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Amelanotic conjunctival melanoma in a child

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ABSTRACT

Purpose: Malignant melanomas of the conjunctiva are extremely rare in children. In this case report we present a conjunctival melanoma of a child.

Observations: We report a case of a 7 years old boy who presented with a rapidly growing reddish lesion measuring 8mm in base × 2.5 mm in thickness on the nasal conjunctiva in his right eye. The patient underwent resection of the lesion (with 4 mm margins of the surrounding clinically normal conjunctiva) and cryotherapy to the adjacent conjunctival margins. Histopathology confirmed the diagnosis of conjunctival melanoma. Pathology also can be challenging; a review of pathology is advisable as happened in this case. Systemic workup was negative for metastatic disease. On 73 months of follow up, the patient was stable without local recurrence or secondary systemic disease.

Conclusions and Importance: Malignant melanoma can present de novo as an amelanotic rapidly growing conjunctival lesion in children. This case should raise the awareness of the variable clinical presentations, the challenging diagnosis, treatment and follow up of pediatric conjunctival melanoma.

1. Introduction

Conjunctival melanoma is a rare but potentially life threatening ocular malignancy, mostly presents in middle aged population. It accounts for 2%–5% of all ocular tumors and 5%–7% of all ocular melanomas with an incidence of 0.2–0.8 per million in white population. Five year survival rate is 83–84% and five year recurrence rate is 39%.[1] Pediatric conjunctival malignant melanoma is an extremely rare condition. Reports on the presentation, management and prognosis of this condition in children is rarely published mainly due to its low occurrence or due to a publication bias or due to the fact that cases are not reported.[2] We report here a case of amelanotic conjunctival melanoma presenting in a 7 years old child.

2. Case report

A 7 years old boy presented with a new reddish amelanotic conjunctival lesion appeared in his right eye (Fig. 1A) that did not exist a year before (Fig. 1B). The lesion showed progressive growth over the previous 3 months. The lesion measured 8 mm in base and 2.5 mm in thickness and involved the nasal aspect of the bulbar conjunctiva. There were three lobules on the surface of the lesion and a feeder vessel with no cysts. Visual acuity was 20/20 and fundoscopy was normal. No cervical nor pre-auricular lymph nodes were present and no scleral involvement according to Anterior segment Optical Coherence Tomography (AC-OCT). On the following day, the patient underwent an excisional biopsy of the lesion using the 'no touch' technique with 4 mm of free conjunctival margins (2mm on corneal edge) with cryotherapy to the margins and base. Finally reconstruction with amniotic membrane transplantation was performed. Conjunctival excisional biopsy under general anesthesia due to the young age of the patient was done. The biopsy showed a compound melanocytic lesion composed of epithelioid and plump spindle cells with nuclear heterogeneity and cytologic atypia. Some nuclei contained nucleoli. Mitotic activity was present in subepithelial nests and in the deeper portion of the lesion. The subepithelial nests showed focal cyst formation at the depth of the lesion. The histologic findings and in particular, the presence of mitotic activity in the deeper portion of this lesion raise the possibility of a conjunctival melanoma [Fig. 2]. In addition, immunohistochemical stains including Ki-67 were strongly positive, indicating high proliferation index and immunohistochemical stain for HMB-45 showed positive stains in the cytoplasm and cell membrane through the whole lesion thickness [Fig. 3]. All the features confirmed diagnosis of conjunctival melanoma. The child was treated with secondary wide excision with cryotherapy for

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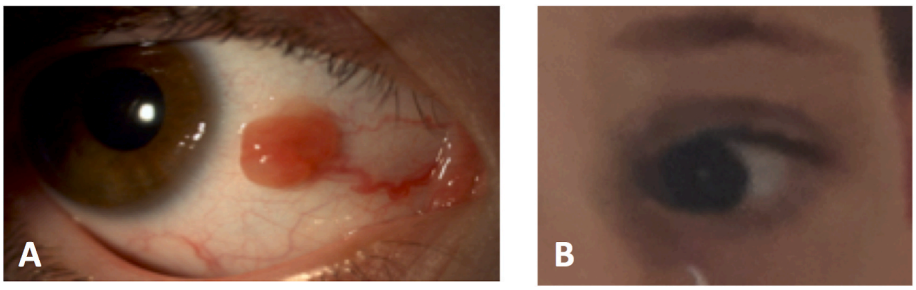

Fig. 1. Clinical presentation
A- The eye with the new lesion- Lesion in the nasal bulbar conjunctiva of the right eye at initial presentation- Amelanotic lesion 8 mm n base 2.5 mm in thickness with no cysts. Consisted of 3 lobules and a feeder vessel. B- One year before the lesion appeared.

