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Case Report

Striking the Iron While it is Hot: A Case of Post-traumatic Sub-macular Bleed Treated with Pneumatic Displacement

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Abstract

Sub-macular hemorrhage can lead to permanent vision loss by photoreceptor damage if not treated timely. Various modes of treatments are described in current published literature. We herein report a case of a young male with sub-macular bleed post blunt trauma treated successfully with an early intervention in form of pneumatic displacement with expansible gas followed with strict prone positioning.

Keywords: Pneumatic Displacement; Post-trauma; Sub-macular Bleed

Introduction

Submacular hemorrhage often leads to irreversible vision loss if left untreated. Several mechanisms have been proposed as explanations for retinal damage. It can damage retina by hemoglobin-derived iron, shearing damage to photoreceptors by fibrin clots and subsequent fibrinolytic reaction, and a prolonged mechanical barrier between the retina and choriocapillaris [1]. Hence, it is necessary to intervene early and displace or remove subfoveal bleed to have a possibility of achieving a functional vision. In such patients, visual recovery depends on the amount and duration of submacular hemorrhage. Usually patients with submacular hemorrhage have a tendency for poor visual outcome if the hemorrhage is not cleared for more than one month [2,3]. Here is one case which was treated at the right time leading to significant improvement in vision.

Case Report

A 32-year-old healthy male, mechanic by occupation, visited our OPD with complaints of diminution of vision and pain in the right eye since morning. He had sustained accidental injury to his right eye following a tyre burst in his close proximity at his workplace the same morning. The best corrected visual acuity (BCVA) in right and left eye was hand movement and 20/20 and intraocular pressure (IOP) was 34 and 14 mmHg respectively. On slit lamp examination, the right eye had ecchymosis, diffuse subconjunctival haemorrhage, edematous cornea, 2mm hyphema, and traumatic mydriasis with the lens appearing clear. The posterior segment examination showed a reddish glow with no structures clearly visible and the B scan showed minimal echoes with an attached retina. Anterior and posterior segment examinations in the left eye were unremarkable. He was prescribed topical steroid-antibiotics, oral and topical anti-glaucoma medications (AGM) and mydriatic-cycloplegics and was advised a neurology opinion and a CT scan Orbit with brain. Fortunately, there was no evident neurological damage or intraocular foreign body.

Two weeks later, BCVA had improved to counting finger 2 meters in right eye and intraocular pressure had lowered to 16 mmHg. The anterior segment had cleared up well. On posterior segment evaluation in the right eye, the optic nerve head showed mild pallor with a choroidal rupture evidently seen around it which extended above the fovea (Figure 1a, white arrow). There was a large dark red subretinal bleed at the macula (Figure 1a, yellow arrow). The

OCT confirmed the sub retinal haemorrhage at the macula and non-involvement of the fovea in the choroidal rupture (Figure 1b, c).

Figure 1: a: Fundus photo of right eye showing a large sub-macular hemorrhage (yellow arrow) and choroidal rupture (white arrow). b, c: HD-OCT of right eye showing subretinal accumulation of heme.

In view of these findings, he was advised a pneumatic displacement to displace the sub-macular heme and clear off the foveal area. Aim of the procedure and guarded visual prognosis in view of photoreceptor damage at fovea were clearly explained to the patient. The procedure was initiated with a paracentesis followed by injection of 0.3cc of 100% C3F8 gas followed by strict prone position post op for two weeks.

One month later, the vision in the right eye improved to 20/200 and the IOP was 18 mmHg. The gonioscopy showed no evidence of angle recession. On posterior segment evaluation (Figure 2a), we could see that the heme was largely displaced from the macular area and had accumulated beyond the inferior arcade. The above findings were confirmed with OCT which showed minimal subretinal heme at the fovea (Figure 2b). The topicals were tapered off and the AGMs were stopped, and the patient was asked to follow up after one month.

Figure 2: a: Post-op 1 month Fundus photo of right eye showing displaced sub-macular hemorrhage and relatively cleared foveal area. b: Post-op 1 month HD-OCT of right eye showing resolving heme. c: Post-op 2 month HD-OCT of right eye showing well-formed foveal contour with distortion noted at the outer retina.

After a month the best corrected visual acuity had further improved to 20/60 and the IOP was 16 mmHg without any AGM. The OCT showed a well-formed foveal contour with no sub-retinal bleed; but distortion at the outer retina was noted which corresponded to the sub-normal visual acuity (Figure 2c).

Discussion

In cases of large submacular hemorrhage with recent onset (<3 weeks) in young patients with no ocular co-morbidities, a pneumatic displacement is likely to give good results. If the hemorrhage is chronic (>3 weeks), then there are two options we can look into. 1. Pars plana vitrectomy with sub-retinal tPA with gas tamponade. 2. Intravitreal tPA with gas tamponade. An Anti-VEGF injection can

be added if there are preexisting ocular conditions like PCV, RAM etc. [3].

In our case, since the patient was young with a recent onset hemorrhage, intravitreal injection of expansile gas was used with strict post-operative prone positioning. We could achieve a successful anatomical displacement of the sub-macular hemorrhage along with a functional visual improvement.

Conclusion

Young patient with fresh onset sub-macular hemorrhage needs prompt intervention. A pneumatic displacement can aid in dislodging the heme under the fovea, and can lead to anatomical and functional improvement. Post op positioning and IOP control are extremely important considerations while dealing with such cases.

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