Simultaneous squamous cell carcinoma and malignant melanoma of the conjunctiva in a teenager with xeroderma pigmentosum: Case report

Ever Rodriguez Caso, Allexya AA Marcos, Melina Morales, Rubens N Belfort

Xeroderma pigmentosum (XP) is an autosomal recessive disease with ophthalmic, dermatologic, and neurologic manifestations. Ophthalmological changes are described in up to 100% of XP patients. We report a young XP patient that presented with bilateral conjunctival masses. She was treated by surgical excision with supplemental cryotherapy. The histopathological analysis revealed squamous cell carcinoma with melanosis on right eye and conjunctival melanoma on the left eye. These patients need to be followed by dermatologists and ophthalmologists to identify malignant lesions as soon as possible and also to prevent unnecessary surgery that increases mutilation.

Key words: Conjunctiva carcinoma, conjunctiva melanoma, eye cancer, xeroderma pigmentosum

Xeroderma pigmentosum (XP) is a rare autosomal recessive of DNA repair with ophthalmic, dermatologic and neurological manifestations.[1,2] It is characterized by progressive pigmentary changes at exposed sites an increased risk of ultraviolet radiation (UVR) induced skin and mucous membrane cancers, severe photosensitivity, and progressive neurodegeneration.[1-3] Ophthalmological changes were describe in 40 to 100% of XP patients.[4,5] Changes include ectropion, lagophthalmos, conjunctival injection, conjunctival melanosis, corneal scarring and keratopathy, pterygium, cancers of both the ocular surface and eyelids[4,5] and accelerated rate of corneal endothelial cell loss.[6]

We describe the clinical and histopathologic findings on an 18-year-old female patient with XP that presented bilateral conjunctival masses confirmed to be simultaneous squamous cell carcinoma and melanoma of the conjunctiva.

Access this article online

Quick Response Code:

Website: www.ijo.in

DOI: 10.4103/ijo.IJO_1106_18

Ocular Oncology Service, Department of Ophthalmology and Visual Sciences, Federal University of São Paulo, Rua Botucatu, 822, São Paulo, Brazil

Correspondence to: Dr. Rubens N Belfort, Ocular Oncology Service, Department of Ophthalmology and Visual Sciences, Federal University of São Paulo, Rua Botucatu, 822, São Paulo, Brazil. E-mail: rubens@belfort.med.br

Manuscript received: 10.07.18; Revision accepted: 15.01.19

Case Report

An 18-year-old female Brazilian patient with XP was referred to our hospital for evaluation of masses in the conjunctiva of both eyes. She referred that the masses have been growing for 2 months.

At 1 year of age she was diagnosed with basal cell carcinoma in the face and eventually diagnosed with XP. In 2014, a complete excision was performed in the glabella and zygomatic region due to skin melanoma.

The ocular history included primary acquired melanosis with atypia in the right eye after surgical excision of conjunctival lesions in 2015. The family history was positive for XP (two paternal uncles with XP, died at 10 and 12 years of age due to melanoma cutaneous).

On examination, the best-corrected visual acuity was 20/20 and 20/40 in the right (RE) and left eye (LE) respectively. Biomicroscopy showed a reddish mass in the temporal conjunctiva of RE with adjacent pigment. In the left eye she presented with a pigmented mass in the temporal conjunctiva with involvement of the limbus. Episcleral blood vessels were wide and tortuous in the temporal part of both eyes [Fig. 1]. The anterior chamber was normal, gonioscopy was normal, intraocular pressure was 14 mmHg in each eye, fundus exams were normal. Regional lymph nodes were not palpable.

She was treated by surgical excision with no touch technique with surgical margins of 3 mm in RE and 5 mm on LE because of clinical suspicion of conjunctival melanoma. Involved epithelium was removed using absolute alcohol. Three freeze-thaw cycles of cryotherapy were applied to conjunctival margins after excision. Amniotic membrane was used to cover the defect, sutured with vicryl 8.0.

