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Case Report

Bcl-2 Immunoexpression in Rapidly Growing Eyebrow Pilomatrixoma after Blunt Trauma

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Abstract

Pilomatrixoma is a benign cutaneous neoplasm that arises from matrix cells of hair follicle. It typically presents as a superficial, firm, solitary, slow-growing, painless dermal or subcutaneous mass in the head and neck region, including the eyelid or eyebrow. Rapidly growth pilomatrixoma is rare and have been reported following trauma. Herein, we present one patient with rapidly growing eyebrow pilomatrixoma with strong Bcl-2 immunostaining following trauma, which was not mentioned before.

Introduction

Pilomatrixoma, also known as calcifying epithelioma of Malherbe, is an uncommon benign cutaneous neoplasm that that arises from matrix cells of hair follicle. It typically presents as a superficial, firm, solitary, slow-growing, painless dermal or subcutaneous mass in the head and neck region, including the eyelid or eyebrow [1,2]. Rapidly growth pilomatrixoma is extremely rare and mostly reported following trauma [3,4]. Herein, we present one patient with rapidly growing eyebrow pilomatrixoma with strong Bcl-2 immunostaining following trauma, and try to explain the role of trauma in the development of pilomatrixoma by immunohistochemical analysis, which was not mentioned in the prior article.

Case Report

A 17-year-old girl noticed one painless nodule over right eyebrow region with progressive enlargement for 1 week. She experienced blunt trauma to right upper eyelid before the mass appeared. On palpation, a firm and mobile nodule, 4x4 mm in size, was detected below the right eyebrow with surrounding ecchymosis. (Figure 1A). Excision biopsy was done and the histopathologic examination demonstrated an admixture basaloid hair matrix cells, and eosinophilic amorphous enucleated ghost cells, confirmed the diagnosis of pilomatrixoma. (Figure 1B and C). Immunostaining showed strong positivity for Bcl-2 in the peripheral basaloid cells of the lesion (Figure 1D). The patient remains free of tumor 3 years later.

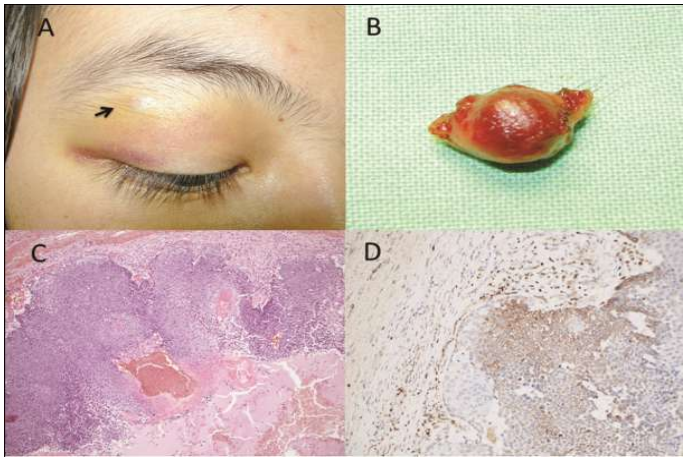

Figure 1: A, Clinical photograph of a 17-year-old girl with a firm, movable mass (arrow) below the right eyebrow with ecchymoses of the overlying skin. B, Macroscopic examination shows a 4x4 mm reddish mass. C, Histopathology shows typical biphasic popula-

tion of basophilic basaloid cells and clusters of eosinophilic ghost cells, along with some areas of keratinization and intralesional hemorrhage. The ghost cells have a distinct border and central unstained area, corresponding to the lost nucleus. (H&E, original magnification 40X). D. Basophilic cells are positive for bcl-2 immunostaining.

