Prognosis in spontaneous phakolytic glaucoma

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Phakolytic glaucoma is a distinct entity characterized by oedematous and hazy cornea, deep anterior chamber, slightly turbid aqueous, and hypermature cataract. Intractable glaucoma results from obstruction of the anterior chamber angle by proteinaceous lens matter and characteristic macrophages (Flocks, Littwin, and Zimmerman, 1955; Becker and Shaffer, 1965; Goldberg, 1967; Duke-Elder, 1969). For timely management from the stand point of visual prognosis, it is important to differentiate it from phakomorphic glaucoma (Appleton and Lowrey, 1959), which is caused by intumescent cataract, and from glaucoma occurring in the course of phakotoxic and phakoanaphylactic uveitis. During the past 18 months we have seen three cases of phakolytic glaucoma which were effectively treated with gratifying visual results. An important clinical sign, *i.e.* the persistence of pupillary reactions even in chronic cases, was recognized as helpful in differentiating phakolytic glaucoma from other types of lens-induced glaucoma.

Case reports

Case 1, a 70-year-old Hindu male, came to the Eye out-patient department of H.P. Medical College Hospital, Simla, on March 26, 1970, with the complaint of severe pain in left eye and hemicrania for the preceding 8 days. There was no history of trauma. He had been examined and found to have mature cataract in the left eye 2 years previously. Cataract extraction had been advised but refused.

Examination

The left eye was found to have moderate circumcorneal congestion; the cornea was oedematous and hazy, and the anterior chamber was deep and contained turbid aqueous but no keratic precipitates. The pupil was moderately dilated and pupillary reactions were well preserved though somewhat sluggish. The iris pattern was normal and the hypermature cataractous lens was *in situ*. Visual acuity was reduced to perception of light with inaccurate projection in the nasal quadrant. The ocular tension was raised to 58 mm. Hg (Schiötz).

Treatment

A clinical diagnosis of phakolytic glaucoma was made and the patient was given acetazolamide and oral corticosteroids. This gave considerable subjective relief but the cornea continued to be oedematous with aqueous flare +, and intraocular pressure of 40 mm. Hg.

Paracentesis was done on April 2 and repeated on April 8, followed by upper pole combined intracapsular cataract extraction (sector iridectomy) with forceps on April 9.

Result

Postoperative recovery was uneventful and the patient was discharged on April 17. At his last visit on July 17, 1971, the visual acuity had improved to 6/12 with +8 D sph., +1 D cyl., axis 10°.

Case 2, a 56-year-old Hindu male, came to the out-patients department on March 9, 1971, with the complaint of headache and severe pain in the left eye of 4 days' duration. At previous examinations he had been found to have a mature cataract in this eye for the last 8 years, and this had become hypermature a year earlier.

Examination

The eye was found to be moderately congested without discharge, the cornea was hazy and oedematous with a deep anterior chamber and mildly turbid aqueous. The iris pattern was normal, and the pupil slightly dilated with maintained direct and indirect reactions. The visual acuity was reduced to perception of light with accurate projection. The ocular tension was 55 mm. Hg (Schiötz) in the left eye and 17 mm. Hg in the right.

Treatment

Diamox brought down the intraocular pressure to 32.5 mm. Hg by next morning, when an intracapsular cataract extraction with complete iridectomy was performed with forceps (upper pole delivery). A short course of oral corticosteroids was given in the early postoperative period.

Result

The patient was discharged on the 13th postoperative day with clear media and normal fundus and tension. At his last visit on June 23, the visual acuity was 6/9 with +3.5 D sph. + 4 D cyl., axis 10°.

Case 3, a 55-year-old Hindu male, came to the out-patient department on June 7, 1971, with the complaint of severe pain in the right eye and headache for the previous 6 days. There was no history of trauma.

Examination

There was circumcorneal congestion with hazy cornea, deep anterior chamber, turbid aqueous, normal iris pattern, pupil slightly dilated with sluggish reactions, and hypermature cataract. The visual acuity was reduced to perception of light with doubtful projection in the nasal quadrant. The ocular tension was 54.4 mm. Hg (Schiötz) in the right eye and 14 mm. Hg in the left.

Treatment

The patient was given Diamox and cataract extraction was advised. He refused immediate surgery because of domestic problems, but continued to take Diamox. He was admitted to hospital on June 23, i.e. 3 weeks after the initial attack, when the ocular tension was 35 mm. Hg. A combined (sector iridectomy) intracapsular cataract extraction was performed with the erisophake on June 24.

Result

He was discharged on the 12th postoperative day with a quiet eye, clear cornea, normal fundus, and good vision. On July 19 the visual acuity was 6/12 with +11 D sph.

