CASE NOTES

CONCUSSION GLAUCOMA*

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ACCORDING to Duke-Elder (1954), pathological examinations of excised eyes have been carried out and reported in only five cases of concussion glaucoma. It may, therefore, be interesting to report upon one further case of traumatic glaucoma in which the eye was excised and a pathological examination made and to compare this case with another due to a similar trauma which did not produce the same end-result, possibly owing to a difference in the method of treatment.

Case Reports

Case 1, a boy aged 10, attended on November 24, 1952, with a history of having been struck in the right eye by an arrow at 18 yds range, some 24 hrs previously.

Examination.—In the right eye a hyphaema occupied half the anterior chamber. The part of the iris which was not covered seemed normal. The fundus was not visible.

The patient was admitted to hospital, and treated with gutt. atropine 1 per cent. and vitamin K by mouth. Two days later the hyphaema suddenly became complete, and the intra-ocular tension was raised (+ +). The eye was treated with ice-packs.

December 18, 1952.—Tension was still raised (+). There was blood staining of the cornea, but the eye was not painful. He was discharged to attend the out-patient department, and was seen on several occasions without much change.

January 19, 1953.—He attended with a history of having sustained a fresh blow on the right eye from a boy's fist 4 days earlier. The tension was + + +. The eye gradually settled down.

May 12, 1953.—He was seen by Mr. Keith Lyle who reported as follows:

This boy has had a serious injury to his right eye which has resulted in blood staining of the cornea with new vessel formation and severe damage to the iris, which has become atrophic, leaving only a small cystic swelling on the outer side. He also has a traumatic cataract.

I think that, at this stage, a discission of the right lens should be carried out, in order to get rid of the cataract. It is a complicated case, and I do not think that one can do more than hope that the eye will be able to perceive large objects.

June 20, 1953.—Right needling was carried out; this was repeated on June 4. These gave a good aperture and the eye was quite satisfactory, until some 3 weeks later it became painful again with another hyphaema and tension was again +. This attack was thought to be due to another blow, but no positive evidence could be obtained.

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The eye began to settle, but in September, 1953, the left eye became irritable, and the monocyte count became raised (on Sept. 14 monocytes formed 5 per cent. of a total white blood count of 7,900, and on Sept. 25 they formed 8.5 per cent. of a total white blood count of 10,650). It was, therefore, decided to excise the right eye, and this was done on October 3, 1953. The left eye has since remained normal with visual acuity 6/5.

The following report on the specimen was received from the Institute of Ophthalmology:

On one side of the section there is evidence of a healed perforating wound of the extensively scarred and vascularized cornea near the limbus, the inner aspect of which is adherent to an organized inflammatory tissue covering the anterior surface of the iris. Descemet's membrane appears to be ruptured. The filtration angles on the other side of the section are also occluded by the formation of broad peripheral anterior synechiae, and posterior synechiae have formed between the degenerate iris remnants and the remains of the cataractous lens. There is free haemorrhage in the posterior chamber in association with a fine cyclitic membrane. A mild and focal chronic inflammatory infiltration is present in the uveal tract. The retina is oedematous and the retinal ganglion cell layer and optic nerve show early atrophy and gliosis. The sections examined show no histological evidence of sympathetic ophthalmitis. Secondary glaucoma. Traumatic cataract. Operation. Chronic endophthalmitis.

Case 2, a boy aged 6, attended the out-patient department on April 26, 1954, with a history of having been struck in the left eye by an arrow on April 18. His own doctor reported that there was, at the time, some oedema of the left upper lid and some conjunctivitis. On April 23, he attended his own doctor again with a history of having vomited several times during the previous 2 days; at this time "the eye did not appear much worse". He was later referred to the out-patient department as "he was not eating and not sleeping".

Examination.—There was a total hyphaema in the left eye. The tension was + + +. The patient was admitted to hospital and treated with ice-packs applied to the left eye, gutt. atropine 1 per cent., and vitamin K by mouth.

April 27, 1954.—Hyphaema absorbed but tension still +.

April 29, 1954.—Tension still +, gutt. eserine $\frac{1}{2}$ per cent. 4 times daily prescribed.

May 2, 1954.—Tension normal, pupil contracting well and eye quiet. Discharged to out-patient department.

May 10, 1954.—Visual acuity was 6/24 in the left eye. As the fundus was not visible, examination was done under homatropine and cocaine. Full dilatation of the pupil was obtained. A vitreous haemorrhage was discovered, and this was confirmed by slit-lamp examination.

May 31, 1954.—Tension still normal. Visual acuity was 6/12 in the left eye; the vitreous was clearing in the upper half and the fundus appeared normal in that area.

Comment

In both cases, the affected eye had been struck by an arrow. In the first, glaucoma occurred on the third day, and, in the other, one can only presume that the rise in intra-ocular tension occurred on the third day also, being the cause of the attacks of vomiting. The cause of glaucoma, in both cases, was intra-ocular haemorrhage though no evidence can be adduced as to how these haemorrhages acted. What is certain about the second case is that there can have been no predisposition to glaucoma in this eye. The

pupil was fully dilated with homatropine and cocaine 4 weeks after the accident, without any rise in tension.

Section of the excised eye has not helped in elucidating the mode of action of intra-ocular haemorrhage in the production of the glaucoma in this case, although it is apparent that the recurrence of glaucoma in September, 1953, was due to blockage of the filtration angles by broad peripheral anterior synechiae, and it may be assumed that the original haemorrhage into the anterior chamber blocked the filtration angle in a similar way.

These two cases show that miosis may be more useful than mydriasis in the treatment of concussion glaucoma, though the evidence is inconclusive.

Summary

Two cases of concussion glaucoma due to trauma by arrows have been described. The common feature was the total hyphaema. The eyes took different courses, possibly because a miotic was used in the second case.

REFERENCES

DUKE-ELDER, S. (1954). "Text-book of Ophthalmology", vol. 6, p. 5887. Kimpton, London.