The histopathological analysis revealed squamous cell carcinoma with melanosis stage T2 in the right eye [Fig. 2] and malignant melanoma stage T1b on left eye [Fig. 3]. Margins were negative on both samples. A systemic survey was negative for metastatic disease. Adjuvant therapy was administered with interferon alpha-2b one million IU/mL four times daily for four months on RE and mitomycin 0.04% four times a day for 2 weeks on LE, and after 12-month follow-up [Fig. 4], she has no signs of recurrence or metastasis.

Cite this article as: Caso ER, Marcos AA, Morales M, Belfort RN. Simultaneous squamous cell carcinoma and malignant melanoma of the conjunctiva in a teenager with xeroderma pigmentosum: Case report. Indian J Ophthalmol 2019;67:1190-2.

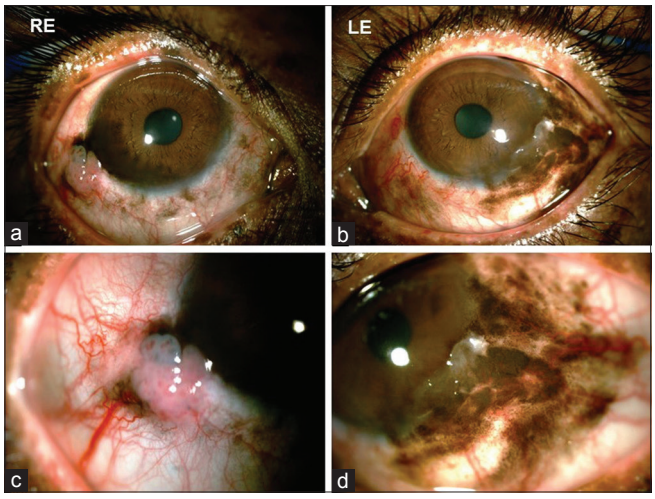

Figure 1: 18-year-old female patient with reddish mass in the temporal conjunctiva of RE with adjacent pigment (a and c) and pigmented mass in the temporal conjunctiva of LE with involvement of the limbus (b and d). Excisional biopsy was performed using no-touch technique with 3 mm and 5 mm margin followed by cryotherapy

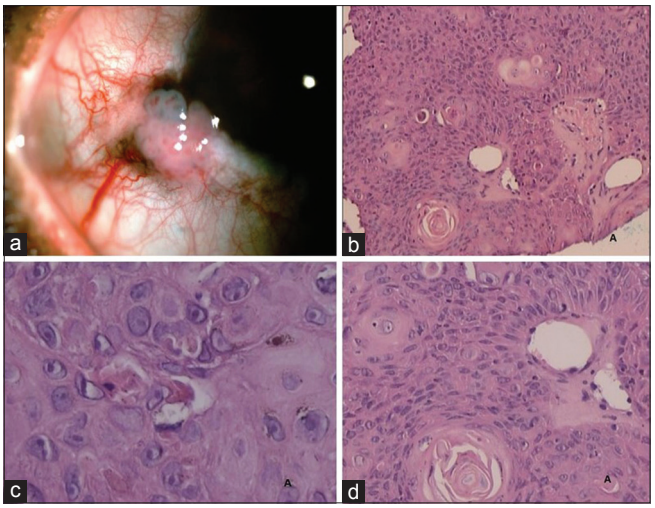

Figure 2: Histopathology of right eye (RE): squamous cell carcinoma stage T2 by AJCC Cancer Staging 8th Edition) with free margins. Picture of RE (a). The cells exhibit various degrees of atypia (b), pleomorphism (c), and keratinization with the formation of squamous pearls (d)

