Original Article

Exploration of the Most Frequent Cause of Retrohyaloid Hemorrhage in Adult Patients

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DOI: https://doi.org/10.3329/jafmc.v21i1.83941

Abstract

Background: Retrohyaloid hemorrhage usually occurs at the interface between the posterior hyaloid and inner limiting membrane (ILM). This usually leads to severe visual impairment because of their specific location for the macular region.

Objective: To see the most frequent causes of retrohyaloid hemorrhage in adult patients.

Methods: Twenty four eyes of 24 cases were evaluated in Combined Military Hospital Dhaka from July 2020 to June 2023. Patients presented with sudden profound painless loss of vision with varieties of causative factors like constipation, coughing, pregnancy, uncontrolled diabetes, hypertension, blood disorders and strenuous exercise. Patient geographical data along with description of retrohyaloid hemorrhage were recorded in predefined data sheet.

Results: Retrohyaloid haemorrhages were clinically diagnosed in 24 eyes of 24 patients (median age 32 years). Age limit were 05 years to 70 years. Best corrected visual acuity was grossly impaired in all patients because of involvement of central macular area. Among those, only two patients were presented with history of valsalva due to constipation and weight lifting. Eight (33.33%) patients were presented with retrohyaloid hemorrhage with uncontrolled diabetes with features of proliferative diabetic retinopathy among the detectable cases. Blood disorders were the cause of retrohyaloid hemorrhage in 4(16.17%) patients. One patient was presented with third pregnancy. Rest of the patients had no identifiable cause. Twenty eyes were treated with YAG Laser hyaloidotomy resulted in excellent visual recovery.

Conclusion: Retrohyaloid hemorrhage often occur in a specific clinical context and can lead to severe visual impairment in adult patients. Though there are varieties of risk factor, uncontrolled diabetes with features of proliferative diabetic retinopathy is the significant frequent cause of retrohyaloid hemorrhage.

Keywords: Retrohyaloid, Valsava, Diabetes, Retinopathy.

Introduction

Retrohyaloid hemorrhage usually occurs at the space between the posterior hyaloid membrane and inner limiting membrane (ILM). This usually leads to profound visual disturbance due to their specific location for the central macular area.

There are multiple causes of subhyaloid hemorrhage over macular area. Among those, the most common primary causes are valsalva retinopathy and terson syndrome.[1] In addition to these, there are multiple causes which are related to vascular causes and few systemic diseases also. The most frequent vascular diseases are arteriosclerosis, retinal artery or vein occlusion, hypertension, chorioretinitis, diabetic retinopathy, retinal macroaneurysm etc. Other systemic unusual causes are shaken baby syndrome, spontaneously, trauma or age related macular degeneration.[2]

Considering the time of presentation, retrohyaloid hemorrhage may be also presented with vitreous hemorrhage due to entry of blood from subhyaloid space into vitreous cavity. Sometimes they may remain dispersed in whole vitreous cavity or may be settle down at inferior part of vitreous cavity. This bleeding may come from preexisting blood vessels over the retinal surface or any other structures of surrounding retina. By giving proper efforts to control the most frequent causes of retrohyaloid hemorrhage, we can reduce chance of it. There are few articles describing causes of retrohyaloid hemorrhage which are not mostly matched with clinical scenario as complications of diabetes have been increased more. So we investigated the most frequent cause of retrohyaloid hemorrhage in this study.

Materials and Methods

A consecutive series of 24 eyes of 24 cases were evaluated in Combined Military Hospital Dhaka from July 2020 to June 2023. Patients presented with sudden profound painless loss of vision with varieties of causative factors like constipation, coughing, pregnancy, uncontrolled diabetes, hypertension, blood disorders and strenuous exercise. Inclusion criteria were preretinal hemorrhage in spindle shaped, age limit 05 years to 70 years. Exclusion criteria were history of trauma, previous recent ocular surgery within 3 months.

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Preoperative best-corrected visual acuity (BCVA) was measured using a standard snellen acuity chart at a distance of 6m. Each patient underwent a thorough anterior segment evaluation with slit lamp and retinal examination using a binocular indirect ophthalmoscope. The medical and ophthalmological history of each individual was recorded. Patient geographical data along with description of retrohyaloid hemorrhage were documented in predefined data sheet.

Results

In this retrospective study, Retrohyaloid haemorrhages were clinically diagnosed in 24 eyes of 24 patients (median age 32 years). Most of the patients were male (70.83%). Vision was severely impaired in all patients because of a premacular location of the haemorrhage. Among those, two patients were presented with history of valsalva due to constipation and weight lifting. Eight patients were presented with retrohyaloid hemorrhage with uncontrolled diabetes with features of proliferative diabetic retinopathy. Blood disorders were the cause of retrohyaloid hemorrhage in 4(16.17%) patients. Rest of the patients (37.50%) had no definite identifiable cause.

Table-I: Apparent causes of Retrohyaloid hemorrhage

Causes	n	%
Valsalva	02	08.33
Diabetes	08	33.33
Pregnancy	01	04.67
Blood disorders	04	16.17
No identifiable cause	09	37.50

One patient was presented with third pregnancy. Twenty eyes were treated with YAG Laser hyaloidotomy resulted in excellent visual recovery.

