

# Retinoschisis and retinal detachment

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Reports have been published of retinal detachment originating from a retinoschisis, when breaks occur through both the inner and outer layers of the cyst (Kurz, 1938; Leffertstra, 1948; Teng and Katzin, 1953; Shea, Schepens, and von Pirquet, 1960; Curtin, Norton, and Smith, 1960; Pischel, 1963; Paul, 1963; Byer, 1968). However, detachments developing in the presence of a retinoschisis, but from retinal holes outside the cyst, have not received attention.

## Case reports

**Case 1, a 62-year-old woman**, had a history of intermittent flashes of light in the right eye for 2 years. Closed-angle glaucoma was diagnosed in 1962 and treated for several months with 2 per cent. pilocarpine drops. In 1963 bilateral peripheral iridectomies were performed.

*Examination* The visual acuity was 6/6 in each eye with a +1.25 D sph. No abnormalities were seen in the anterior segment, except for the iridectomies. The fundus of the right eye showed a peripheral small round hole in an area of cystoid degeneration at 11 o'clock. In addition, an area of retinoschisis adjacent to the ora serrata was observed from 10 to 6 o'clock. The surface of the cyst had a frosted appearance and in its periphery the vessels were sheathed (Fig. 1, overleaf). The fundus of the left eye showed an area of peripheral retinoschisis from 2 to 6 o'clock.

The retinal hole in the right eye was treated by photocoagulation, the areas of retinoschisis being left untouched.

**Case 2, a 44-year-old male**, had attended the out patients eye clinic at 3-monthly intervals for the last 18 months. He was known to suffer from a retinal cyst in the lower temporal quadrant and lattice degeneration in the equatorial region of the upper temporal quadrant of the left eye. 2 months before admission the visual acuity was 6/6 in the right eye and 6/9 in the left with bilateral corrections of -8 D sph. In June, 1968, the patient was admitted to hospital.

*Examination* The left fundus presented a shallow retinal cyst, which had not changed its former appearance, extending from 4 to 7 o'clock to the equator. Marked pigmentary reaction was seen at the boundaries of the cyst. The area of lattice degeneration at the equator extending from 12 to 2.30 now showed, in addition, two small holes at 2 o'clock and a horseshoe-shaped hole at 12 o'clock, with marked vitreous traction. The upper nasal quadrant, in which no obvious pathology had been observed before, showed a horseshoe-shaped hole of 1.5 disc diameters at 10.30, with a localized shallow retinal detachment extending from 9 to 11 o'clock. The vitreous was detached posteriorly and was producing traction on the operculum.

Treatment consisted of cryopexy over the hole at 10.30 and over the holes and lattice degeneration from 12 to 2.30 o'clock. The cyst was left untouched.

**Case 3, a 45-year-old man**, had complained of progressive deterioration of visual acuity in the left eye for 3 years.

*Examination* The visual acuity was 6/7.5 in the right eye and counting fingers at 1 m. in the left. The left fundus revealed a large retinal cyst involving the lower temporal quadrant and part of the