Discussion

Gifford (1900) first recognized that morgagnian cataract might cause intractable secondary glaucoma. Flocks and others (1955) introduced the term "phakolytic glaucoma" for cases in which glaucoma resulted from leakage of lens matter into the anterior chamber (Irvine and Irvine, 1952; Schofield, 1957; Fenton and de Buen, 1964). The condition mostly occurs in cases of hypermature cataract in which the capsule is thinned or ruptured posteriorly (Flocks and others, 1955; Schofield, 1957). Large mononuclear phagocytes engulf the liberated lens matter, and clog the trabecular spaces, thus causing intractable secondary glaucoma. These phagocytes are also seen around the lens capsule (Duke-Elder, 1969) and in the aqueous (Goldberg, 1967), thus making it somewhat turbid. Goldberg (1967) demonstrated large rounded macrophages in the aqueous sucked through a millipore filter of 0.45 μ pore size. Since there is no other cellular reaction and the iris sphincter pupillae is unaffected, the pupillary reactions persist, unlike cases of phakotoxic and phakoanaphylactic glaucoma, in which the primary lesion is inflammatory, involving the iris and ciliary body, so that the iris is congested and its colour and pattern altered.

Because of exudation within the iris tissue and the formation of posterior synechiae, the pupil becomes small and nonreactive. In acute glaucoma due to intumescent cataract, the anterior chamber is shallow, and the pupil widely dilated, vertically oval, and fixed.

Most workers (Irvine and Irvine, 1952; Irvine, 1957; Chandler, 1958; Goldberg, 1967; Duke-Elder, 1969) are of the opinion that lens extraction is the only feasible means of eliminating the anterior chamber reaction and the rise in tension. Lowering the intraocular pressure by the use of acetazolamide and osmotic pressure agents (Irvine and Irvine, 1952; Chandler, 1958; Goldberg, 1967; Duke-Elder, 1969) and control of the anterior chamber reaction by steroids (Becker and Schaffer, 1965) is recommended. Duke-Elder (1969) recommends intracapsular cryoextraction. In two of our cases intracapsular extraction was achieved without difficulty by upper pole delivery with forceps and in one with the erisophake after a superior sector iridectomy. Presumably the leakage of lens matter reduces the tension of the anterior capsule and makes it easier to catch with the capsule forceps. The ease with which the intracapsular extraction was performed suggests that the zonule was weakened by the phakolytic process in these cases. The intraocular pressure was lowered by Diamox and in one case by paracentesis. The latter is a useful procedure, particularly in cases unresponsive to Diamox and other osmotic agents. The aqueous thus drained can be utilized for diagnostic purposes by the method of Goldberg (1967). Although these patients came for treatment 4 to 8 days after the phakolytic attack and lens extraction was performed from 5 to 24 days after the initial symptoms, the visual results were surprisingly good. In two of these cases light projection had been inaccurate, but Brini and Fritz (1964) do not regard inaccurate projection of light as a contraindication to surgery.

Summary

Three cases are reported of spontaneous phakolytic glaucoma treated successfully. Persistence of pupillary reactions was an important clinical sign differentiating phakolytic glaucoma from other types of phakogenic glaucoma. Lowering of the intraocular pressure by acetazolamide, osmotic agents, and, in refractory cases, by paracentesis, is recommended before lens extraction. Easy intracapsular extraction is believed to be due to the weakness of the zonule, perhaps resulting from the phakolytic process. The visual prognosis in cases of phakolytic glaucoma, even those of long standing and with inaccurate projection of light, has been found to be good.

References

- APPLETON, B., and LOWREY, A. (1959) *Amer. J. Ophthalm.*, **47**, 682
 BECKER, B., and SHAFFER, R. N. (1965) "Diagnosis and Therapy of the Glaucomas", 2nd ed., pp. 197-198. Mosby, St. Louis
 BRINI, A., and FRITZ, B. (1964) *Bull. Soc. Ophtal. Fr.*, **64**, 70
 CHANDLER, P. A. (1958) *A.M.A. Arch. Ophthalm.*, **60**, 828
 DUKE-ELDER, S. (1969) "System of Ophthalmology", vol. 11, pp. 663-666. Kimpton, London
 FENTON, R. H., and DE BUEN, S. (1964) *Arch. Ophthalm. (Chicago)*, **72**, 227
 FLOCKS, M., LITWIN, C. S., and ZIMMERMAN, L. E. (1955) *A.M.A. Arch. Ophthalm.*, **54**, 37
 GIFFORD, H. (1900) *Amer. J. Ophthalm.*, **17**, 289
 GOLDBERG, M. F. (1967) *Brit. J. Ophthalm.*, **51**, 847
 IRVINE, S. R. (1957) "Lens-induced uveitis in glaucoma", in "Symposium on Diseases and Surgery of the Lens", ed. G. M. Haik, p. 186. Mosby, St. Louis
 ——— and IRVINE, A. R., JR. (1952) *Amer. J. Ophthalm.*, **35**, 489
 SCHOFIELD, P. B. (1957) *Trans. ophthalm. Soc. U.K.*, **77**, 193