We recently had a case of pigmented actinic keratosis arising in the conjunctiva, and this is
an unusual site for the lesion. Most actinic keratoses are seen on sun-exposed areas of the
skin, especially for Caucasians living in sunny climates. When these lesions are pigmented,
they may resemble lentigo maligna. A 56-year-old man was referred to the ophthalmology clinic
for a pigmented conjunctival lesion. An ophthalmologic examination revealed multiple dark brown-
colored, linear or irregular shaped patches located on the lateral side of the conjunctiva in his
right eye, partially covering the cornea, and this made a clinical differentiation from other pos-
sible pigmented lesions somewhat difficult. A histologic examination of the subsequent biopsy
specimen demonstrated acanthosis with melanocytes containing heavy melanin, scattered
dyskeratotic cells, atypical keratinocytes, and solar elastosis, and all of their findings are con-
sistent with pigmented actinic keratosis.

Key Words : Dermatitis, actinic-Keratosis-Conjunctiva

CASE REPORT

A 56-year-old man sought medical attention for a recent decrease in visual acuity. His past medical history was unremarkable.
A physical examination revealed no other abnormalities. A local ophthalmologist noticed a dark brown conjunctival lesion in his
right eye and he referred this patient to our institution. The pig-
mented areas were located on the lateral side of the conjunctiva
and these areas consisted of four linear or irregular shaped pig-
mented patches, the largest being about 8mm in length (Fig. 1).
Their surfaces appeared smooth and the borders were irregular,
but well demarcated. One of the pigmented patches was covering
the cornea. The eyelid was not involved and regional lymphade-
nopathy was absent. The results of a subsequent histologic exam-
ination demonstrated irregular acanthosis with scattered dysker-
atomic cells. Some of the keratinocytes that were present appeared
atypical. Many melanocytes containing melanin were observed
throughout the epidermis (Fig. 2, 3), and there was the basal layer
of pigmentation. Solar degeneration with a few melanophages
was noted in the superficial subepithelial layer. The surrounding
normal epithelium lacked any unusual pigmentation. Fontana-
Masson’s stain highlighted diffuse pigmentation through the full
thickness of the epidermis; this pigmentation was also in the me-
lanocytes and the intercellular spaces (Fig. 4). On immunohisto-
chemical stains, the melanocytes were positive for S-100 protein,
but they were negative for HMB-45 (Fig. 5). These findings sup-
ported the diagnosis of pigmented actinic keratosis of the con-
junctiva.
DISCUSSION

Actinic keratoses are seen most frequently on the face and the dorsum of the hands of persons in or past their middle life. Excessive exposure to sunlight is known to be the essential predisposing factor. Some melanization is not uncommon and numerous melanophages may be observed in the superficial dermis. The increase in dermal melanophages may reflect an abnormal degranulation of melanosomes. In the pigmented type of actinic keratosis, very excessive amounts of melanin are present, especially in the basal cell layer, but its etiology is not different from other types of actinic keratosis. Conjunctival actinic keratosis has been
Conjunctival Pigmented Actinic Keratosis rarely reported \(^5,6\) but this pigmented type we observed has never appeared before in the literature. The patient previously reported on in France was a 73-year-old man and he demonstrated the same findings as shown in our case, including acanthosis with some atypia, keratosis, parakeratosis, and solar degeneration.\(^6\) Mauriello \(\textit{et al.}\) \(^5\) reviewed the charts of forty-five patients with intraepithelial neoplastic lesions of the conjunctiva that were obtained from the registry of Ophthalmic Pathology Division of the Armed Forces Institute of Pathology (AFIP). Twenty four of those cases had actinic keratosis and 21 had dysplasia. The lesions classified as actinic keratosis tended to be focal and leukoplakic, whereas those classified as dysplasia tended to be diffuse and gelatinous. Two of the lesions of actinic keratosis and 13 of the lesions of dysplasia recurred during 2 years of follow-up. The degree of atypia was described to be uncorrelated with recurrence.

The mechanism of hyperpigmentation in pigmented actinic keratosis is not yet clear. Although the atypical keratinocytes are well melanized in some cases, melanin is exclusively contained in the cell bodies and dendrites of the melanocytes in others. Therefore, it has been postulated that the hyperpigmentation in pigmented actinic keratosis may be due to a melanocyte-keratinocyte melanin transfer block.\(^4\) This is supported by the fact that increased number of melanosomes were seen within melanocytes of pigmented basal cell epitheliomas.\(^7,5\) However, the findings of melanosomes and melanosome complexes in the keratinocytes of all layers of the epidermis exclude this possibility of some blocks of melanin transfer.\(^7\) In our current case, all the melanin granules were present in the dendritic cells and intercellular spaces. Thus, we believe that the abnormal pigmentation of the conjunctival lesion may be due to a disturbance in the melanosome transfer pathway from melanocytes to epithelial cells, and there could be a possible defect in the uptake of melanin by keratinocytes. The exact mechanism, however, should be clarified.

Pigmented actinic keratoses need to be separated from lentigo maligna by histological testing because the prognosis and management of these two conditions differ. The epidermis of the lentigo maligna is atrophic with a reduction of rete ridges and there is a proliferation of abnormal melanocytes in the basal layer.\(^1,3,4\) This condition stands in contrast with the mildly hyperplastic epidermis of the actinic keratosis that contains atypical keratinocytes with normal-looking melanocytes along the basal layer. However, when the vacuolated cells are present, especially in a small biopsy specimen, vacuolated-pigmented keratinocytes in pigmented actinic keratosis may be indistinguishable from the melanocytes of lentigo maligna. Immunohistochemical staining for S-100 protein and HMB-45 may provide the assistance necessary in the determination of the abnormal proliferation of intraepithelial melanocytes of lentigo maligna.

**REFERENCES**