An Unusual Case of Post Vitrectomy Hypopyon

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Ghost cell glaucoma is a clinical entity that was first described in 1976 by Campbell and colleagues in eyes with long standing vitreous hemorrhage. Theoretically the process involves degradation of the red blood cells present in the vitreous haemorrhage. Rigid spherical khaki coloured cells 4-7 μm in size with clumps of haemoglobin at their periphery called Heinz bodies are formed. They find their way through the anterior hyaloid into the anterior chamber and become trapped in the trabecular meshwork leading to obstruction of aqueous humor outflow with secondary intra ocular pressure rise. Clinically a double layered khaki coloured or candy – stripe pseudo hypopyon is a pathognomonic sign.

We report a case of khaki coloured pseudohypopyon in the anterior chamber in a phakic patient who underwent vitrectomy for suspected peripheral exudative and haemorrhagic chorioretinopathy (PEHCR) in the elderly. Although the anterior chamber was filled with degraded blood products, the intraocular pressure remained normal.

A 67 year old male presented to our out-patient department with history of sudden onset of visual blurring of 15 days duration. He was a long standing hypertensive on regular treatment and under good control. Ocular examination revealed a visual acuity of hand movements right eye with inaccurate projection of rays and 6/18 improving with pin hole to 6/6 N6 in his left eye. Slit lamp biomicroscopy revealed a sluggishly reacting pupil and blood stained aqueous filling the anterior chamber (Fig. 1). The intraocular pressure measured by the non contact air puff tonometer was 10 in the right and 11 in the left. Indirect ophtalmoscopy showed dense fresh vitreous haemorrhage precluding visualization of the fundus in the right eye. The fundus of the left eye appeared normal. Fluorescein fundus angiography of the left eye was normal (Fig. 2a &b). B Scan ultrasonography showed evidence of vitreous haemorrhage with large subretinal haemorrhage not involving the macula (Fig. 3). A diagnosis of peripheral exudative and haemorrhagic chorioretinopathy in the elderly (PEHCRE) with subretinal and vitreous haemorrhage was made. The patient was advised conservative treatment with advice to restrict physical activity. The guarded visual prognosis and the need for follow up with serial B scan USG was explained.

The patient reported for review after a month. He had a visual acuity of hand motion with inaccurate
projection in the right eye, clear aqueous, no anterior chamber reaction, a tension applanation reading of 8 mm Hg in the right and the fundus view was obscured by organised vitreous blood. B Scan ultrasonography showed total posterior vitreous detachment, no evidence of retinal detachment and peripheral subretinal blood. He underwent parsplana vitrectomy right eye. The procedure was uneventful. There was total PVD and organised yellow subretinal blood peripherally. The macula appeared normal and hence a good prognosis was expected. Over the area of organised subretinal blood peripherally a retinal tear was noticed through which khaki coloured degenerated blood products were coming out. Laser barrage as well as peripheral cryo was performed although the resultant retinal reaction was mild due to the presence of subretinal blood.

On the first post operative day, the vision was hand motion, there was 3+ flare and cells in the anterior chamber and a 1 mm khaki coloured hypopyon (Fig. 4). Tonometry was 15 mm Hg right eye and only fundal red glow could be obtained on indirect ophthalmoscopy. Anticipating ghost cell glaucoma, topical dorzolamide was started along with the routine postoperative medications. The hypopyon progressively increased and by the 5th postoperative day it filled half of the anterior chamber (Fig. 5). There was no fundus view and the intraocular pressure was 11 (RE). Conservative treatment was continued with the decision to perform an anterior chamber wash and vitreous lavage if the level of the khaki coloured hypopyon increased.

Five days later the patient reported with the hypopyon filling the anterior chamber, a tonometry value of 11 on a single antiglaucoma medication and no pain. AC wash and vitreous lavage was performed under local anesthesia. There was good red glow both intraoperatively and for two weeks into the post operative period (Fig. 6 a, b, c). This quiescent period was followed by recurrence of khaki coloured deposits in the anterior chamber although the patient is asymptomatic at 3 months follow up (Fig. 7 a & b).
Fig. 6. (a, b, c) showing khaki coloured cells in AC after 2 weeks of AC wash

Fig. 7. (a, b) Khaki coloured cells presenting in the anterior chamber at 3 months postoperatively

Discussion

Peripheral exudative haemorrhagic chorioretinopathy (PEHCR) was first described by Annesely 5 and later by Shields 6. Classical description includes lesions characterized by blood either subretinal or at the sub RPE level located anterior to the equator and may be associated with massive vitreous blood 7. 8% of cases with a diagnosis of uveal melanoma have PEHCR 6 as the simulating lesion. Hence this condition is more common than is generally thought of and can lead to temporary or permanent loss of sight in its more advanced stages. This condition should be kept in mind while evaluating spontaneous vitreous haemorrhage or any posterior segment lesion in the elderly. The anticoagulative status of these patients should be taken into consideration if active disease is identified, as there is a risk of massive subretinal haemorrhage. Our patient with acute onset of massive vitreous haemorrhage and peripheral subretinal blood was advised conservative treatment on the diagnosis of PEHCR. Preoperatively itself he had blood staining of aqueous indicating migration of blood cells into the anterior chamber.

The exact incidence of ghost cell glaucoma following vitreous haemorrhage surgery has never been assessed. It may occur a few days after the procedure and has been reported to occur even up to 4 years after surgery 8. The precise mechanism by which the degenerate RBC gains access to the anterior chamber is unclear in a phakic eye 7, 8, 9. Typically the patients presents with pain and a mildly inflamed eye. Perilimbal congestion, variable degree of corneal oedema, khaki coloured cells in the anterior chamber that are out of proportion to the flare and a classical candy – stripe double layered pseudohypopyon are pathognomonic of their condition. Keratic precipitates are absent but large clumps of khaki coloured cells can stick on to the corneal endothelium. Tan coloured cells in the anterior chamber, angle and vitreous are seen. When the diagnosis is unclear, pathological evaluation may be extremely helpful in confirming the diagnosis. Examination of wet preparations of aqueous and vitreous fluid by phase contrast microscopy 9 can provide immediate confirmation of the clinical diagnosis.

The disease is often self limited. Medical treatment of increased IOP is normally sufficient. Surgical options include anterior chamber lavage, vitrectomy and trabeculectomy 10. A rise of intraocular pressure was not observed in our patient probably due to the fact that he had been or topical Dorzolamide eye drops from the first post operative day.

Regardless of its low incidence rate (0.05%) 11, 12 post vitrectomy endophthalmitis should never be overlooked. When in doubt it is better to err on the side of postoperative infection and proceed with intravitreal antibiotics after a vitreous tap.

The presence of the pathognomonic multilayered hypopyon in a patient with history of longstanding vitreous haemorrhage preoperatively should raise the suspicion of ghost cell glaucoma.

References