Bilateral Rhegmatogenous Retinal Detachment Secondary to Non-Traumatic Spontaneous Retinal Dialyses

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A healthy 17-year-old boy reported worsening vision in the right eye since childhood. On presentation, visual acuity was counting fingers in the right eye and 20/20 in the left eye; intraocular pressure was within normal limits. Fovea-involving chronic rhegmatogenous retinal detachment (RRD) with retinal dialysis and subretinal bands was identified in the right eye, while there was macular subretinal fluid (SRF) and fovea-sparing asymptomatic RRD with retinal dialysis in the left eye. The patient underwent scleral buckling and cryotherapy in both eyes. Twelve months after presentation, with interval decrease in SRF, vision improved to 20/400 in the right eye and was 20/20 in the left eye. Our case describes an otherwise healthy adolescent male with bilateral rhegmatogenous retinal detachment secondary to non-traumatic spontaneous retinal dialysis. Bilateral spontaneous retinal dialyses are rare but may occur in pediatric patients. Scleral buckling and cryotherapy resulted in anatomical success in both eyes.

The patient underwent scleral buckling and cryotherapy treatment of both eyes. Twelve months after initial presentation, VA was 20/400 in the right eye and 20/20 in the left eye. Optos fundus photos and SD-OCT images showed chorioretinal scarring inferotemporally, attached fovea, and resolved inferotemporal SRF in both eyes (Figures 1B, D and 2B, D).

Discussion

In an analysis of 196 patients with retinal dialysis, Zion and Burton showed that unilateral nasal, superior, and inferotemporal dialyses were most commonly a result of trauma, whereas bilateral retinal dialyses (14% of all cases) may result from developmental anomaly of the ora serrata. Peripheral cystic and lattice degeneration causing slowly progressing retinal thinning, development of intraretinal cysts, and formation of a demarcation line have also been implicated in the pathogenesis of retinal dialysis. There may be a genetic component to development of non-traumatic spontaneous retinal dialysis, which highlights the importance of examining family members of such patients.

Singh et al previously reported a case of bilateral RRD secondary to retinal dialyses in a healthy 28-year-old man. He presented with 6/6 vision in the right eye, VF vision in the left eye, and reported a five week duration of decreased vision in the left eye. They noted multiple retinal holes (round, u-shaped, and horse shoe) on retinal examination. Both eyes were successfully surgically repaired with segmental scleral buckling and cryotherapy. Vision remained stable in the right eye while improving from CF to 6/18 in the left eye.

Stepankova and colleagues described their experience with 10 eyes of five patients (mean age, 19.2 years) with bilateral non-traumatic inferotemporal retinal dialyses. Two (20%) had an associated RD; five (50%) with a demarcation line; and one (10%) with subretinal “solid strands”. The dialyses were repaired with scleral buckling as a primary procedure in all patients, with eight (80%) receiving a segmental sponge and two (20%) an encircling element. Although anatomical success was achieved in nine (90%) eyes, VA improved in only one (10%) eye. Scleral buckling and cryotherapy is considered the surgical standard-of-care in such cases.

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Figure 1. Optos color fundus photos of the right (A and B) and left (C and D) eyes. A. Fovea involving chronic inferior retinal detachment (RD) with inferotemporal retinal break and retinal dialysis with subretinal bands (grade C proliferative vitreoretinopathy). B. Heavy inferotemporal chorioretinal scarring; retina appears attached. C. Fovea sparing inferior asymptomatic RD with a large peripheral inferotemporal retinal break and retinal dialysis without a posterior demarcation line. D. Heavy inferotemporal chorioretinal scarring and posterior pigmented demarcation line; retina appears attached.

Figure 2. Spectralis spectral-domain optical coherence tomography of the right (A and B) and left (C and D) eyes. A. Fovea involving subretinal fluid causing retinal detachment; multiple intra-retinal cysts and retinoschisis-like changes inferotemporally. B. Fovea flat; resolved inferotemporal subretinal fluid; outer retinal atrophy. C. Shallow sub-retinal fluid in the inferotemporal macula (none in the fovea); retinoschisis-like changes inferotemporally. D. Fovea flat; no subretinal fluid.
In summary, we describe a case of an otherwise healthy adolescent male with RRD secondary to non-traumatic spontaneous retinal dialysis. These RRD tend to be asymptomatic for an extended period of time likely due to the poorly appreciated superonasal visual field defects. Whereas previously described in older patients, our case highlights the fact that non-traumatic spontaneous retinal dialysis may occur in childhood. Due to abnormalities in the vitreo-retinal interface and genetic predisposition, siblings and other family members should be examined as well. In our patient, anatomic success was achieved in both eyes with scleral buckling and cryotherapy; however, despite retinal re-attachment, improvement in right eye VA might have been limited by disorganization of the ellipsoid zone, disintegration of the photoreceptor-RPE interdigitations, as well as outer retinal hypoxia and atrophy due to chronicity of the SRF. Finally, as the patient reported poor vision since childhood, the possibility of amblyopia in the right eye cannot be ruled out.