Only one lesion of retrohyaloid hemorrhage is usually involving preferably macular region. But when there are multiple lesions, different focus of retrohyaloid hemorrhage may involve different location, some of which may spare part of macular region. Sometimes such kind of single or multi lesion may be associated with other retinal vascular changes. These are more prominent in case of diabetic patient with features of proliferative diabetic retinopathy.

Thirteen (54.17%) cases had single lesion of retrohyaloid hemorrhage involving premacular region. Five (20.83%) cases present with multifocal lesion of retrohyaloid hemorrhage, some of which present beyond the vascular arcades. Six (25.00%) cases presented with associated mild to moderate vitreous hemorrhage.

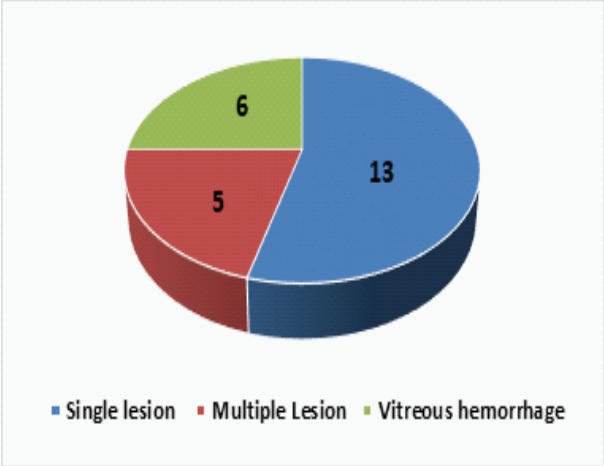

Figure-1: Distribution of number of retrohyaloid hemorrhage lesion with associated vitreous hemorrhage.

In case of proliferative diabetic retinopathy with retrohyaloid hemorrhage, along with YAG Laser hyaloidotomy, pan retinal photocoagulation was done in such all cases.

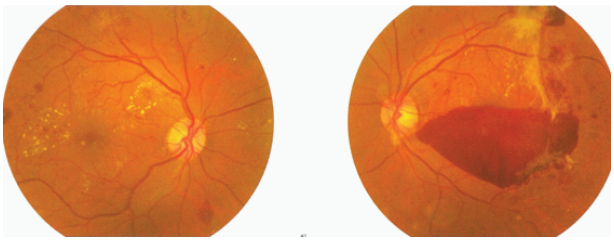

Figure-2: Proliferative diabetic retinopathy in both eyes with distorted retrohyaloid hemorrhage obscuring most of the part of macula.

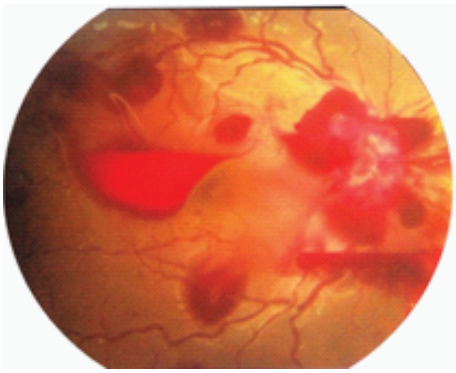

Figure-3: Multiple lesion of retrohyaloid hemorrhage with mild vitreous hemorrhage in an anaemic patient.

Discussion

Retrohyaloid hemorrhage typically presents as a sudden visual loss in an otherwise healthy individual, caused by a premacular haemorrhage secondary to a Valsalva manoeuvre. Krol P et al described that the most frequently reported causes of Valsalva manoeuvre include vomiting, coughing, strain and physical activities.[2] Multple articles shown the pathophysiology

of retrohyaloid hemorrhage but Iijima et al described that sudden increase in pressure in the intraocular veins, secondary to an increased intrathoracic pressure, causes spontaneous rupturing of perifoveal capillaries.[3] This description was supported by another study of Heydenreich A et al.[4]

Proliferative diabetic retinopathy may be featured with neovascularization in any part of retina along with hard exudates, cotton wool spot, occluded vessels, fibrosis, fibrovascular proliferation even with tractional retinal detachment. Meier P et al described in their study that those cases also may be present with retrohyloid hemorrhage in macular region or multiple lesion in different part of retina.[5]

Kaynak S et al have found that terson's syndrome encompasses any intraocular haemorrhage associated with intracranial subarachnoidal haemorrhage and increased intracranial pressures. Premacular haemorrhages have been reported in up to 39% of casesoften with a location beneath the ILM.[6]

Blood dyscrasia has been associated with premacular haemorrhages in a number of reports.[4-6] The combination of severe anaemia and thrombocytopenia has been hypothesised to cause, respectively, reduced endothelial cell integrity of the retinal vasculature and reduced coagulability, allowing blood to leak through the jeopardised endothelial barrier and Nd YAG Laser capsulotomy provides better results in most of the (85%) cases. Ulbig M W et al described that in some patients, no obvious cause can be identified and the retrohyaloid hemorrhage is assumed to be idiopathic.[7] This also compatible with results of this study.

Conclusion

Retrohyaloid hemorrhage often occurs in a specific clinical context and can lead to severe visual impairment in adult patients. Though there are varieties of risk factor, uncontrolled diabetes with features of proliferative diabetic retinopathy is the significant frequent cause of retrohyaloid hemorrhage. So in case of retrohyalid hemorrhage management, it also important to search the appropriate cause and go for pan retinal photocoagulation in case of associated proliferative diabetic retinopathy.

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