

# Study of clinical profile and management of vitreous haemorrhage

Raghuwanshi S<sup>1</sup>, Rashmi Kumar<sup>2</sup>, Raghuwanshi SK<sup>3</sup>

<sup>1</sup>Dr Sapna Raghuwanshi, Senior Resident, Department of Ophthalmology, L N Medical College Bhopal, <sup>2</sup>Dr Rashmi Kumar, Department of Ophthalmology, Assistant Professor, L N Medical College Bhopal, <sup>3</sup>Dr Shivkumar Raghuwanshi, Associate Professor, Department of ENT, L N Medical College Bhopal, MP, India

**Address for Correspondence:** Dr Sapna Raghuwanshi, Senior Resident, Ophthalmology, L N Medical College Bhopal, E-mail: drsapnaraghuwanshi@gmail.com

## Abstract

**Background:** Vitreous haemorrhage is one of the common causes of visual loss. This study reports a clinical profile and management of vitreous haemorrhage in our environment, which prevent complications so as to avoid irreversible damage to sight. **Methods:** Medical records of all patients presenting with vitreous haemorrhage from April 2010 -to- December 2011 were retrospectively reviewed. **Results:** Seventy five patients were reviewed 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. Sudden loss of vision (60.0%) and red curtain falling in front of eye (17.33%) were the main complaints. Patients treated by medical line of treatment showing an overall recurrence rate of 55%. Amongst the different subgroups of medical treatments the patients treated by systemic steroids showed the best result. Patients treated with photocoagulation the recurrence was 10%. Retinal and vitreoretinal fibrosis, neovascularization and were common complications. **Conclusion:** Awareness needs to be increased to assess the causes and risk factors of vitreous haemorrhage. Specific line of therapy was instituted in cases where etiology was established resulting in early resolution of vitreous haemorrhage, reduced recurrence rate and useful visual recovery.

**Keywords:** Vitreous haemorrhage, Etiology, Vision loss

## Introduction

Vitreous hemorrhage is one of the common causes for loss of vision. Vitreous hemorrhage 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 from retinal tears or neovascularization of the retina or may be related to bleeding from preexisting blood vessels in the retina [2, 3, 4]. Age, race and sex of vitreous haemorrhage have been found to correlated with the underlying disease.

Vitreous hemorrhage can present with a diminution of vision which could be sudden or progressive, visual haze, smoke signal, and photophobia, perception of

shadows or cobwebs or appearance of floaters. Rarely pain can be associated like in neovascular glaucoma or in post-traumatic vitreous hemorrhage. If flashes or light precede the symptoms, posterior vitreous detachment or retinal breaks should be considered. Visual acuity usually depends upon the degree of haemorrhage.

Ocular ultrasound scan is most useful investigation in giving information regarding the state of the retina when fundus examination cannot be carried out [1, 5].

Complications and sequelae of vitreous hemorrhage include temporary or permanent loss of vision, Retinitis proliferans, vitreous membrane formation, tractional retinal detachment, secondary glaucoma, hemosiderosis bulbi with photoreceptor toxicity, severe floaters are other important complications after vitreous hemorrhage[7].

The management options of vitreous hemorrhage include observation, laser photocoagulation and pars

Manuscript received: 24<sup>th</sup> Jan 2016  
Reviewed: 04<sup>th</sup> Feb 2016  
Author Corrected: 12<sup>th</sup> Feb 2016  
Accepted for Publication: 22<sup>nd</sup> Feb 2016

plana vitrectomy. The choice depends on several factors related to individual patient.

This study was planned to analyze the demographic profile, clinical presentation, complications and treatment modalities of vitreous hemorrhage in patients of all age groups. This would further help in decreasing incidence of blindness in our country.

## Materials and Methods

Medical records of all patients who presented with vitreous haemorrhage between April 2010-to-December 2011 in department of ophthalmology, Gandhi Medical College and associated Hamidia Hospital, Bhopal were retrospectively reviewed. Vitreous haemorrhage of all causes was included. A detailed analysis of records, including patients' demographic data (age, sex, socioeconomic status), etiological factors, history, presenting symptoms, associated ocular and systemic conditions, investigation reports, B-scan ultrasound findings, involved eye, complications, best corrected visual

acuity at presentation and at final visit were noted involved eye, management details. Management options were include close observation, laser photocoagulation, and systemic corticosteroids administration. For evaluation of management of these patients the cases were divided into three groups.

- Cases where conservative management or no treatment was given.
- Nonsurgical treatment which include laser photocoagulation.
- Surgical management

The first group was further divided into 3 sub-groups.

- Anti tubercular treatment, ii) Systemic steroids, iii) Only symptomatic

Patients who need vitrectomy were referred to higher center for further management and later follow up in Gandhi Medical College and associated Hamidia Hospital, Bhopal.

