Research Article

Study of clinical risk factors for vitreous haemorrhage

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Abstract

Background: Vitreous haemorrhage is one of the common causes of visual loss and it is due to number of risk factors. This study aims to establish an early etiology of vitreous haemorrhage in our environment which provides proper treatment to help in early absorption and prevention of complications so as to avoid irreversible damage to sight. **Methods**: A 20 months retrospective review of medical records of patients who admitted in the department of ophthalmology, Gandhi Medical College and associated Hamidia Hospital, Bhopal with vitreous haemorrhage between from April 2010 to December 2011. Demographic data, etiological factors of vitreous haemorrhage and involved eye were amongst the information culled from the records and analysed. **Results:** Seventy five patients were seen over the period under review out of which 78% they were males. The age range was 16-45 years. Vascular disorders (48%) and trauma accounted for 29.33% of all the causes of vitreous haemorrhage. **Conclusion:** vascular disorder is a significant cause of vitreous haemorrhage in our environment affecting the all age group and while considering individual aetiological factors the ocular trauma showed highest incidence. The poor presenting visual acuity reflects the severity of causes of vitreous haemorrhage. Awareness needs to be increased to assess the causes and risk factors of vitreous haemorrhage.

Keywords: Vitreous haemorrhage, Etiology, Vision loss.

Introduction

Vitreous haemorrhage is one of the commonest causes for loss of vision. Vitreous haemorrhage is defined as the presence of extravasated blood within the space outlined by the internal limiting membrane of retina posteriorly and laterally, the non-pigmented epithelium of ciliary body antero-laterally and lens zonules and posterior lens capsule anteriorly [1].

This condition may result directly from retinal tears or neovascularization of the retina or it may be related to bleeding from pre-existing blood vessels in these structures. The vitreous is avascular and inelastic. Pathological mechanisms of vitreous haemorrhage can include haemorrhage from diseased retina, traumatic insult, and/or spread of haemorrhage into the retina and vitreous from any other intraocular sources. Sometimes, it may be reasonable to consider extra ocular etiologies such as blood dyscrasias or leukaemia. Usually, coagulation disorders or anticoagulant therapy does not cause vitreous haemorrhage; however, bleeding from abnormal new vessels or rupture of normal retinal vessels from direct or indirect trauma frequently is associated with vitreous haemorrhage. Bleeding from neovascular and fragile vessels in proliferative diabetic retinopathy, proliferative sickle cell retinopathy, ischemic retinopathy secondary to retinal vein occlusion, and retinopathy of prematurity are among the most common pathological causes of vitreous haemorrhage. Age, race and sex of vitreous haemorrhage have also been found to correspond with the underlying etiology. Patients usually present with a diminution of vision which could be sudden or progressive. Visual acuity depends upon the degree of haemorrhage, dense haemorrhage can reduce vision to 'light perception' in the absence of trauma there is usually no associated pain with VH. Ocular ultrasound scan is most useful investigation in giving information

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regarding the state of the retina when fundoscopy cannot be carried out. Treatment is usually targeted at the underlying cause. Pars plana vitrectomy may be carried out where indicated [1]. This study was planned to analyze vitreous haemorrhage in a retrospective series of admitted cases in the department of ophthalmology, Hamidia hospital and Gandhi Medical College, Bhopal to establish an early etiology of vitreous haemorrhage in our environment which provides proper treatment to help in early absorption and prevention of complications so as to avoid irreversible damage to sight. This would further help in postulating strategy for its prevention and in decreasing incidence of blindness in our country.

Materials and Methods

This study is a retrospective non comparative study of 75 patients who admitted patients in the department of ophthalmology, Gandhi Medical College and associated Hamidia Hospital, Bhopal. Data was analysed from the medical records of patients who admitted with vitreous haemorrhage between from April 2010 -to-December 2011. Analysis of different Parameters including the patients' demographic data (age, sex), aetiological factors and involved eye were done.

Result

Seventy five patients were included in the study.

