Asteroid hyalitis (Benson's disease) and retinal separation

WILLIAM V. DELANEY JR

Department of Ophthalmology, State University of New York Upstate Medical Center, 750 East Adams Street, Syracuse, New York 13210, U.S.A.

Significant association of asteroid hyalitis with other ocular diseases has been disclaimed by clinical (Rutherford, 1933) and pathological (Rodman, Johnson, and Zimmerman, 1961) observation. The literature on retinal separation is so voluminous that oversight is possible, but a search of the literature over 90 years has revealed only three references (D'Oench, 1889; Bailey, 1926; Krejci, 1963) to retinal separation associated with asteroid hyalitis. One of these patients (Bailey, 1962) had diabetic retinopathy.

Five patients from a group of 448 with clinical retinal separation had asteroid hyalitis. Three of them had retinal separation only in the eye with asteroid hyalitis and the other two had retinal separation in one eye and asteroid hyalitis in both.

The association of these two diseases can present preoperative and operative difficulties.

Case reports

Case 1, a 67-year-old white man, had noticed poor vision in the right eye for 3 weeks. He had been diabetic for 2 years and the diabetes was controlled by diet and acetohexamide 500 mg. twice daily.

Examination

Visual acuity on admission to hospital was counting fingers at 6 in. in the right eye with -1.25 D sph., $+2.75$ D cyl., axis 125° , and 20/50 in the left eye with -0.300 D sph., $+4.25$ D cyl., axis 94° . Intraocular pressure was 30 mm. Hg in the right eye and 26 in the left by applanation. He had nuclear cataracts. The inferior temporal and inferior nasal retina was elevated, including the macula. A horseshoe tear was present just below the temporal long posterior ciliary nerve. Ophthalmoscopy was made difficult by asteroid hyalitis in the right eye.

Surgery

On November 3, 1969, a local scleral buckling procedure closed the tear without release of subretinal fluid. Visual acuity improved to 20/200. Fluid re-accumulated inferiorly and no additional tear could be found. At re-operation the local buckle was extended inferiorly with additional cryopexy and fluid release.

Result

Visual acuity improved to 20/50. The intraocular pressure was controlled with 1 per cent. pilocarpine. The disc : cup ratio was 8 : 1.

Case 2, a 78-year-old white man, was admitted to hospital, having had poor vision in the left eye for 2 to 3 months. A past history of deafness, dermatitis, and heart disease was present for which he took prednisone, benadryl, and digitoxin.

Examination

Visual acuity in the right eye was 20/20 with -1.75 D sph., $+1.25$ D cyl., axis 15° , and in the left eye 20/200 with $+0.50$ D sph., $+1.25$ D cyl., axis 155° . The intraocular pressure was 21.9 mm. Hg (Schiötz) in the right eye and 15.6 in the left. He had nuclear sclerosis and mild asteroid hyalitis in the right eye. There was dense asteroid hyalitis in the left eye. The lower two-thirds of the left retina was separated with star folds infero-nasally. A single small round hole was seen above the temporal long posterior ciliary nerve in the left eye. Paving-stone degeneration was present at 6 o'clock.

Surgery

On June 20, 1969, an encircling procedure with diathermy and fluid release improved the visual acuity to 20/80.

Case 3, a 68-year-old aphakic white man, had noted decreased vision in the right eye for 3 days. His blood pressure had been high for several years and a platelet deficiency had been found previously.

Examination

On admission to hospital the visual acuity was hand movements in the right eye with $+11.25$ D sph., $+2.00$ D cyl., axis 180° , and 20/25 in the left eye with $+10.50$ D sph., $+3.50$ D cyl., axis 180° . The upper half of the retina was separated with horseshoe tears supero-temporally and supero-nasally. Asteroid hyalitis in the lower half obscured details; no asteroid hyalitis was present in the left eye. Intraocular pressure was 12 mm. Hg (Schiötz) in the right eye and 16 in the left on applanation.

Surgery

On September 5, 1969, an encircling procedure was done with fluid drainage.

