ELSEVIER

Retinal Detachment in the Mentally Retarded

Rika Kuwabara*,†, Atsushi Minamoto*, Ken Yamane*,
Tetsu Kajikawa†, Hideaki Mizote* and Hiromu K. Mishima*

**Department of Ophthalmology and Visual Science, Graduate School of Biomedical Sciences, Hiroshima University, Hiroshima, Japan;*
†Department of Ophthalmology, Fukuyama National Hospital, Fukuyama, Japan

Purpose: To report the clinical features and surgical outcomes of retinal detachment in mentally retarded patients.

Methods: Retrospective review of records of mentally retarded patients who had retinal reattachment surgery at the authors' institutions between February 1994 and February 2000. There were 8 patients with 13 surgically treated eyes. Demographic and clinical data were abstracted from the patients' medical records.

Results: The retina of 12/13 (92%) eyes remained reattached after a follow-up ranging from 9 to 78 months. In 6 eyes of the 4 patients whose visual acuity (VA) could be determined, VA improved in 5 eyes of 3 patients. In the remaining 4 patients whose VA could not be determined, improved behavioral patterns suggesting a successful surgical outcome were observed in 3 patients with bilateral retinal detachment, although in one of these patients only unilateral retinal reattachment was achieved. The findings in the eyes in this study agree with the findings in reports on patients with traumatic retinal detachment.

Conclusions: The retinal reattachment rate is fair in the mentally retarded compared with the rate in other segments of the population. Ophthalmological examinations should be provided regularly for mentally retarded persons to keep open the possibility for early sight-improving surgery. **Jpn J Ophthalmol 2003;47:93–96**

Key Words: Mental retardation, retinal detachment, surgical outcomes.

Introduction

Visual handicap is more common in the mentally retarded than in other segments of the population, and the degree of visual loss is correlated to the severity of mental retardation.[1] Because mentally retarded persons themselves infrequently complain of decreased vision, diagnosis tends to be late, especially in cases with posterior ocular segment disorders.

Retinal detachment (RD) in the mentally retarded is likely to be encountered at advanced stages,[2–4] for the above-mentioned reason. Additionally, pre- and postoperative examinations are often unsatisfactory because of the poor cooperation by patients. Therefore, the prognosis for surgery to restore vision in these patients might have been undervalued.

In this article, we report the results of a retrospective study of the clinical features and surgical outcomes in mentally retarded RD patients over the last 6 years, wherein relatively successful outcomes are demonstrated.

Materials and Methods

Eight mentally retarded patients with RD treated in Hiroshima University Hospital and Fukuyama National Hospital, between February 1994 and February 2000, were selected. Eyes with history of corneoscleral laceration were excluded. Clinical records of these patients were reviewed and the data col-

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Correspondence and reprint requests to: Atsushi MINAMOTO, MD, Department of Ophthalmology and Visual Science, Graduate School of Biomedical Sciences, Hiroshima University, 1-2-3, Kasumi, Minami-ku, Hiroshima 734-8551, Japan

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lected included: age at presentation, sex, affected eye, presenting symptom(s), medical history, preoperative visual acuity (VA), number, type and localization of retinal break(s), attachment or detachment of the macula, extent of detachment, presence and grade of proliferative vitreoretinopathy (PVR) based on the Retina Society classification of 1983,[5] lens status, type of surgery performed, reoperations, postoperative VA, final reattachment status, record of behavioral patterns, and length of follow-up.

Results

The patients were 6 men and 2 women between 8 and 61 years of age (mean = 35 years). Follow-up ranged from 9 to 78 months (mean = 34 months). Two patients had the complication of epileptic disorder, 1 had von Recklinghausen disease, 1 had cerebral palsy, and 1 had Fukuyama-type congenital muscular dystrophy. Subjective decreased vision was the presenting symptom in only 2 patients. Of the remaining 6 patients, RD was detected following parental recognition of worsened behavioral patterns such as groping, difficulty in descending the stairs in 3 patients, conjunctival hyperemia in 2 patients, and on routine examination in 1 patient. There had been no intraocular surgery in any of the patients. VA could be determined in 4 patients with mild to moderate mental retardation (patients 1, 4, 5, and 7), although quantification of the duration of visual loss was still impossible in these patients.

RD was bilateral in 5 patients and unilateral in 3. PVR was present at initial presentation in 6 of the surgically treated 13 eyes (46%), and severity was of grade C-1 or worse. The macula was detached in 11 eyes (85%). Retinal breaks usually were present around the vitreous base borders [10 (77%) in 13 eyes], where oral dialysis was the most common occurrence [8 (62%) in 13 eyes]. Retinal break was undetected in 1 eye because of PVR. Cataract was found in 8 eyes, including 1 eye with the lens dislocated into the vitreous cavity.

