

INTRA-EPITHELIAL EPITHELIOMA OF THE CORNEA

By Arthur S. M. Lim, M.B., B.S., F.R.C.S., D.O., A.M.

and

Tan Kheng Khoo, M.B., B.S., D.C.P., Dip. Path., M.C. Path., A.M.

Intraepithelial epithelioma was first described as a neoplastic lesion in the skin by a dermatologist, John T. Bowen in 1912. The characteristic of this condition is that the malignancy is entirely intraepithelial and therefore grows by lateral spread rather than invasion of the deeper tissues.

This condition was only recognised as an ophthalmic entity in 1942 when Megavic described 5 cases. Since then there were a large number of cases recorded: 19 cases by Ash (1950) of Washington, 18 cases by Locke (1956) of New York and 8 cases by Trevor-Roper (1956) of London.

The following is the description of the first recorded case in Singapore:-

CASE REPORT

L.C.Y. 66 years, male, was seen in October 1965 with a history of a gradually increasing growth over his right cornea for seven years. He



Fig. 1. Greyish intraepithelial Carcinoma of 7 years duration arising from limbus from 9 to 12 o'clock extending across the pupillary region. Note the surrounding inflammatory reaction with grossly dilated vessels.

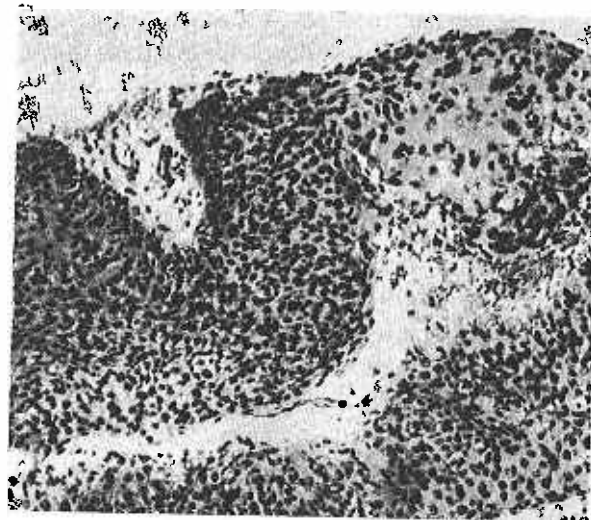


Fig. 2. Strip of epithelium showing total loss of polarity with an intact basement membrane. Hyperchromatic, bizarre and clumped nuclei are well shown. H & E \times 150.

was operated on seven years ago at a private clinic and was told that the tumour was not a cancer. Since the operation the tumour has been enlarging gradually and during this period his vision was gradually getting worse. He had no other significant complaints except for defective vision as the growth was extending across his right pupillary region.

At examination a large 7 millimetre slightly raised reddish-grey corneal tumour with surrounding inflammation extended from the limbal region from 9 to 12 o'clock across the pupillary region. The clinical diagnosis of an intraepithelial carcinoma (Fig. 1) or a papilloma was made. A Biopsy was done on the 21st October 1965.

BIOPSY REPORT

The entire strip of squamous epithelium showed a carcinoma-in-situ, and normal epithelium was seen. The loss of polarity is evidenced by a total disarray of the cells in the malpighian layer, so typical of the "wind blown" appearance (Figs. 1 & 2) of Bowen's Disease of skin. The entire breadth was thickened (acanthotic), but

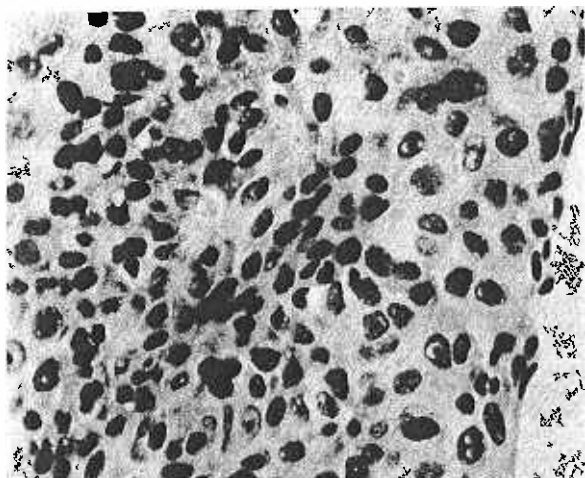


Fig. 3. Higher power view of Fig. 2, showing indistinct cellular outlines, bizarre and hyperchromatic nuclei. Clumping of nuclei and an occasional mitosis are also present. H & E \times 500.

the basement membrane was intact. The cellular outlines were indistinct, and the cells were represented mainly by large bizarre nuclei, they also tended to clump together (Fig. 2). An occasional mitotic figure was also seen. However, keratinisation and dyskeratosis were absent.

Diagnosis: *Carcinoma-in-Situ.*

A second opinion by correspondence was sought and Professor Gerald Crook of the University of Melbourne examined the histology and also sought the opinion of Dr. Greer, the ocular pathologist at a Victorian Eye and Ear Hospital, Melbourne. Professor Crook's report was as follows:-

"I took the liberty of seeking Dr. Greer's opinion on the histology, and he agrees with your local people that this is an intraepithelial neoplasm, though there is not sufficient evidence to say whether this is invasive or not".