Result

The patient retained 20/200 vision, but 7 weeks later massive pre-retinal retraction suddenly reduced his vision to perception of light.

Case 4, a 46-year-old white man, had had congenital cataract surgery at 12 and 28 years of age in the right and left eye respectively. Visual acuity in the right eye had been diminished for 4 days.

Examination

Visual acuity in the right eye was counting fingers at 6 in. with $+7.25$ D sph., $+0.25$ D cyl., axis 135° , and 20/25 in the left eye with $+8.75$ D sph., $+1.75$ D cyl., axis 82° . The intraocular pressure was 35.8 mm. Hg (Schiötz) in the right eye and 18.5 in the left. A supero-temporal retinal separation was present in the right eye with a horseshoe tear extending posterior to the equator. Asteroid hyalitis obscured the view. The left eye had asteroid hyalitis also. No holes could be seen.

Surgery

On June 9, 1969, an encircling procedure was performed with diathermy.

Result

Visual acuity was improved to 20/70 in the right eye.

Case 5, a 77-year-old white man, had noted decreased vision in the left eye for one month. His general health was good and he was not taking any medication.

Examination

The visual acuity was 20/25 in the right eye and counting fingers in the left without correction. The intraocular pressure was 18 mm. Hg (Schiotz) in each eye. Infero-temporal and infero-nasal retinal separation could be seen, but retinal breaks could not be found. The separation was obscured by severe asteroid hyalitis in the lower half of the globe. No asteroid hyalitis was present in the right eye.

Surgery

On May 14, 1965, an encircling procedure with cryotherapy and a scleral buckle to the lower half of the globe failed to re-attach the retina.

Result

The vision remained at finger counting only.

Clinical characteristics

The average age of the asteroid hyalitis-retinal separation patients (67.2 years) (Table I) exceeds the average age of a large series of asteroid hyalitis patients (Rutherford, 1933) and also the median age of non-myopic male retinal separation patients (Schepens and Marden, 1966). The 100 per cent. of men in this small group contrasts with the 67 per cent. of males with asteroid hyalitis found by Rutherford (1933) and the 50.6 per cent. of males with retinal separation found by Schepens and Marden (1961) in their large series. The lack of myopia but presence of glaucoma and cataract in the asteroid hyalitis-retinal separation group is noteworthy. Only one patient had clinical diabetes. No other features seem distinctive.

Table I *Clinical characteristics of five male patients with retinal separation and asteroid hyalitis*

Average age (yrs)	67.2
Myopia and trauma	1 (Case 4)
Aphakia	2
Average duration separated (wks)	3
Tear location	Superior temporal 3
	Inferior temporal 1
	No hole 1
	Equator or posterior 4
Glaucoma	2
Cataract	3

Findings

Ophthalmoscopic difficulty due to light dispersion by asteroid bodies made preoperative evaluation difficult. This was particularly troublesome when the retinal separation was inferior or the retinal breaks posterior, since the asteroid body concentration was greatest inferiorly and centrally. Slight improvement in view could be obtained by tilting the indirect ophthalmoscope hand lens in the direction of the patient's gaze. Mild scleral depression to accentuate colour difference helped slightly.

At surgery the localization or cryotherapy of retinal breaks was complicated by the poor ophthalmoscopic view and seemingly diminished depth perception. Subretinal fluid shifted freely and retinal prolapse occurred on fluid release in one patient despite careful attention to this possibility. No asteroid bodies could be found in the subretinal fluid.

Surgical results

In three of five patients with asteroid hyalitis and retinal separation, re-attachment was successful (Table II).

Table II *Successful re-attachment rate in the five patients with asteroid hyalitis compared with the whole series of 448*

Retinal separation	Total patients	Re-attached	
		No.	Per cent.
With asteroid hyalitis	5	3	60
Others	448	395	88.2

The visual results (Table III) 6 months after surgery showed that the successfully operated asteroid hyalitis-retinal separation patients achieved 20/80 or better vision (60 per cent.). This compared favourably to the final visual acuity of the consecutive retinal separation patients also with 20/200 or less pre-operatively (53 per cent.), who could be examined 6 months later.