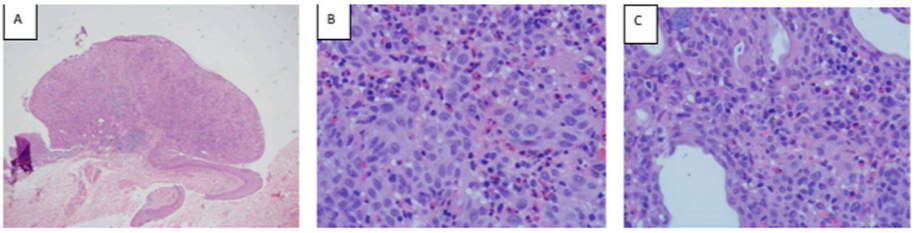

Fig. 2. H&E stain. A. First biopsy showing polypoid neoplasm composed of nests of melanocytes cells (original magnification). B. Spindle cells with nuclear heterogeneity and cytologic atypia. Some nuclei contain nucleoli C. The subepithelial nests showed focal cyst formation at the depth of the lesion. Mitotic activity in submucosal melanocytes (black arrow) indicating proliferation (haematoxylin and eosin, original magnification X40).

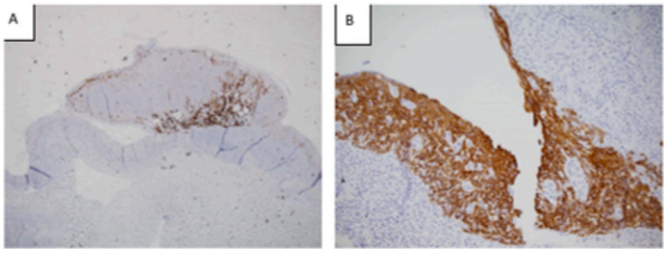

Fig. 3. Immunohistochemical stains-. A. Ki-67 strongly positive at the deeper part of the lesion indicating high proliferation index, raising the possibility of malignant melanoma. B. Immunohistochemical test HMB-45 stained the cytoplasm and cell membrane through the whole lesion thickness.

better local tumor control. No invasion to the lateral margins was found in the second operation.

The patient's thorough general physical examination along with metastatic work up including Positron Emission Tomography (PET) scan was unremarkable. On 73 months of observations, the patient was stable without local recurrence or secondary systemic disease.

3. Discussion

Our pediatric patient had a conjunctival lesion which rapidly progressed to a large elevated conjunctival mass later confirmed to be a malignant melanoma on histopathology. Malignant melanoma is a potentially lethal tumor that arises from melanocytes located among the basal cells of the conjunctival epithelium. It accounted for only 4.8% of ocular melanomas, mostly affects middle aged and elderly population. In children the condition is rarer. Only 1% of all conjunctival melanoma occurs in children.[3] Limited information on the presentation, management and prognosis of conjunctival malignant melanoma in children is available. Literature search using the terms "pediatric, conjunctival, melanoma, in, children" (PubMed; Google scholar) revealed very few published cases of conjunctival melanoma diagnosed in children in the last 30 years. To our knowledge, from 1987 to 201, 8 33 cases of conjunctival melanoma in children were reported. 15 of them were presented in detail. Sixty percent were above 10 years of age. Four of the reported cases with details presented or developed metastatic disease.

Conjunctival melanoma in adults is thought to most commonly arise from primary acquired melanosis. Some conjunctival melanomas arise from pre-existing nevi, especially in children.[3] In a review of 806 children with conjunctival lesions who were evaluated at the Wills Eye Hospital between 1975 and 2015, Shields et al. found that majority of the tumors were benign (97%), only 3% were malignant and 2% diagnosed with melanoma. They concluded that conjunctival tumors in children are nearly always benign, most commonly nevi, indicating that the majority of conjunctival nevi do not progress to melanoma in children.[4] The literature reveals that only 3 (8.5%) of the reported cases apparently arose de novo. In our case the melanoma was developed de novo as well.