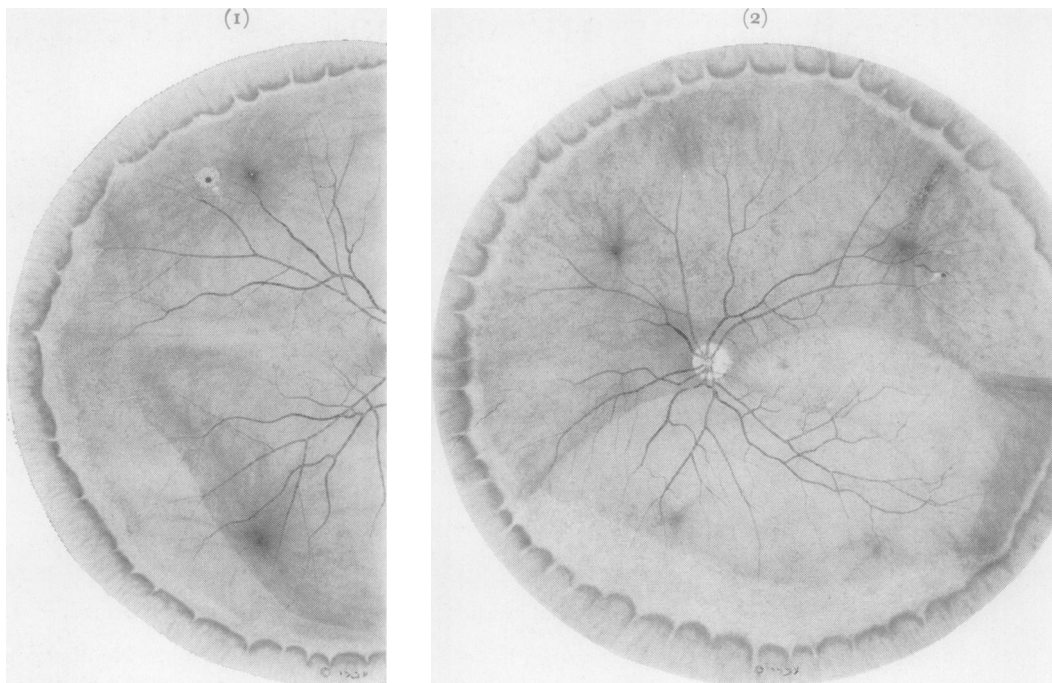


FIG. 1 Case 1 Right fundus, showing a retinal hole in an area of cystoid degeneration at 11 o'clock and retinoschisis from 6 to 10 o'clock

FIG. 2 Case 5 Left fundus, showing a retinal detachment in the upper temporal quadrant with pigment lattice formation on its upper borders and a retinal hole at 2 o'clock. A large retinal cyst is observed in the lower temporal and nasal quadrants. Sheathing of smaller vessels is seen in the periphery of the cyst, and a small haemorrhage at 5 o'clock

lower nasal quadrant, and extended from the ora serrata to a little beyond the equator of the eye. The well defined borders of the cyst did not shift when the head was moved from side to side. Numerous white flecks were seen on the surface of the cyst, and sheathing of retinal vessels was observed in its periphery. In the upper temporal quadrant, a globular retinal detachment extended from the ora serrata to the equator, and thence, shallowly, to the macular area. The lower part of the detachment was limited by the border of the cyst. The detached retina presented a folded surface and was of a less transparent texture than the cyst. Four small round holes were seen from 2 to 2.30 o'clock near the ora serrata, in an area of lattice degeneration. The borders of the detachment were displaced when the patient moved his head. Cystoid degeneration of the retina was observed from 8 to 10.30 o'clock. A partial posterior vitreous detachment was detected, but the vitreous was in contact with the cyst. The retina of the right eye presented extensive cystoid degeneration in its periphery from 7 to 10 o'clock.

**Operation** The patient underwent surgical treatment to the left eye in February, 1967, consisting of diathermy around the retinal holes, a scleral resection from 2 to 7.30 o'clock, and fluid removed at 2.30 o'clock in the area of the bullous retinal detachment. Another puncture was performed at 5 o'clock in the area of the cyst, with the release of a small amount of viscous fluid. After the operation the detached retina flattened and the visual acuity improved to 6/30, but the cyst has so far remained almost unchanged.

**Case 4, a 26-year-old man,** had complained of sudden deterioration of vision in the left eye 10 months ago,

*Examination* The visual acuity was 6/6 in the right eye and counting fingers at 2 m. in the left. The left fundus showed a large translucent cyst that extended through the lower temporal and nasal quadrants, from the ora serrata to a little beyond the equator. Above the cyst, in the upper temporal quadrant, a retinal detachment about 8 diopters high was observed. Three small round holes were seen in the periphery at 1.30 o'clock in an area of lattice degeneration. Beyond the equator this detachment became shallower and extended to the macula. A partial posterior vitreous detachment was present, with traction at the edges of the holes. Over the area of the cyst the hyaloid was not detached. The right fundus showed a large cyst extending throughout the lower temporal and part of the lower nasal quadrants from the periphery to the equator.

