Anterior polar pyramidal cataract

Presenting as an anterior chamber foreign body

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Anterior polar pyramidal cataract is a congenital cataract which is usually bilateral and bilaterally symmetrical. It may be inherited, in which case dominant inheritance is the rule (Duke-Elder, 1964). Various corneal opacities are commonly associated. The anterior lens cortex beneath the pyramidal cataract is commonly affected by one or more disc-shaped opacities (Berliner, 1949).

Case report

A woman aged 31, first seen in April, 1969, had recently come to live in England from India. She complained of poor vision in the right eye and of a divergent squint. Her vision had been poor since early childhood, particularly in the right eye, and there had ceased to be useful vision in the right eye at the age of 20. An operation had been performed on the right eye under local anaesthesia when she was aged 26.

Examination

The visual acuity in the right eye was counting fingers at 1 m., and in the left counting fingers, improving to 6/24 when the pupil was dilated. There was a concomitant right divergent squint of approximately -30° .

Biomicroscopy of the right eye showed peripheral corneal vascularization and a small full-thickness corneal scar at the 10 o'clock periphery. There was a faint central stromal nebula. In the lower part of the anterior chamber there was an opaque white cone-shaped foreign body measuring 2.0×2.3 mm. (Fig. 1).

FIG. 1 *Right eye, showing anterior chamber foreign body. The opaque posterior lens capsule is seen through the dilated pupil*

The part of the cornea in contact with the foreign body showed no oedema and the endothelium appeared to be normal. There were no signs of active inflammation.

Dilatation of the right pupil revealed aphakia with a dense posterior lens capsule on which were seen Elschnig's pearls.

The left eye showed peripheral corneal vascularization and a faint central stromal nebula. The lens showed an anterior polar pyramidal cataract with a single disc-shaped opacity spreading beneath it into the anterior lens cortex (Fig. 2).

FIG. 2 *Left eye, showing anterior polar pyramidal cataract and subjacent ring-shaped anterior cortical opacity*

FIG. 3 *Slit-image of left eye*

A slit-image photograph was taken of the left eye with a camera employing a tilted objective as described by Brown (1969) (Fig. 3).

The shape and size of the foreign body in the right anterior chamber was identical to the anterior polar pyramidal cataract of the left eye, but without the anterior cortical lens opacity.

Right squint surgery to be followed by capsulotomy was advised, but postponed because the patient was pregnant. She subsequently presented her baby boy for examination and he was found to be unaffected at an examination under anaesthesia.

A right recession and resection operation was performed in June, 1970, but after this the patient declined any further surgery.

Discussion

Seven cases of non-metallic foreign bodies were reported by Archer, Davies, and Kanski (1969), and corneal oedema was present in five, the onset of oedema being from 19 months to 20 years after the entry of the foreign body. The endothelial damage causing the oedema was attributed to the mobility and sharpness of the foreign body. The cornea of the patient reported here appears to have been unaffected so far by the foreign body, which has a smooth contour.

The presence of the foreign body in the right anterior chamber in this case is believed to be due to the anterior polar pyramidal cataract remaining unabsorbed after surgery to the eye 5 years previously, which was probably a discission.

Spontaneous rupture of the anterior capsule overlying an anterior lenticonus is well recorded (Ehrlich, 1946; Gregg and Becker, 1963; Stevens, 1970), the associated cataract being discharged into the anterior chamber. Spontaneous rupture of an anterior polar pyramidal cataract is not recorded.

It is significant that the anterior polar cataract in the right anterior chamber had undergone no absorption in the course of 5 years, whereas the opacity discharged into the

anterior chamber in the case of anterior lenticonus reported by Stevens (1970) was completely absorbed in 5 months.

There is some similarity in the biomicroscopic and histological appearances of anterior lenticonus with cataract to those of anterior polar pyramidal cataract. The histology of anterior lenticonus has been reported (Sand and Abraham, 1962); there is loss of the normal fibre architecture in the subcapsular cortex forming the cone, with hyalinization.

The histology of anterior polar pyramidal cataract has been widely studied, in particular by Treacher Collins (1892, 1898, 1908). There is proliferation of the subcapsular epithelium with degeneration of subjacent lens fibres. The epithelial cells take on an appearance resembling fibroblasts and the whole pyramidal structure becomes converted into a dense hyaline mass resembling connective tissue. It appears that hyalinization is more pronounced in this condition than in anterior lenticonus with cataract, and that it produces a pyramidal cataract of unabsorbable density.

An associated anterior cortical disc-shaped opacity was probably present in the right eye in this bilaterally symmetrical condition, but unlike the anterior polar pyramidal cataract, it would appear to have been absorbed.

It is concluded that anterior polar pyramidal cataract is one form of congenital cataract which is not amenable to extraction by discission or by similar procedures.

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References

- ARCHER, D. B., DAVIES, M. S., and KANSKI, J. J. (1969) *Brit. J. Ophthalm.*, **53**, 453
 BERLINER, M. (1949) "Biomicroscopy of the eye", vol. 2, p. 1045. Hoeber, New York
 BROWN, N. (1969) *Trans. ophthalm. Soc. U.K.*, **89**, 397
 COLLINS, E. TREACHER (1892) *Ibid.*, **12**, 89
 ——— (1898) *Ibid.*, **18**, 124
 ——— (1908) *Ophthalmoscope*, **6**, 577, 663
 DUKE-ELDER, S. (1964) "System of Ophthalmology", vol. 3, part 2, p. 717. Kimpton, London
 EHRLICH, L. H. (1946) *Amer. J. Ophthalm.*, **29**, 1274
 GREGG, J. B., and BECKER, S. F. (1963) *Arch. Ophthalm. (Chicago)*, **69**, 293
 SAND, B. J., and ABRAHAM, S. V. (1962) *Amer. J. Ophthalm.*, **53**, 636
 STEVENS, P. R. (1970) *Brit. J. Ophthalm.*, **54**, 621