Ectopic intraocular lacrimal gland tissue

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Ectopic lacrimal gland tissue is rarely found within the eye. The first report was that of Puech (1887) who described an adenoma of the choroid in an adult female. The lesion had the appearance of lacrimal gland tissue which was adherent to the sclera and the retina. After an interval of 65 years Christensen and Anderson (1952) described ectopic lacrimal gland tissue within the sclera, ciliary body, limbus, and iris in an infant of 2 weeks. Bruce (1952) described a case in the iris of a 2-month-old boy who was 2 weeks premature. No other abnormalities were noted in these infants. Hunter (1960) described a fourth case in which ectopic cystic lacrimal gland tissue was seen in the ciliary body, iris, and sclera. The fifth case was described by Dallachy (1961) in a 2-month-old female infant; ectopic lacrimal gland tissue was seen in the ciliary body and iris. A search of the literature since 1961 revealed only one other case of intraocular lacrimal gland tissue (Green and Zimmerman, 1967); their patient was a 5-month-old child with ectopic lacrimal gland tissue in the limbal area and a nodule of similar tissue in the chamber angle, on the anterior surface of the iris, and in the ciliary body.

The purpose of this paper is to record a seventh case of intraocular ectopic lacrimal gland tissue.

Case report

A 9-month-old boy was born with an "abnormal-looking" eye, which later became buphthalmic with raised tension. No further clinical details were available. The eye was enucleated.

PATHOLOGY

Macroscopical examination

The eye was enlarged and the cornea puckered. The iris had a somewhat ragged appearance and the lens was cataractous. Deep cupping of the optic disc was present.

Microscopical examination

Ectopic lacrimal gland tissue was seen in the ciliary body on one side (Fig. 1, opposite). This was composed of acini, some of which were found to be surrounding ducts (Fig. 2, opposite). On this side the ciliary body and the root of the iris were lined by two layers of epithelium, the inner being columnar and the outer flattened (Figs 3 and 4, overleaf). The epithelial layers became even flatter as they approached the opposite iris leaf, but on the leaf itself the two layers were similar to those on the opposite side (Fig. 5, overleaf). On the side opposite to the ectopic lacrimal gland tissue, the iris leaf was retroverted and its proximal portion was not lined by epithelium. The latter extended on to the back of the cornea near its central point and then on to its posterior surface to become continuous once again with the epithelium lining the iris root on the side of the ectopic tissue, thus forming a cyst of lacrimal gland tissue within the anterior chamber (Fig. 6). Apart from some gliosis of the posterior retina, the remaining ocular structures showed no gross abnormality.

FIG. 1 *Ectopic lacrimal gland tissue in ciliary body. Haematoxylin and eosin $\times 130$*

FIG. 2 *Ectopic lacrimal gland tissue in ciliary body. A number of acini surround ducts. Haematoxylin and eosin $\times 130$*

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FIG. 3 *Lining the ciliary body are two layers of epithelium, the inner layer of columnar type and the outer layer flattened. Haematoxylin and eosin $\times 590$*

FIG. 4 *Lining the iris root are two layers of epithelium, the inner layer of columnar type and the outer layer flattened. Haematoxylin and eosin $\times 590$*

Discussion

The lacrimal gland develops at about the 25 mm. stage in the shape of some half dozen outgrowths from the upper and outer part of the conjunctival sac. Additional outgrowths

FIG. 5 Iris leaf lined by two layers of epithelium. Haematoxylin and eosin $\times 108$

FIG. 6 Photomicrograph of anterior segment, showing a cyst in the anterior chamber

are added to these throughout the 3rd month, and a set of branching tubules with large-celled acini is thus produced (Mann, 1949). The accessory lacrimal gland develops from the basal cells of the palpebral conjunctiva simultaneously with the main lacrimal gland. At birth there are twenty to forty of these in the upper fornix and six to eight in the lower fornix. Other accessory lacrimal glands are found in the upper lid between the extremities of the tarsal glands (François and Rabaey, 1951).

The presence of lacrimal gland tissue in the eye is extremely rare, and it is not understood how it reaches the intraocular structures, for the foetal cleft closes at the 15 mm. stage and the lacrimal gland does not appear until the 25 mm. stage. There are several possible explanations for the presence of aberrant lacrimal gland tissue within the eye. The gland may have developed at an earlier stage than usual so that the aberrant tissue grew into the undifferentiated mesoderm of the optic cup before the closure of the foetal cleft. Other possible explanations are:

- (1) There might have been a defect in the sclera through which the aberrant tissue grew, and the defect might have closed at a later stage;
- (2) The aberrant tissue developed in the eye from epithelial islands which had been carried into the mesoderm with or by the lens plate.
- (3) The aberrant tissue developed *in situ* from lacrimal anlage cells situated in the primitive mesoderm.

Once the aberrant tissue develops in the ciliary body, there will be a tendency for it to be carried towards the area of the future anterior chamber. This is because the ciliary body grows unequally (Allen, Burian, and Braley, 1955), the greater degree of growth taking place forwards and outwards. The aberrant tissue could then grow on to the posterior surface of the cornea and the anterior surface of the iris. It is also possible that the tissue could be carried into the anterior chamber by the cornea and the mesodermal portion of the iris which differentiate between the 18 and 20 mm. stages.

Summary

The presence of ectopic lacrimal gland tissue within the eye is a rare occurrence, only six previous cases having been recorded in the literature. A seventh case is described in this paper.

The ectopic tissue was found in the ciliary body, on the anterior iris surface, and in the anterior chamber. It is not known how this aberrant tissue reaches the intraocular structures, but several possible mechanisms are discussed.

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