INJURY TO BOTH THE ORBITS WITH A REVOLVER SHOT CAUSING LITTLE DAMAGE

BY

Lt.-Col. J. N. DUGGAN, C.I.E., D.O.(Oxon.)

BOMBAY

MR. D., aged 48 years, saw me four months after a severe injury to both of his orbits. The injury was self-inflicted in a fit of unsound mind, probably the outcome of a motor car accident in which he was involved. It was caused by a revolver which, it is alleged, he fired after placing its muzzle on his right temple. The shot went in a straight line through both the orbits and emerged out of his left temple. It was difficult to ascertain all the conditions present soon after the accident, as no record of it

FIG. 1.

was available nor could the patient supply me with any details. He told me what he remembered to have heard from his attending surgeon that there was a rupture of the right inferior rectus muscle. It was also found out that there was a great swelling of the lids and incisions had to be made and leeches applied to relieve the congestion. On the day I saw him, I found the following injuries.

The right eye was proptosed and displaced upwards. The right inferior rectus was inactive. The right pupil was semi-dilated and reacted sluggishly. Vision of both the eyes was as follows :—

R.E. 6/60 $\bar{c}$ + 1.0 D. sph. 6/36 one letter.

L.E. $\bar{c}$ + 0.5 D. sph. 6/9 and + 4.0 D. sph. reads Jaeger 6.

From the situation of the scars on the temples the shot must have pierced the outer wall of the right orbit, entered the floor and passed through to the opposite orbit along its floor and come out through a corresponding spot on its outer wall. The radio-gram did not show the entrance wound of the bony orbit nor the track of the bullet but a diffuse mottled area was seen at the junction of the outer wall with the floor of the left orbit;

this was where the bones must have been splintered by the shot as it made its exit there.

The fundus of the right eye revealed pallor of the optic nerve and a few pigment spots in the retina near the ora serrata of the inferior temporal quadrant.

The left fundus showed a big tear in the choroid concentric with the disc margin and on its outer side. It was almost a millimetre broad in its central part, narrowing gradually upwards but remained broader and diffuse as it coursed the lower fundus, both the extremities passing beneath the upper and lower

FIG. 2.

temporal arteries. The upper extremity of this tear bifurcated into two limbs, one of them curving nasalwards, and the other towards the extreme edge of the retina temporalwards. There was another offshoot springing from the central part of the main tear which extended temporally for a few millimetres. Below, it gradually curved round underneath the retina after widening out a little. There were clusters of pigment granules just near the central offshoot and a few big pigment blotches could be seen downwards and outwards near the ora.

Comments

Würdemann finds the temple the favourite situation for the would-be-suicide as this is where the revolver muzzle is pressed. He points out that at least 50 per cent. of them point the barrel

too far forward and thus fail in their immediate attempt, however a large number of injuries to the eyes and orbit have been reported from this cause. "The bullet generally passes from the temporal region through the outer wall of the orbit and destroys the eye-ball if striking it, if passing behind the eye-ball, the bullet cuts through the optic nerve or tears away the globe. The bulb and the nerve may escape injury, but this, as well as the bullet remaining in the orbit or the nasal cavity, is rare." Weeks, quoted by the same author, has reported a case of an attempted suicide shooting in the temple. The ball passed through both the orbits without in any way interfering with vision. Hirschberg, quoted by the same author, in his article on the eye and the revolver, says that half of those who attempt suicide with a revolver die and about a third lose the sight of the right eye.

Rupture of the choroid is more often caused indirectly than directly. The characteristics of indirect ruptures are that they occur near the posterior pole of the eye, are vertical, concentric with the disc margin, between it and the macula and in later stages show marked pigmentation. In nearly 80 per cent. of cases it is present in the temporal region. The rupture is caused in a severe contusion of the eye-ball, the impact being sudden and severe, flattening the globe antero-posteriorly and increasing its transverse diameter; the structure that gives way is the choroid, being fragile. In contra-distinction to this, the direct rupture occurs towards the periphery of the fundus, in the vicinity of the ciliary body, the sclera and retina at times participating in it.

In this case the rupture was caused by indirect force applied to the globe from behind; the bullet traversed the orbit without causing serious destruction of the eye-balls or the vision. In the right eye some damage was done to the optic nerve and probably a rupture of the inferior rectus muscle was caused, resulting in partial optic atrophy and paralysis of the muscle. The interesting feature of the case was, however, the almost typical indirect rupture of the choroid of the opposite eye. This was caused probably by the impact of the bullet falling tangentially upon the globe and compressing it posteriorly and suddenly. The escape was miraculous and the injuries were relatively less serious.

REFERENCES

- Würdemann.—Injuries of the Eye. Pp. 529-538, 676, 751. 1932.
Collins and Mayou.—Pathology of the Eye. Pp. 357-358.