Discussion

The etiology of pilomatrixoma is not completely understood. While trauma has been postulated as a cause of bullous appearance of anetodermic variant of pilomatricoma [5]. In a large case series of 40 cases of eyelid pilomatrixomas, 6 patients (15%) had a history of preceding trauma to the involved area [6]. It has been proposed that trauma might rupture a vessel wall and cause hemorrhage into an existing lesion, producing enlargement of the tumor. Red-blue discoloration of the skin is a typical feature of pilomatrixoma and could help to differentiate it from inclusion and dermoid cysts which are often misdiagnosed clinically [7]. Dermoid cysts following trauma can leak their cystic substances into surrounding soft tissues, causing rapid growing of the lesion. However, the skin over dermoid cysts looks normal and can be moved freely over the lesions, which are different from pilomatrixoma.

Bcl-2-positive immunostaining has been reported in the peripheral proliferating basaloid layers of pilomatrixoma [8,9]. Bcl-2 is a proto-oncogene that helps to suppress apoptosis in both benign and malignant tumors and has been supposed to contribute to the pathogenesis of pilomatrixoma by faulty suppression of apoptosis [10]. However the relationship between trauma and expression of Bcl-2 protein in the pilomatrixoma has not been addressed. Bcl-2 immunostain was strong positive in current case of pilomatrixoma which developed rapidly after trauma. Human and animal studies have shown that Bcl-2 proteins are increased after traumatic insults [11,12]. It is possible that increased expression of Bcl-2 after trauma promotes cells proliferation by regulating apoptosis and contribute to the development of pilomatrixoma.

Conclusion

Whether the cause-effect relationship between trauma and pilomatrixoma remains to be established, however, trauma is probably important in producing enlargement of an existing pilomatrixoma.

References

1. Pirouzmanesh A, Reinisch JF, Gonzalez-Gomez I, Smith EM, Meara JG. Pilomatrixoma: a review of 346 cases. Plast Reconstr Surg. 2003; 112: 1784-1789.

2. Levy J, Ilsar M, Deckel Y, Maly A, Anteby I, Pe>er J. Eyelid Pilomatrixoma: A Description of 16 cases and a Review of the Literature. Surv Ophthalmol. 2008 ; 53: 526-535.

3. Mathen LC, Olver JM, Cree IA. A large rapidly growing pilomatrixoma on a lower eyelid. Br J Ophthalmol. 2000; 84: 1203-1204.

4. Sevin K, Can Z, Yilmaz S, Saray A, Yormuk E. Pilomatrixoma of the earlobe. Dermatol Surg. 1995; 21: 245-246.

5. Li L, Zeng Y, Fang K, Xiao Y, Jin H, et al. Anetodermic Pilomatricoma: Molecular Characteristics and Trauma in the Development of Its Bullous Appearance. Am J Dermatopathol. 2012; 34: e41-45.

6. Boniuk M, Zimmerman LE. Pilomatrixoma (Benign calcifying epithelioma) of the eyelids and eyebrow. Arch Ophthalmol. 1963; 70: 399-406.

7. Rotenberg M, Laccourreye O, Cauchois R, Laccourreye L, Putterman M, et al. Head and neck pilomatrixoma. Am J Otolaryngol. 1996; 17: 133-135.

8. Nakamura T. A reappraisal on the modes of cell death in pilomatricoma. J Cutan Pathol. 1999; 26: 125-129.

9. Fayyazi A, Soruri A, Radzun HJ, Peters JH, Berger H. Cell renewal, cell differentiation and programmed cell death (apoptosis) in pilomatrixoma.Br J Dermatol. 1997; 137: 714-720.

10. Farrier S, Morgan M. bcl-2 expression in pilomatricoma. Am J Dermatopathol. 1997; 19: 254-257.

11. Jeschke MG, Bolder U, Finnerty CC, Przkora R, Müller U, et al. The effect of hepatocyte growth factor on gut mucosal apoptosis and proliferation, and cellular mediators after severe trauma. Surgery. 2005; 138: 482-489.

12. Clark RS, Kochanek PM, Chen M, Watkins SC, Marion DW, et al. Increases in Bcl-2 and cleavage of Caspase-1 and Caspase-3 in human brain after head injury. FASEB J. 1999; 13: 813-821.