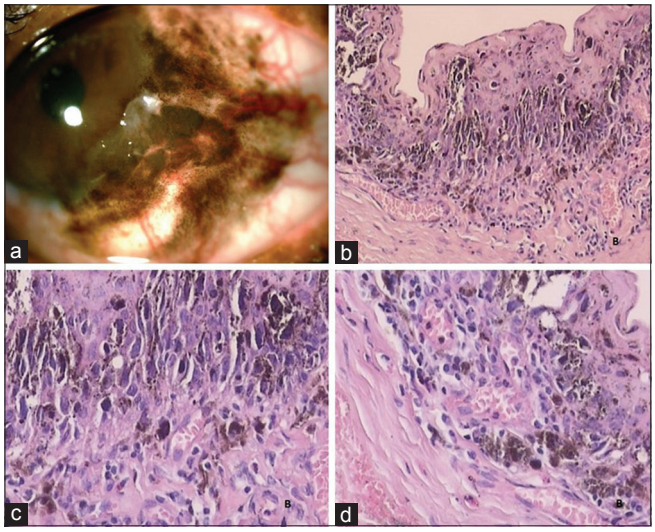

Figure 3: Histopathology of left eye (LE): conjunctival melanoma stage T1b (by AJCC Cancer Staging 8th Edition) with free margins. Picture of LE (a), low-magnification histological picture showing conjunctival melanoma (b), evidenced melanocytes with nuclear pleomorphism (c and d)

Discussion

XP affects males and females equally and is frequently symptomatic since early childhood.[5] The incidence of XP in the United States, Western Europe, and Japan is 1 in 250 000, 1 in 500 000 and 1 in 22,000, respectively,[7] with higher incidence in communities where consanguinity is common.[8]

The clinical manifestations of XP are extremely varied both between and within XP complementation groups,[3] severity of disease and age of onset are dependent on the cumulative UVR exposure.[1,2]

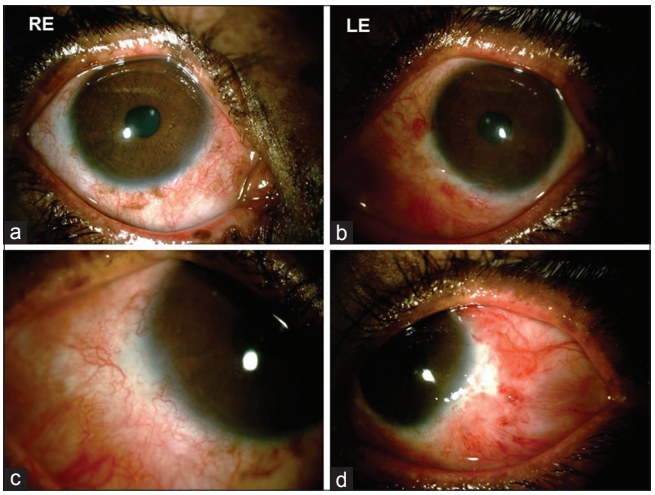

Figure 4: Photograph of the patient 12 months after surgery. Image of the RE (a and c) and LE (b and d) without signs of recurrence

Defects in nucleotide excision repair lead to premature sunlight-induced damage with hyperpigmentation, hypopigmentation, lentigos, telangectasias, actinic keratoses, and atrophy.[9] Cutaneous symptoms present before 2 years of age, and in the first decade patients usually present the first skin malignant neoplasia.[9] XP increases the frequency of skin cancer in >10,000-fold for nonmelanoma skin cancer (NMSC) and >2000- fold increased risk of melanoma in patients under 20 years of age compared to the general U.S. population.[9-11] Patients without XP present NMSC at mean age of 67 years and melanoma of 55 years,[12] in the XP patients the median age at diagnosis of first NMSC was 9 years (range 1–32 years) and melanoma was 22 years (range 2–47 years),[8] showing that XP patients had a 58 year reduction in age at first NMSC, and a 33 year reduction in age at first melanoma.[8]

