EXCESSIVE PROLIFERATION OF CORNEAL EPITHELIUM*

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THIS paper reports an unusual case of excessive proliferation of the corneal epithelium in one eye following mucopurulent conjunctivitis in both. An exactly similar condition has not previously been described, but Warlomont (1860) and Hocquard (1881) have mentioned plaques of epithelial tissue forming over the cornea as a result of chronic irritation on exposure.

Case Report

An 18-year-old soldier was admitted on December 30, 1962, to a hospital which had no ophthalmologist. He had bilateral mucopurulent conjunctivitis and was treated with intensive penicillin drops and procaine penicillin injections. He had no systemic symptoms. There were no skin lesions or any membrane in the throat or nose.

When seen by me on January 4, 1963, the right eye showed mild conjunctival congestion without any discharge and there was no chemosis. The lids were not swollen and the cornea was clear with a visual acuity of 6/6. This eye quietened down completely in two to three days when Terramycin ointment was used locally and has remained quiet since then.

The lids of the left eye on January 4, 1963, were swollen, and the tarsal conjunctiva was adherent to the bulbar conjunctiva. The interpalpebral area was covered with a thick sheet of what looked like fibrinous exudate. The cornea could not be seen. The bulbar conjunctiva showed marked chemosis. There was no free discharge. Under local anaesthesia, the lids were separated from the globe by means of a glass rod. The thick central fibrinous sheet completely covered the cornea, to which, however, it was not adherent, but it was so firmly adherent all round the limbus that it had to be cut with scissors; there was hardly any bleeding. The cornea looked bright and transparent.

For the next four days the lids had to be separated daily by means of a glass rod. On January 6, 1963, a membrane was observed to be growing from the edges of the limbus towards the centre of the cornea, and by the following day this was completely covered. When an iris repositor was inserted through the central part of this membrane under topical anaesthesia, it was seen to pass easily between the membrane and the cornea, all round and right up to the limbus, to which the membrane was adherent (Figs 1-3). The membrane was excised repeatedly as it kept growing again.

The pattern of growth remained unchanged, i.e., it always started from the cut margin at the limbus and gradually spread towards the centre, covering the peripheral one-third of the cornea in the first twenty-four hours and the remaining central part in the next twenty-four hours. Although the rate of growth remained unchanged, the "regrowing membrane" became progressively thinner.

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FIG. 1.—Intact corneal epithelium with fairly well-marked opacity over the lower half.

FIG. 2.—An iris repositing is seen under the corneal epithelium.

FIG. 3.—Appearance after excision of the loose corneal epithelium showing prominent cut margin just inside the limbus.

Slit-lamp examination on March 23, 1963, showed vascularization of the deeper layers of the lower half of the cornea.

Investigations.—Direct smear and culture from the conjunctival sac were negative for pathogenic organisms. Serological tests for adenovirus and syphilis were also negative. Urine contained no sugar or albumin. Radiography of the chest showed no evidence of pulmonary tuberculosis. Total and differential leucocyte counts were within normal limits. There was no enlargement of glands, including pre-auricular glands.

Treatment of Left Eye.—The patient was given systemic penicillin for one week, with Aureomycin ointment applied locally. Atropine drops were used once daily and after the first week Efcorlin ointment three times daily. In addition, 10 mg. of cortisone acetate was injected subconjunctivally once a week. The chemosis and conjunctival congestion gradually subsided. There was, however, a recurrent membrane-like growth over the cornea with persistent circumcorneal congestion.

On January 12, 1963, the membrane was excised and the cut edges painted with alcoholic iodine. On January 14, 1963, the membrane was again excised and this time the cut margin was painted with pure carbolic acid. Even this did not stop the membrane from growing again.

On January 25, 1963, peritomy was done after excising the membrane; 5 mm. of conjunctiva

with subconjunctival tissue was excised all round the limbus. The blood vessels over the bared sclera were cauterized. In spite of this the membrane completely covered the cornea when the patient was seen on January 27, 1963. The membrane was last excised on March 19, 1963, and then left alone.

Present Condition.—When last seen on July 3, 1963, the eye was quiet. In a small area the “membrane” was still loose. Visual acuity was 6/9–2.

FIG. 4.—Microphotograph of the histological section. $\times 36$.

FIG. 5.—Microphotograph of the histological section. $\times 80$.

Discussion

The course of the disease did not favour its being considered a case of membranous conjunctivitis. The looseness of the membrane over the cornea, with firm attachment only at the limbus, associated with the regular pattern of growth from the limbus towards the centre of the cornea, led to the supposition that the membrane might be caused by excessive growth of the conjunctival epithelium over the cornea. However, application of caustics like alcoholic iodine and pure carbolic acid, as well as peritomy, failed to have any effect on the growth of the membrane. Histopathological slides were sent to the Institute of Ophthalmology in London, with the history of the case. An extract from Professor Ashton's (1962) report on it states:

The sections show a hyperplastic, stratified epithelium and I have stained them with Periodic-acid-Schiff which reveals numerous glycogen granules within the cytoplasm, thus proving that this is corneal epithelium. I think, therefore, we can rule out the notion of membranous conjunctivitis or any neoplastic condition. This is no more than an exuberant healing process and I feel sure that eventually, if left alone, the epithelium will return to its normal thickness. (Figs 4 and 5.)

Even though the disease started simultaneously in both eyes and the treatment given in the initial stage was the same for both, only the right eye responded satisfactorily. The stimulus which led to exuberant growth of the corneal epithelium in the left eye remains unknown.

Summary

An unusual case of excessive proliferation of the corneal epithelium is described. The factor which triggered off the growth remains unknown.

In spite of considerable insult to the cornea, the ultimate outcome was satisfactory.

REFERENCES

- ASHTON, N. (1962). Personal communication.
HOCQUARD, E. (1881). *Arch. Ophtal. (Paris)*, **1**, 481.
WARLOMONT (1860). *Ann. Oculist. (Paris)*, **44**, 253.