Conjunctival melanoma in adults commonly presents as a pigmented, elevated lesion with feeder vessels and surrounding areas of melanosis.[2] However, amelanotic or reddish appearance may be found and might be confused with benign lesions. The diagnosis and treatment of pediatric melanoma may be challenging due to its variable presentation. Shields et al. have found that pediatric conjunctival melanoma compared with nevus, was associated with older children (aged >10–15 years) with larger tumor (thickness of >1.5 mm and base of >10 mm), hemorrhages, and lack of cysts.[5] Pediatric amelanotic malignant melanoma in the caruncle, was previously reported by R.Walters et al.[6] Our case was presented as a rapidly growing amelanotic bulbar conjunctival lesion with three lobules on the surface of the lesion and a feeder vessel with no cysts. This case reported an amelanotic malignant melanoma in the bulbar conjunctiv of a child.

The preferred surgical approach is the "no touch technique" surgical excisional biopsy with 3–4 mm of tumor free margins combined with supplemental cryotherapy to the remaining conjunctival margins and alcohol corneal epitheliectomy for corneal involvement.[7] This technique of surgery, was shown to be an important factor for decreasing tumor recurrence, metastasis and death by Shields et al.[8] In case of invasive melanoma, adjuvant irradiation with plaque should be advised.

No touch technique as used in our case with cryotherapy to the remaining conjunctival margins and tumor base. No recurrence was noted in 73 months of follow up.

Diagnosis of pediatric conjunctival melanoma is challenging also in the histopathologists' field. Benign and malignant melanocytic lesions of the conjunctiva are difficult to differentiate histologically. Histologically nests of atypical melanocytes cells are often seen, extended through all the layers of epithelium.[2] However, histopathological diagnosis is commonly confirmed by imohistochemical stains, the most sensitive are ki-67, HLB-45.[9] Our case was strongly positive for ki-67 and HLB-45 raising the possibility for malignant melanoma. The use in these stains was performed in 60% of the previous presented cases.

Little is published regarding the best systemic follow-up methods and screening for metastatic disease. Furthermore, only two publications discuss the role of sentinel lymph node biopsy (SLNBX) in pediatric conjunctival malignant melanoma. Thickness of more than 2 mm was previously published, as an indication for SLNBX in adults.[10] In the present case, our patient underwent FDG PET/CT whereas SLNBX was not performed for additional evaluation due to his young age.

In conclusion, malignant melanoma can present de novo as an amelanotic rapidly growing conjunctival lesion in children. This case should raise the awareness of the variable clinical presentations, the challenging diagnosis, treatment and follow up of pediatric conjunctival melanoma.

Patient consent

This report does not contain any personal identifying information.

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Authorship

All authors attest that they meet the current ICMJE criteria for Authorship.

Declaration of competing interest

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References

1. Gverovi A, Beketi L, Salopek J. *Conjunctival Melanoma - Epidemiological Trends and Features*. 2018:787–796.
2. Wong JR, Nanji AA, Galor A, Karp CL. Management of conjunctival malignant melanoma: a review and update. *Expet Rev Ophthalmol*. 2014;9:185–204.
3. Shields CL, Shields JA. Conjunctival tumors in children. *Curr Opin Ophthalmol*. 2007; 18(5):351–360. https://doi.org/10.1097/ICU.0b013e32823ecfbb.
4. Taban Mehran, Elias I. Traboulsi. Malignant melanoma of the conjunctiva in children: a review of the international literature 1965–2006. *J AAPOS*. 2007;44(5): 277–282.
5. Shields CL, Sioufi K, Alset AE, et al. Clinical features differentiating benign from malignant conjunctival tumors in. *Children*. 2017;19107(3):215–224. https://doi.org/10.1001/jamaophthalmol.2016.5544.
6. Walters AR, Keck KM, Simmons O, Williams SG, Cross S, Patel RM. Malignant melanoma presenting as amelanotic caruncular lesion in a child. *J AAPOS*. 2019;21 (6):501–503. https://doi.org/10.1016/J.JAAPOS.2017.06.025.
7. Shields JA, Shields CL, De Potter P. Surgical management of conjunctival tumors: the 1994 lynn B. McMahan lecture. *Arch Ophthalmol*. 1997;115(6):808–815. https://doi.org/10.1001/archopht.1997.01100150810025.
8. Shields CL, Shields JA, Gündüz K, et al. Conjunctival melanoma: risk factors for recurrence, exenteration, metastasis, and death in 150 consecutive patients. *Arch Ophthalmol*. 2000;118, 1497–507.
9. Jakobiec FA, Bhat P, Colby KA. Immunohistochemical studies of conjunctival nevi and melanomas. *Arch Ophthalmol*. 2010;128:174–183.
10. Cohen VML, Tsimpida M, Hungerford JL, et al. Prospective study of sentinel lymph node biopsy for conjunctival melanoma. *Br J Ophthalmol*. 2013;97(12):1525–1529.