CASE NOTES

EARLY APPEARANCES OF AN OPEN RETINAL HOLE*

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It is widely held that "spontaneous" retinal detachment rarely, if ever, occurs without the presence of one or more open retinal holes and that the latter are causal, and not mere incidents, in the development of the detachment. The evidence in favour of this contention is to a large extent based on the knowledge that the closure of such holes is an essential step in the successful re-attachment of the retina, but it is also based more directly on the observation that an active change may occur within a localized part of the retina before the formation of any open hole and before the development of any detachment. It is the purpose of this communication to describe three such cases in which a retinal hole clearly preceded the retinal detachment.

Case Reports

Case 1, a married woman aged 60 years, had developed a retinal detachment of the right eye in 1945 during internment in a concentration camp in Germany, and operation was delayed until after her return to Holland in 1946. The retina was restored to its normal position by diathermy (by the late Professor Zeeman in Amsterdam), but in view of the extent of the detachment there was permanent loss of macular function and of a considerable area of the temporal field of vision.

In October, 1957, during a visit to London, she suddenly became aware of spots in the vision of the left eye and one week later she attended the Casualty Department of Moorfields Eye Hospital, High Holborn. She was found to have a small dark mass in the upper nasal quadrant of the retina in the region of the equator with two or three small retinal haemorrhages on its surface. This mass remained unchanged during the next 2 days, but on the third day a small slit appeared at the inner border of the mass, and this extended 2 days later into a crescentic tear with the original dark area forming the operculum of an open retinal hole. One day later the retina surrounding the tear developed a slightly grey colour, an appearance suggestive of an early retinal detachment, and on the following day surface diathermy was applied to the sclera (six applications 60 ma. for 5 sec., 16–18 mm. from the limbus at 10–11 o'clock). This was followed by closure of the hole and the retina became flat.

In March, 1958, during a visit to Holland, she developed a further retinal hole in the left eye, on the nasal side of the previous tear, associated with a localized area of peripheral retinal detachment, but the detachment responded to operation by Professor Weve in Zeist. Since that time there has been no other change in the retina and the corrected vision has remained normal.

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The refraction was -6 D sph. in the right eye and -5 D sph., -1 D cyl., axis 180° in the left.

Case 2, a man aged 58 years, became aware in August, 1958, of a small floating spot in the vision of the left eye which changed 2 days later into the appearance of many fine spots over a wide area of the visual field. These became concentrated again into a more central cloud on the following day when he attended for consultation. The corrected visual acuity of the left eye was 6/9, but there was a fairly well-marked haze of the central part of the vitreous. A small greyish-blue mass was present in the lower temporal quadrant of the retina near the equator and there were two small retinal haemorrhages bordering the upper and lower edges of the mass.

The corrected visual acuity of the right eye was 6/5 and the fundus was normal.

The appearance of the mass in the left fundus remained unchanged, except for a slight increase in the extent of the retinal haemorrhages, until 3 weeks later, when a small tear became evident in the retina at the inner border of the mass and was followed within a few hours by the appearance of an obvious operculum. On the next day surface diathermy was applied to the sclera (five applications 6 ma. for 5 sec., 17-18 mm. from the limbus at 4-5 o'clock), and this resulted in closure of the hole without the development of any retinal detachment. The vitreous haze cleared within 4 weeks and normal central vision was restored.

Since that time there has been no further change in the left eye, but in November, 1959, the patient became aware of a wispy object in the temporal field of vision of the right eye which was preceded by a sensation of flashes of light. This was followed in a few hours by the development of many scattered black spots over the whole field of the right vision, and on examination at that time, although the vision of the right eye could be corrected to a normal level, there was a large anterior vitreous opacity and a blue area in the retina near the equator in the upper nasal quadrant. 5 days later there was a suggestion of a small haemorrhage near the lower border of this area and, after a further 5 days, the haemorrhage increased in amount and a crescentic retinal tear developed along the inner border of the affected area. 5 days later surface diathermy was applied to the sclera (seven applications 70 ma. for 5 sec., 15-17 mm. from the limbus at 2-3 o'clock). This was followed by closure of the hole, and the retina remained flat. Since that time there has been no further change in the right eye and the corrected vision has remained normal.

The refraction was -4.75 D sph., 1 D cyl., axis 115° in the right eye and -4.75 D sph., -1 D cyl., axis 65° in the left.

Case 3, a man aged 63 years, consulted one of us for a purely routine check of the refraction in May, 1959; on careful questioning he admitted to a vague awareness during the previous few weeks of a small spot in the lower part of the field of vision of the right eye which resembled a "monkey's tail". The visual acuity of both eyes could be corrected to a normal level, but a small opacity was found in the vitreous in the upper temporal quadrant of the right eye near the equator; this opacity appeared to be lying on the surface of the retina and on careful examination it proved to be an operculum with an open retinal crescentic tear along its inner margin. The patient was admitted to hospital the following day, when there was evidence of some retinal haemorrhage at the upper margin of the operculum and the tear had extended along its outer and inner margins. The retina surrounding the hole was very slightly detached. This detachment subsided after 3 days lying flat on the back, and surface diathermy was applied after that interval to the sclera (six applications 65 ma. for 5 sec., 14-16 mm. from the limbus at 10.30-11.30 o'clock). This was followed by closure of the hole, and since that time the retina has remained flat and the corrected visual acuity has remained normal.

The left eye has been unaffected throughout the period of observation.

The refraction was -6.25 D sph., -0.50 D cyl., axis 140° in the right eye, and -4.50 D sph., -0.50 D cyl., axis 25° in the left.

Discussion

There is little doubt that, in each of the four incidents described in this paper, the retinal hole preceded the development of the retinal detachment, and that the formation of the hole was accompanied by an active change within the retina as shown by the discoloration and swelling of the affected area and by the development of frank retinal haemorrhage. It is likely, however, that the primary event in the formation of a retinal hole is a detachment of a localized part of the posterior vitreous face, so that traction of a vitreous band gradually produces elevation of a small retinal area. A continuation of this process results in a splitting of the retina at the junction of the detached area and the normal retina, and this leads to the development of a true detachment by the accumulation of fluid in the subretinal space. It follows, therefore, that a thorough examination of the fundus should be carried out in any patient with symptoms suggestive of a vitreous detachment, and that it should be repeated at frequent intervals if any area similar to those described in this paper is noticed, because this is likely to represent an area of impending retinal hole formation. In this way it may be possible to treat effectively early cases of retinal detachment simply by obliteration of the retinal hole using the method of surface diathermy or, more advantageously, the method of light-coagulation which was not available at the time when the three patients described in this paper were treated.

Summary

Four incidents of retinal detachment are described; in each case the formation of a retinal hole preceded any sign of a true detachment, and in three an active change within part of the retina preceded the hole formation. The importance of detailed and repeated fundus examinations in all patients with vitreous detachment is stressed.