Demographic And Baseline Characteristics- In the present study the incidence of vitreous haemorrhage was greatest between 16-45 years (68%). Male preponderance was observed in the present series, 78% patients were male. Average male: female ratio is 1:0.41 (Table 1). 61.33% patients belong to lower socio-economic group, 36.0%to middle and 2.67%to upper socio-economic group according to kuppuswamy' socioeconomic classification (Table 2). 94.67% cases show unilateral involvement (Table 3).

Table 1: Table showing age and sex distribution of cases of vitreous haemorrhage

S.No	Age group in years	Sex		Total	Male/female ratio
		Male	Female		
1	0-15	2	3	5	1:15
2	16-30	27	6	33	1:0.22
3	31-45	13	5	18	1:0.38
4	46-60	8	7	15	1:0.87
5	Above 60	3	1	4	1:0.33
Total		**53**	**22**	**75**	**1:0.41**

Table 2: Table showing distribution of cases of vitreous haemorrhage in different socio-economic groups

Sr. No	Socio-economic group	No of cases	Percentage
1	Lower	46	61.33%
2	Middle	27	36.0%
3	Upper	2	2.67%

Table 3: Table showing distribution of cases of vitreous haemorrhage as per involvement of eye

Sr. No	Eye involved	No of cases	Percentage
1	Unilateral	71	94.67%
I	Right eye	36	
Ii	Left eye	35	
2	Bilateral	4	5.33%

Etiology- Maximum cases (48.0%) belong to the group of vascular disorders (48%) which included Perivasculitis (26.66%), diabetes mellitus (17.33%)and hypertension(4.0%). Next commonest cause was ocular trauma(29.33%) other causes was retinal detachment (5.33%) uveitis (5.33%) blood dyscrasis (4%) and papilloedema (2,66%) in 4 cases (5.33%) the diagnosis could not be established(Table 4).

Table 4: Table showing Etiological distribution of cases of vitreous hemorrhage

Sr. No	Etiology	No of cases	Percentage
1	Vascular disorders	(36)	48%
I	Perivasculitis	20	26.66%
Ii	Diabetes mellitus	13	17.33%
Iii	Hypertension	3	4.0%
2	Ocular trauma	22	29.33%
3	Retinal detachment	4	5.33%
4	Uveitis	4	5.33%
5	Blood dyscrasias	3	4.0%
6	Papilloedema	2	2.66%
7	Uncertain	4	5.33%

Correlation Of Etiology With Age And Sex- Under the age group of 45 ocular traumas (25.33%), Perivasculitis (24%) were the common aetiological factors. while diabetes mellitus (13.33%) was the commonest factor above 45 yrs (Table 5).

Table 5: Table showing Etiological distribution of cases of vitreous hemorrhage in different age groups

Sr. No	Etiology	0-15	16-30	31-45	46-60	Above 60
1	Vascular disorders					
I	Perivasculitis	-	12	6	2	-
Ii	Diabetes mellitus	-	1	2	7	3
Iii	Hypertension	-	1	1	1	-
2	Ocular trauma	3	10	6	2	1
3	Retinal detachment	-	2	1	1	-

Table 6: Table showing Distribution of cases of vitreous hemorrhage in different etiological groups

Sr. No	Etilogy	No of cases	
		Male	Female
1	Vascular disorders	(28)	(8)
I	Perivasculitis	20	0
Ii	Diabetes mellitus	7	6
Iii	Hypertension	1	2
2	Ocular trauma	15	7
3	Retinal detachment	2	2
4	Uveitis	2	2
5	Blood dyscrasias	1	2
6	Papilloedema	2	0
7	Uncertain	3	1

Male preponderance was observed in vascular disorders and ocular trauma. The male to female ratio was 3.5:1 in vascular disorders and2.1:1 in ocular trauma. In Perivasculitis all patients were males. No significant difference was observed in other aetiological group (Table 6).

Discussion

The prevalence of vitreous haemorrhage related to the frequency of the causative disease and this depends on the study population, mean age of patients and the geographical region where the study is conducted.

The incidence of vitreous haemorrhage was greatest between 15-45 years (68%). Male preponderance was observed in the present series, 78% patients were male. These observations are similar to those made Lean and Gregor [2]. This higher incidence can be attributed to the more implication of young males in ocular trauma and Perivasculitis, which formed the major aetiological groups in this study.