Table III *Visual results in five patients with asteroid hyalitis compared with 113 who could be assessed 6 months after surgery. All had 20/200 or less preoperatively*

Retinal separation	Patients observed	Vision 20/80 +
With asteroid hyalitis	3/3	60 per cent.
Others	60/113	53 per cent.

In both patients in whom failure occurred, ophthalmoscopy was an important factor. In one patient with an inferior separation no hole could be found. In the other, another hole was suspected but could not be verified and properly treated.

Discussion

Dor (1908) found 32 cases of asteroid hyalitis in 82,732 patients and some of these may have had synchysis scintillans. This low incidence suggests that it is unusual to find five cases in 448 patients, unless selection by retinal separation is a significant factor.

The chemical nature of the asteroid bodies has been carefully elaborated (Rodman and others, 1961). The same authors noted that some pathological specimens contained inflammatory reaction to the asteroid bodies. It is impossible to tell by clinical examination whether the inflammatory type of asteroid hyalitis is the variety present in the patients described here.

Association of asteroid hyalitis with other ocular diseases is common but too inconsistent to allow conclusions to be drawn. The association of many diseases, including retinal separation, indicates that asteroid hyalitis is probably one obvious facet of overall ocular disease.

Careful clinical observations of asteroid hyalitis have recorded the predominance of males, the average age, and a disputed relationship to diabetes (Smith, 1965). Most

authors have noted 75 per cent. unilaterality of the disease, but two (Hogan and Zimmerman, 1962; Cibis, 1965) claimed 75 per cent. bilaterality without detailed documentation.

It is difficult to discount as fortuitous the occurrence of asteroid hyalitis and retinal separation in five patients. It is even more difficult to discount that three of five had asteroid hyalitis and retinal separation in the same eye—in a disease with 75 per cent. unilaterality. Especially significant is the fact that not one of the remaining 443 consecutive retinal separation patients had asteroid hyalitis only in the contralateral eye. On the other hand, the two patients with bilateral asteroid hyalitis have not developed retinal separation in the second eye in a 2-year follow-up.

The operative correction of retinal separation in an eye with asteroid hyalitis can be difficult mainly for ophthalmoscopic reasons. Vitreous exchange for a better view, while possible, is impracticable in the presence of retinal separation.

Summary

Five patients from a group of 448 consecutive cases of retinal separation had asteroid hyalitis. In three the asteroid hyalitis occurred only in the eye with retinal separation. This seems to be a significant, though rare, association. The preoperative and operative complications of this association are mainly due to the difficulties of ophthalmoscopy.

The author's thanks are due to Miss Rosemary Ryan for carefully keeping and searching the punch-card file.

References

- BAILEY, J. (1926) *Amer. J. Ophthalm.*, **9**, 760
 CIBIS, P. A. (1965) "Vitreo-retinal Pathology and Surgery in Retinal Detachment", p. 193. Mosby, St. Louis
 D'OENCH, F. E. (1889) *Med. Rec.*, **35**, 268
 DOR, H. (1908) *Ophthalm. prov.*, **5**, no. 7, p. 101
 HOGAN, M. J., and ZIMMERMAN, L. E. (1962) "Ophthalmic Pathology", 2nd ed., p. 193. Saunders, Philadelphia
 KREJČI, L. (1963) *Čs. Oftal.*, **19**, 262
 RODMAN, H. I., JOHNSON, F. B., and ZIMMERMAN, L. E. (1961) *Arch. Ophthalm. (Chicago)*, **66**, 552
 RUTHERFORD, C. W. (1933) *Ibid.*, **9**, 106
 SCHEPENS, C. L., and MARDEN, D. (1961) *Ibid.*, **66**, 631
 ———, ——— (1966) *Amer. J. Ophthalm.*, **61**, 213
 SMITH, J. LAWTON (1965) *Trans. Amer. Acad. Ophthalm. Otolaryng.*, **69**, 269