It was decided that the tumour should be totally excised and corneal grafting done if the cornea was found to be infiltrated.

After much discussion the patient decided not to have the operation but proceeded to the Republic of China for further opinion. He spent several months visiting various eye centres in China and the majority of centres agreed that this was probably a non invasive carcinoma of the cornea. He was accordingly advised to have the tumour removed in Singapore.

On returning to Singapore the patient decided to have operation but refused corneal grafting.

He was admitted on the 30th June 1966 to the Mt. Alvernia Hospital. On the 1st of July 1966 a total excision of the tumour with superficial

keratectomy was done under local anaesthesia (as patient refused general anaesthesia). The recovery was uneventful and he was discharged on the 7th July when his vision was recorded to be 6/60. He was found to have a right nuclear cataract. A further histological report of the excised tumour confirmed that the lesion was still within the confines of the basement membrane *i.e.* carcinoma-in-Situ.

Regular post-operation follow up on 8.7.66, 9.7.66, 11.7.66, 14.7.66, 21.7.66, 2.8.66, and 15.8.66, showed no evidence of recurrence (Fig. 4).

COMMENTS

This case was typical. An intraepithelial carcinoma of the cornea should always be suspected when an elderly man presents with a long history of a slightly raised (sometimes flat) reddish-grey gelatinous-like tumour on the cornea spreading laterally and surrounded with inflammatory reaction.

The treatment of choice is total excision; and the tumour can usually be stripped from the Bowman's membrane without difficulty. Usually a replacement lamellar corneal graft is not necessary (Duke Elder 1965). Because of the long history and the fact that we could not see behind the cornea, it was not possible to be certain whether the tumour was infiltrating into the eye. In this case, the author was fortunate to find that the lesion was superficial and was

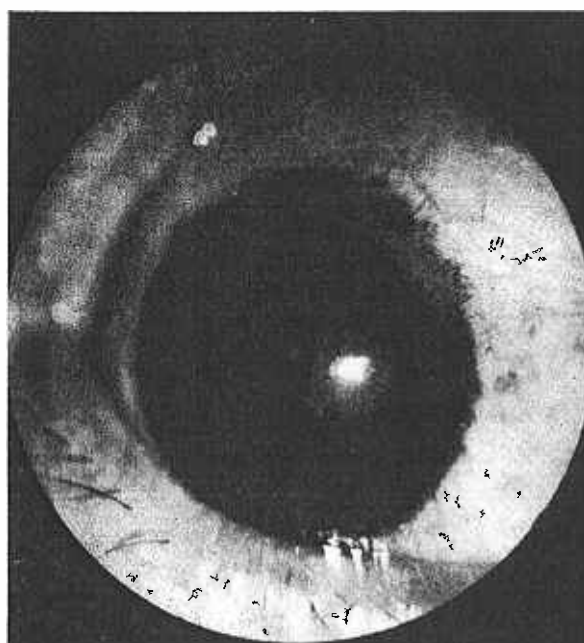


Fig. 4. Same eye as Fig. 1, after removal of tumour with superficial keratectomy.

stripped off without difficulty by doing a superficial keratectomy (Fig. 4).

Regular post-operative follow up is important as recurrences occur in a percentage of cases. Locke (1956) reported 3 cases of 10 cases and Winter and Kleh (1960) reported 6 recurrences of 15 cases. The use of chemicals and cantery is undesirable and may be dangerous as the tumour may be stimulated to a "malignant" change. Radiotherapy may be used either as a primary procedure or after surgery, but its use is not recommended as the tumour is not very radio-sensitive and high doses are required with the result that radiation injury to the eyeball, especially the lens is a real hazard.

SUMMARY

1. A case of intraepithelial carcinoma of the cornea of 7 years duration is described. It was successfully removed completely with keratectomy.
2. The diagnosis and management is discussed.

ACKNOWLEDGEMENT

The authors thank Professor Gerard Crock, M.R.A.C.P., F.R.C.S., Professor of Ophthalmology, University of Melbourne, for his advice and encouragement in the management of this patient.

REFERENCES

1. Ash J. E. (1950), "Epithelial tumours"—*American Journal of Ophthalmology*. 33, 1203.
2. Boniuk (1964), "Ocular and Adrenal tumours", Mosby, 49.
3. Duke Elder W. S. (1965), *System of Ophthalmology*. Vol. VIII, 1154.
4. Locke J. C. (1956), "Bowen's disease (Intraepithelial epithelioma) of the cornea and conjunctiva"—*American Journal of Ophthalmology*. 41, 801.
5. McGavic J. S. (1942), "Intraepithelial epithelioma of the cornea and conjunctiva (Bowen's disease)"—*American Journal of Ophthalmology*. 25, 167.
6. Reese A. B. (1964), "Tumours of the Eye"—Hoeber Incorporated.
7. Trevor-Roper P. D. (1957), "Intraepithelial epithelioma (Bowen's Disease)"—*British Journal of Ophthalmology*. 41, 167.
8. Winter F. C. and Kleh T. R. (1960), "Precancerous Epithelioma of the Limbus"—*Archives of Ophthalmology* (Chicago). 64, 208.