The initial surgical procedure performed was scleral buckling in 10 eyes (77%), encircling procedures with widespread cryoretinopexy in 9 (69%), and pars plana vitrectomy in 3 eyes (23%). Two eyes initially treated with the scleral buckling procedure underwent subsequent vitrectomy. One eye initially treated with encircling buckling (right eye of patient 5) required additional vitrectomy with SF_6 gas, and another eye (right eye of patient 6) with encircling buckling required a vitrectomy with silicone oil injection, for retinal reattachment. Of the 3 eyes initially treated with vitrectomy, in 2 eyes the retina was reattached with the use of silicone oil. One eye initially treated by fluid-gas exchange with C_3F_8 (left eye of patient 6) redetached, and additional vitrectomy with silicone oil injection also was eventually ineffective. In all, 5 eyes (38%) ultimately underwent vitrectomy and silicone oil was used in 4 of these 5 eyes (31%). Silicone oil removal was performed in 1 (right eye of patient 6) of the 3 reattached eyes. In the other 2 reattached eyes initially treated with vitrectomy (patients 7 and 8), silicone oil was not removed at the last visit, because of persistent hypotony. The retina remained reattached in 12 of the 13 eyes (92%) at the last follow-up visit. If the 2 eyes with retained silicone oil are excluded, the success rate is 77% (10 of the surgically treated 13 eyes).

Although postoperative intraocular pressure increased in 3 eyes (23%; patient 1 and both eyes of patient 6), it was controlled with topical antiglaucomatous medications.

In 6 eyes of the 4 patients whose VA could be determined, VA improved in 5 eyes of 3 patients. In the remaining 4 patients whose VA could not be determined, improved behavioral patterns, suggesting a successful surgical outcome, were observed in 3 patients with bilateral RD (patients 2, 3, and 6), although only unilateral reattachment was achieved in patient 6. Because patient 8 was profoundly mentally retarded and had the complication of muscular dystrophy, assessment of vision was impossible by any means. Overall, improved VA or behavioral patterns were observed in 75% of the 8 patients (6/8). Tables 1 and 2 list the clinical summary of the 13 surgically treated eyes.

Discussion

We retrospectively reviewed the clinical records of 8 mentally retarded patients with RD (13 eyes). It has been reported that a high incidence of bilateral involvement is characteristic of RD in the mentally retarded.[2–4] These patients are often incommunicative and infrequently complain of unilateral poor vision; therefore their worsened behavioral patterns are likely to be the first sign of their visual disturbance in both eyes. Visual loss in a unilateral eye may have been further obscured by a lower level of daily activity, because of coexisting motor disturbance in some cases. Late diagnosis of RD is evidenced by the high frequency of PVR [6 (46%) in 13 eyes] at initial presentation in this study. This is comparable to the frequency in pediatric rhegmatoge-

Table 1. Clinical Data on 13 Operated Eyes

Case No.	Age (y)	Sex	Severity of Mental Retardation*	Eye†	PVR† Grade	Retinal Break			Macula	Quadrants of RD§	Lens
						No.	Location	Extent			
1	49	F	Moderate	RE	–	1	Ora serrata	10:00–10:30	Off	4	
2	40	F	Profound	RE	–	1	Posterior vitreous border	2:00–4:00	On	3	Cortical cataract, Phacodonesis
				LE	C–2	1	Equatorial zone	9:00–10:00	Off	4	Cortical cataract Phacodonesis
3	26	M	Profound	RE	C–3		Undetected		Off	4	Cortical cataract
				LE	C–1	1	Ora serrata	9:30–10:00	Off	4	Mature cataract
4	35	M	Mild	RE	–	4	Ora serrata	11:30–2:00	Off	4	Cortical cataract
				LE	–	2	Ora serrata	11:30–2:00	Off	3	Cortical cataract
5	38	M	Mild	RE	–	1	Ora serrata	6:30–8:30	Off	3	Cortical cataract
				LE	–	2	Ora serrata	4:00–5:30	On	1	
6	22	M	Profound	RE	D–1	1	Ora serrata	2:00–4:00	Off	3	
				LE	D–2	2	Ora serrata	5:00–7:30	Off	3	
7	61	M	Mild	LE	–	1	Posterior vitreous border	5:30–6:00	Off	3	Cortical cataract, posteriorly dislocated
8	8	M	Profound	RE	D–3	1	Equatorial zone	4:30–5:00	Off	4	

*Mild retardation [intelligence quotient (IQ)>50], moderate (IQ: 35–50), severe (IQ: 20–35), profound (IQ: 0–20).
†RE: right eye, LE: left eye.
‡PVR: proliferative vitreoretinopathy.
§RD: retinal detachment.

nous RD reported by Fivgas and Capone,[6] wherein PVR was observed at initial presentation in 13 (45%) of 29 eyes. It should be noted that in our study PVR was consistently detected in patients whose VA could not be determined due to profound mental retardation (patients 2, 3, 6, and 8).