Eyelid and conjunctival cancers have been reported,[1-3,9] conjunctival involvement includes squamous cell carcinoma developing from the interpalpebral zone. Limbal tumor includes pterygia, squamous cell carcinomas, and malignant melanoma. The iris can rarely be affected by melanoma. Orbital tumors include basal cell carcinomas, squamous cell carcinomas, and melanomas.[9,13]

The recommendation for preventing these neoplasms in patient with XP is the avoidance of UVR exposure from sunlight through the application of high-factor sunscreen, UVR-protective clothing, hats, gloves and sunglasses, and UVR-blocking window films at home and in cars. In Brazil many of our patients have little access to adequate information about the disease and importance of UV protection, on top of late diagnosis and difficulty to find medical assistance. High cost of UV protective sunscreen and barriers like UV protective hats and clothes also present a challenge.

Conclusion

To our knowledge, this is the first reported case of XP with simultaneous conjunctival squamous cell carcinoma and melanoma. These patients need periodic skin examination by dermatologist and ocular exam by an ophthalmologist. If eye cancer is suspected an ocular oncologist should be involved to both confirm the diagnosis and also use treatment techniques that prevent unnecessary mutilating surgeries.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. DiGiovanna JJ, Kraemer KH. Shining a light on xeroderma pigmentosum. J Invest Dermatol 2012;132:785-96.
2. Lehmann AR, McGibbon D, Stefanini M. Xeroderma pigmentosum. Orphanet J Rare Dis 2011;6:70.
3. Griffiths C, Barker J, Bleiker T, Chalmers R, Creamer D. Rook's Textbook of Dermatology. John Wiley and Sons; 2016. p. 78.1-12.
4. Anttinen A, Koulu L, Nikoskelainen E, Portin R, Kurki T, Erkinjuntti M, *et al*. Neurological symptoms and natural course of xeroderma pigmentosum. Brain 2008;131:1979-89.
5. Brooks BP, Thompson AH, Bishop RJ, Clayton JA, Chan CC, Tsilou ET, *et al*. Ocular manifestations of xeroderma pigmentosum: Long-term follow-up highlights the role of DNA repair in protection from sun damage. Ophthalmology 2013;120:1324-36.
6. Mohamed A, Peguda R, Ramappa M, Ali MJ, Chaurasia S. Corneal endothelium in xeroderma pigmentosum: Clinical specular microscopy study. Br J Ophthalmol 2016;100:750-3.
7. Lim R, Sethi M, Morley AMS. Ophthalmic manifestations of xeroderma pigmentosum: A perspective from the United Kingdom. Ophthalmology 2017;124:1652-61.
8. Schubert S, Lehmann J, Kalfon L, Slor H, Falik-Zaccai TC, Emmert S. Clinical utility gene card for: Xeroderma pigmentosum. Eur J Hum Genet 2014;22. doi: 10.1038/ejhg. 2013.233.
9. Ramkumar HL, Brooks BP, Cao X, Tamura D, Digiovanna JJ, Kraemer KH, *et al*. Ophthalmic manifestations and histopathology of xeroderma pigmentosum: Two clinicopathological cases and a review of the literature. Sur Ophthalmol 2011;56:348-61.
10. Bradford PT, Goldstein AM, Tamura D, Khan SG, Ueda T, Boyle J, *et al*. Cancer and neurologic degeneration in xeroderma pigmentosum: Long term follow-up characterises the role of DNA repair. J Med Genet 2011;48:168-76.
11. Cleaver JE, Lam ET, Revet I. Disorders of nucleotide excision repair: The genetic and molecular basis of heterogeneity. Nat Rev Genet 2009;10:756-68.
12. Glass AG, Hoover RN. The emerging epidemic of melanoma and squamous cell skin cancer. JAMA 1989;262:2097-100.
13. Rizvi SAR, Amitava AK, Mehdi G, Sharma R, Shahid M. Orbital amelanotic melanoma in xeroderma pigmentosum: A rare association. Ind J Ophthalmol 2008;56:421-3.