Interestingly, monoclonal IgG and IgG light chains appear to bind copper in these disease states but are not known to do so in vitro. In at least 1 case, the copper-carrying protein was sequenced in an attempt to determine whether it shared the N-terminal Asp-Ala-His amino acid sequence known to bind copper in albumin, but no such sequence was found. Sequences as simple as Gly-His are capable of binding copper under certain circumstances, especially if they are repeated, rendering it difficult to determine the location of a potential binding site based on sequence alone. Myeloma protein is known to accumulate in the eye as an amyloid, and although individual myeloma proteins do not appear to bind copper, closely packed myeloma proteins may be able to do so.

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Poliosis as a Manifestation of Conjunctival Melanoma

Acquired poliosis of the eyelashes is usually seen in conjunction with benign conditions. However, its appearance should prompt a careful examination to rule out malignant neoplasia. We report a case of conjunctival melanoma with eyelid poliosis.

Report of a Case. A 71-year-old woman with a history of primary-acquired melanosis with atypia and recurrent anaplastic conjunctival melanoma of the right eye (Figure 1A) had a 2-month history of ocular pain and growth of 3 pigmented conjunctival lesions. A patch of white eyelashes on the lateral aspect of the right upper eyelid was noted adjacent to the pigmented palpebral conjunctival lesion (Figure 1C and D). The eyelid appeared thickened and inflamed. No other abnormality in the eyelid architecture was noted, and there was no vitiligo or intraocular inflammation. Previous examinations revealed no evidence of tumor recurrence and normal eyelash pigmentation (Figure 1B). The primary melanoma had been resected 4 years prior. At the time of excision, cryotherapy was used on the bulbar conjunctiva but not on the palpebral conjunctiva. The patient denied any topical medication use including prostaglandins or chemotherapeutic agents. Findings from histological examination of the area immediately adjacent to the poliosis revealed a conjunctival melanoma. There was no histological evidence of inflammatory cell infiltration or destruction of the hair follicle (Figure 2).

Comment. The term poliosis is used to describe a localized area of hair depigmentation. In the skin, it has been described in association with lesions such as intradermal nevi, giant congenital nevi, and halo nevi. Acquired poliosis of the eyelashes has been described in several ophthalmic conditions, including blepharitis, sarcoidosis, sympathetic ophthalmia, herpes zoster, Vogt-Koyanagi-Harada syndrome, vitiligo, tuberous sclerosis, following irradiation, and with topical administration of prostaglandin F2α analogues. Although poliosis of the eyelid is usually associated with benign eyelid conditions, in this case it developed in conjunction with conjunctival melanoma. Poliosis associated with malignant neoplasms has only once been reported with malignant melanoma of the scalp. To our knowledge, there have been no prior reports of poliosis in association with conjunctival melanoma.

The pathogenesis of poliosis is not known. It has been suggested that it may be related to an inflammatory destruction of the melanocytes in the hair follicle, apoptosis of the follicular melanocytes, or a targeted autoimmune response. Perhaps the malignant cells initiate an immune response that cross-reacts with the normal follicular melanocytes. In other conditions where poliosis is present, selective antibodies against melanocytes have been found. The poliosis in our case developed next to areas of atypical melanocytic proliferation, but there was no evidence of a dense inflammatory response around the hair follicle. Acquired poliosis of the eyelashes is an important clinical sign, and it should prompt careful examination of the tarsal conjunctiva for suspicious pigmented lesions.

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Figure 1. Right eye. A, Anaplastic conjunctival melanoma at the initial visit. B, Photographic documentation from a previous examination demonstrates no abnormal depigmentation of the eyelashes. C and D, Poliosis on the right upper eyelid adjacent to the pigmented conjunctival lesion.

Figure 2. Atypical, round, ovoid, and spindle-shaped cells with chromatin clumping and prominent nucleoli associated with lymphocytic and plasma cell infiltrate in tarsal conjunctiva adjacent to hair follicles, consistent with the diagnosis of primary-acquired melanosis with atypia (melanoma in situ). Note the absence of pigment within the hair follicle on the right and the absence of perifollicular inflammation. A, Hematoxylin-eosin, original magnification ×20. B, Hematoxylin-eosin, original magnification ×40.