*Operation* The left eye was treated with diathermy and a scleral pocket was made at the site of the holes and filled with preserved scleral chips. A scleral resection from 4 to 7.30 o'clock was performed. The cystic area was punctured by six Pischel pins connected to the diathermy apparatus, and viscous fluid was released after the pins were removed. A separate puncture over the detached area released a large amount of yellowish watery fluid. When the edges of the scleral resection and of the pocket were tightly sutured the detached retina could be seen back in place. The cyst flattened progressively in the following 4 weeks.

Two months later the right eye was treated with a scleral resection and six Pischel pins over the area of the cyst, which gradually flattened in the following 6 weeks.

**Case 5, a 27-year-old woman,** complained of deterioration of visual acuity in the left eye.

*Examination* The visual acuity was 6/9 with  $-9$  D sph. in the right eye and 6/60 with  $-9.5$  D sph. in the left.

The left fundus presented a large and highly translucent cyst involving most of the lower temporal and nasal quadrants from the ora serrata to the disc. From the equator towards the ora serrata the lower part of the cyst had a frosted appearance. The terminal vessels were sheathed. A dotted haemorrhage was seen at 5 o'clock in the superficial layers of the retina. Temporal to the macula a white line resembling a watermark was observed.

In addition, a retinal detachment was present in the upper temporal quadrant from 2 to 3 o'clock, extending from the ora serrata to the equator. On the upper boundaries of the detached retina, pigmented lattice degeneration was observed. A circular punched-out hole was present in the periphery at 2 o'clock. A partial posterior hyaloid detachment with traction on the operculum of the hole was observed. Fig. 2 (p. 128) shows the appearance of the left fundus.

The right eye presented myopic degenerative changes.

*Treatment* After diathermy and the creation of a scleral pocket filled with preserved sclera over the area of the hole, the detachment flattened down and the visual acuity improved to 6/12 with  $-8.50$  D sph. The cyst gradually flattened after 2 months.

## Discussion

Whenever a break takes place in both layers of a retinoschisis, conditions seem to be set for the development of a retinal detachment. However, the actual incidence of retinal detachment caused by these events seems to be very low according to Byer (1968), who reported three cases of retinal holes in 102 eyes affected with retinoschisis, in all of which the hole was in a different area to the retinoschisis. In this series no actual retinal detachments were observed.

In our five cases, this parallel development also took place, and in Cases 2, 3, 4, and 5 it led to a retinal detachment. The co-existence of a cyst and of retinal holes and a detachment in Case 1 might well have been due to a common origin of these lesions, presumably microcystoid degeneration of the retina; while in Cases 2, 3, and 4 the retinal

holes and detachment resulted from another pathological change, namely, lattice degeneration. Vitreo-retinal adhesions in the area of the holes was obviously an important additional factor in the development of the detachments.

It is of interest to note that the cyst and the detached retina reacted differently to treatment. In Case 3 the cyst remained almost unchanged after surgery, while the detached retina flattened down completely, and in Cases 4 and 5 the cyst flattened only 4 to 8 weeks after the detached retina.

The recognition of the combination of a cyst with holes and retinal detachment in separate areas of the fundus is of obvious importance in the treatment of these cases. The combination should be kept in mind, especially when no through-and-through holes are present in the cyst.

### Summary

A report is presented of five patients suffering from a combination of two retinal lesions: (a) retinoschisis, and (b) retinal holes with or without retinal detachment in different areas of the fundus.

The retinal holes were observed in an area of cystoid degeneration in one case, and in areas of lattice degeneration in three. The patients with retinal detachment showed marked vitreous traction in the area of the retinal holes. The cyst and the detached retina reacted differently to surgical treatment. The pathogenesis and significance of these findings are briefly discussed.

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