In 3 eyes of grade C PVR (left eye of patient 2, both eyes of patient 3) the retina was successfully re-

Table 2. More Clinical Data on 13 Operated Eyes

Case No.	Eye*	Surgery†	Buckle Detail‡	Reoperations	Best-corrected Visual Acuity		Retinal Reattachment	Follow-up Months
					Preoperative	Postoperative		
1	RE	SB, DIA	Enc sp	None	20/1000	20/200	On	27
2	RE	SB, CRYO	Enc sp	None	Unable	Unable	On	9
	LE	SB, CRYO	Enc sp	None	Unable	Unable	On	9
3	RE	SB, CRYO	Enc sp	None	Unable	Unable	On	15
	LE	SB, CRYO	Enc sp+Rad sp	None	Unable	Unable	On	15
4	RE	SB, CRYO	Enc tyre	None	20/400	20/60	On	78
	LE	SB, CRYO	Enc tyre	None	20/600	20/250	On	78
5	RE	SB, CRYO	Enc tyre	PPV, PEA, GFE, EL, SF_6	HM§	20/300	On	30
	LE	SB, CRYO	Seg sp	None	20/60	20/40	On	30
6	RE	SB, CRYO	Enc tyre	1. PPV, PPL, GFE, EL, SiO 2. PPV, MP, SiO, removal	Unable	Unable	On	33
	LE	SB+PPV, PEA, GFE, EL	Enc band	PPV, GFE, EL, SiO	Unable	Unable	Off	33
7	LE	SB+PPV, ICCE, GFE, EL, SiO	Enc band	None	20/200	20/500	On	66
8	RE	PPV, PPL, SiO		None	Unable	Unable	On	18

*RE: right eye, LE: left eye.
†SB: scleral buckle, DIA: diathermy, CRYO: cryopexy, PPV: pars plana vitrectomy, PEA: phacoemulsification and aspiration of the lens, GFE: gas fluid exchange, EL: endolaser, ICCE: intracapsular cataract extraction, SiO: silicone oil, PPL: pars plana lensectomy.
‡Enc: encircling, sp: sponge, Rad: radial, Seg: segmental, MP: membrane peeling.
§HM: hand motion.

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attached with an encircling procedure with widespread cryoretinopexy. In 3 eyes of grade D PVR (both eyes of patient 6, and one of patient 8), silicone oil was injected as an adjunct to the vitrectomy surgery. In the right eye of patient 6, the primary encircling procedure was ineffective because of progressive epiretinal proliferation. Multiple iatrogenic breaks in inferior quadrants developed during subsequent vitrectomy. Therefore, silicone oil was injected as a long-term tamponade. In the third operation, recurrent macular epiretinal membrane could be peeled off and silicone oil was removed. In the left eye of this patient, primary vitrectomy with C_3F_8 gas was ineffective because of residual subretinal proliferation. Silicone oil was used as a long-term tamponade at the second vitrectomy; however, the retina remained detached. Parents did not wish further surgery. In patient 8, silicone oil was used because of positioning problems. In patients 7 and 8, silicone oil has not been removed because of persistent hypotony. The presence of anterior PVR changes is suspected in all these patients.

Self-inflicted ocular contusion, eye rubbing, and uncontrolled trauma inflicted by others are regarded as factors to increase the risk of RD in the mentally retarded.[2–4] The findings in eyes in this study agreed with those in traumatic RD, and RD with atopic dermatitis in which contusion from rubbing the eyes was considered to be the cause of retinal breaks.[7] Predominance of younger men, characteristic distribution of retinal breaks around the vitreous base borders, high incidence of cataract, and lens dislocation into the vitreous cavity in one patient, are suggestive of a traumatic etiology for RD in this study. Because many patients in our study were institutionalized and had not always been under the supervision of a devoted caretaker such as their parents, prevention of ocular trauma was probably limited.

Poor patient cooperation makes examination and instillation of medications difficult in mentally retarded patients, especially in the early postoperative period. Additionally, these patients may traumatize operated eyes by rubbing or inadvertent contusion. Therefore, in some patients, the use of either sedatives or restraints for extremities had been inevitable in the early postoperative period before improvement of VA or behavioral pattern was observed. Postoperative ophthalmological examinations were provided monthly for the first year, then decreased to every 3 months. We recommended the provision for observation by a single caretaker to increase awareness of day-to-day changes in the patient's behavior.

The retina remained reattached in 12 (92%) of the 13 surgically treated eyes at the last follow-up visit. Additionally, improved VA or behavioral patterns were observed in 75% of patients (6/8). Although our study is limited by the small number of patients included, these data provide information for caretakers of mentally retarded persons about the risk of traumatic retinal detachment in the mentally retarded and the benefits of retinal reattachment surgery. Ophthalmological examination should be provided regularly for mentally retarded persons, especially for those with repeated ocular contusion. In this way, we can keep open the possibility for early sight-improving surgery for concealed retinal detachment, and thereby improve the quality of postoperative vision for mentally retarded patients.

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