A higher incidence of vitreous haemorrhage was observed in lower socio-economic group comprising mainly of factory workers, farmers and labourers. This was observed specially on Perivasculitis and ocular trauma. This can be explained by high risk of exposure to trauma, under nutrition and poor environmental hygiene.

Etiology- Results show that vascular disorders (48%) and ocular trauma (29.33%) were the leading causes. While considering individual aetiological factors the ocular trauma showed highest incidence. Perivasculitis was the commonest cause among vascular disorders, followed by diabetes and hypertension. Other less common causes included uveitis, retinal department, blood dyscrasias and papilloedema.

These figures have been compared with observations made by other authors in the Table 7.

Table 7: Table showing the result of comparison made by others authors

S. No.	Etiology	Morse et al. 1974 (%)	Lean & Gregor 1980 (%)	Jampol LM et al. 1994 (%)	Present Study (%)
1	Perivasculitis	-	-	-	26.6
2	D.M.	84.0	7.0	19.1	17.37
3	Hypertension	2.0	1.0	-	4.0
4	Trauma	-	12.0	18.8	29.3
5	Uveitis	1.0	-	-	5.33
6	R.D.	28.0	44.0	7.10	5.33
7	Blood Dyscrasias	1.0	1.0	0.2	4.0
8	Papilloedema	-	-	-	2.6
9	Undiagnosed	3.0	4.0	7.6	5.3

Morse et al did not include traumatic vitreous haemorrhage in his study [3]. Morse et al and Lean and Gregor, jampol LM et al not describe Perivasculitis as a cause of vitreous haemorrhage [4, 2].

Vascular Disorders- In the present series, the incidence of Perivasculitis was higher. These findings are not consistent with observation of Morse et al (1974) and Lean and Gregor (1980), Kumar D et al 1995 [3, 2, 5]. This difference can be attributed to higher incidence of infectious diseases i.e. tuberculosis and syphilis in India as a result of malnutrition and poor hygienic conditions. The incidence of diabetes was 17.3% much lower than that observed by Morse, Dana et al but higher than incidence in Lean and Gregor series [3,6,2]. This discrepancy is due to different mode of selection of cases. Hypertension was reported in 4.0% cases of present series. The findings are consistent with that of other authors [3, 2].

Ocular Trauma-Ocular Trauma was found to be responsible for 29.33% cases of vitreous haemorrhage, out of which 68.0% were caused by blunt trauma. While considering individual aetiological factors the ocular trauma showed highest incidence. Rotimi et al also reported trauma to be the commonest cause of vitreous haemorrhage in Western Nigeria this was followed by proliferative sickle cell retinopathy in their series [7]. Higher incidence than Jampol LM et al can be explained by the fact that cases of old injuries are also included in the present series [4].

Retinal Detachment-In 5.33% cases of the present series the cause of haemorrhage was found to be the retinal detachment with or without retinal tear. This figure was similarly to observations of Jampol LM et al (1995) [4].

Other Causes-The incidence in uveitis, papilloedema and blood dyscrasias, PVD are roughly similar to observations made by others [1, 8, 9]. The other rare causes include Terson's syndrome and Valsalva retinopathy [10]

Correlation with age and sex-In the present study ocular trauma and Perivasculitis were the leading aetiological factors under 45 year; age, whereas diabetes mellitus predominated above 45 years. Male preponderance was observed among the cases of Perivasculitis and trauma, whereas for other disease the ratio was almost 1:1.

Ocular Preponderance-In the present series unilateral involvement was seen in 94.6% cases. Bilateral involvement was seen only in 5.33% cases which were of diabetes and Perivasculitis, an observation similar to Dana et al. (1993) [6]. Management of Vitreous haemorrhage involves managing the underlying cause.

Conclusion

In all patients presenting with blurring of vision, indirect ophthalmoscopy should be carried out to detect peripheral lesion and vitreous haemorrhage thus ensuring early treatment and better prognosis.

A detailed history and thorough examination including ophthalmoscopy of the fellow eye helped in correlating aetiological diagnosis of vitreous haemorrhage.

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