case	60-year-old male	OS in the superotemporal epibulbar region	Painless tumor	S100, SOX9, SOX10, and CD34	41 months
Mora-Cantallops et al. (2020)[11]	63-year-old male	OS originating in the medial rectus muscle	Painless proptosis of the OS	S100, CD34, and CD56	Not provided
Rodríguez-Uña et al. (2015)[12]	66-year-old female	OS affecting the lateral rectus muscle	No symptoms, detected incidentally by CT scan	S100 and CD34	1 month
Sánchez-Orgaz et al. (2011)[13]	63-year-old male	Lateral orbit of the OD	Blepharoptosis and a painless mass	S100, CD34, vimentin, CD68, and CD10	24 months
Nakamura et al. (1994)[6]	23- year-old female	Lower left eyelid near the punctum	Painless tumor	S100 and Alcian blue	18 months
Kakizaki et al. (2004)[5]	69- year-old female	Right lower eyelid near punctum	Painless tumor with sensation of foreign body	NSE and S100	12 months
Guiseppi et al. (2020)[4]	19-year-old male	Left lower eyelid	Blurry vision with esthetic concerns, painless tumor	GFAP, vimentin, CD34, Alcian blue, and S100	Not provided
Choe et al. (2019)[2]	34-year-old male	Right upper eyelid near the medial canthus	Painless tumor	S100	Not provided

GFAP, glial fibrillary acidic protein; NSE, neuron specific enolase.

only 3 cases were diagnosed as NSMs based on positive S100 staining.[11–13] Furthermore, only 4 cases of NSMs were found in the literature presenting in the eyelid as a chalazion[5,6] or recurrent cystic lesion.[2,4] These published cases are presented in Table. All discussed NSM cases were initially misdiagnosed, which is not surprising given its rare incidence and indistinctive features. The presentation of (peri)orbital NSM lesion as a subconjunctival orbital mass is, to our knowledge, unreported. This case shows that a broader differential diagnosis should be considered for subconjunctival lesions clinically suggestive of fat prolapse.

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Intratarsal Keratinous Cyst at the Eyelid Margin: A Case Report

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Abstract: **An uncommon case of an intratarsal keratinous cyst at the lid margin is described in a 73-year-old Asian man using long-term antiglaucoma eye drops. There was no history of trauma or surgery of the upper eyelid. A yellow**