## Result

Total seventy five patients were included in the study. 16 patients were lost to follow up at various stages of follow up. Overall incidence of vitreous haemorrhage was more common between 16-45 years (68%). Male preponderance (78%) was observed in the present study. Average male: female ratio is 1:0.41 (Table 1). Incidence of vitreous haemorrhage was higher in lower socio-economic group (61.33%), 36.0% belongs to middle and 2.67% patients belongs to upper socio-economic group according to kuppuswamy' socioeconomic classification (Table 2). In present study Unilateral eye involvement was more common (94.67%) (Table 2). Vitreous haemorrhage was more common in urban population. Urban –rural ratio was 1:0.92 (Table 2). In present study spontaneous causes was the most common cause of vitreous haemorrhage in 53 (70.66%) patients. Among spontaneous causes maximum cases belong to the group of vascular disorders in 36 (48%) patients. Perivasculitis was the most common etiology in 20 (26.66 %) patients among the vascular disorder. Ocular trauma was responsible for vitreous haemorrhage in 22(29.33%) patients (Table 2).

**Table 1: Table showing age and sex distribution of cases of vitreous hemorrhage**

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
<b>Total</b>		<b>53</b>	<b>22</b>	<b>75</b>	<b>1:0.41</b>

**Presenting complaints-** In present study sudden loss of vision (60.0%) and red curtain falling in front of eye (17.33%) were the main complaints. Gradual loss of vision was noticed by 6.67% cases that showed localized vitreous hemorrhages especially at the posterior pole. In 8.0% cases the detection was accidental during routine ophthalmoscopy of examination .45.3% of the cases was presented within one week, 80% within one month if their symptoms (Table 3).

**Table 2- Table showing Demographic features of vitreous hemorrhage at presentation.**

Trait	No of cases (%)
1. Laterality	
Unilateral	71 (94.67%)
Bilateral	4(5.33%)
Socioeconomic status	
Lower	46(61.33)
Middle	27(36.0)
Upper	2 (2.67)
Habitat	
Rural	36 (48.0%)
Urban	39(52.0%)
Etiology	
Spontaneous	53 (70.66)
1. Vascular disorder	36(48)
i) Perivasculitis	20(26.66)
ii) Diabetes mellitus	13 (17.33)
Iii) Hypertension	3 (4)
2. Others	17 (22.66)
Trauma	22 (29.33)

**Table No 3: Table showing various symptoms with their duration at the time of presentation in cases of vitreous hemorrhage**

S No		Duration of Symptoms (weeks)				Total No	%
		Less than 1	1-4	5-8	More than 8		
1	Sudden loss of vision	10	24	3	8	45	60.0%
2	Red curtain in front of eye	12	0	0	1	13	17.33%
3	Blurring of vision ;sudden floater	5	0	0	1	6	8.0%
4	Gradual loss of vision	1	2	0	2	5	6.67%
5	No ocular complaint	6	0	0	0	6	8.0%
<b>Total</b>		<b>34</b>	<b>26</b>	<b>3</b>	<b>12</b>	<b>75</b>	

**Management:** In the present study medical treatment was given in 49 patients out of which 27 cases showed recurrence (55%). Amongst the different subgroups of medical treatment the patients treated by systemic steroids showed the best results. In patients treated with Photocoagulation the recurrence was 10% (Table 4). In 10 cases vitreous haemorrhage persisted for 6 months and was referred to higher center for vitrectomy but only one patient came for follow up in which no recurrence was observed, so efficacy of surgical management could not be evaluated.

**Table No 4: Showing efficacy of different regimen used in treatment of vitreous hemorrhage.**

S. No	Type of management	No of patients	Resolution	Recurrence	%of recurrence
A	Medical m/m				
1	Anti tubercular therapy	20	5	13	65%
2	Systemic steroids	20	8	9	45%
3	Only symptomatic t/t	9	4	5	53.5%
	Total	49	22	27	55%
B	Photocoagulation	10	9	1	10%

In present study complete absorption was observed in 46 cases out of 59, in 10 cases absorption did not occur till last follow up. Absorption was rapid in cases of ocular trauma (76.0% within 2-4 months ) only 36% cases of perivasculitis showed complete absorption within 4 months .Non absorption was most frequent (37%) in case of diabetes (Table 5). In most of cases (72%) visual acuity at the time of presentation was Hand movement to 2/60 while only 3 cases had vision 6/36 or better. In 1 cases of hypertension vision was not recorded as patient was unconscious. In 4 cases of ocular trauma vision was no perception of light .In 44% of cases visual acuity was better than 6/36 at the time of last follow up. 46% cases of diabetes did not show any improvement (Table 6).

**Table No 5: Table showing time taken for complete absorption in different etiological group after giving necessary treatment.**

(No of cases in which follow up was done -59)

Sr No	Etiology	Time taken for absorption(months)				
		1-2	2-4	4-5	More than 9	Not absorbed
Spontaneous						
1)vascular disorder						
a)perivasculitis		-	7	7	4	1
b)Diabetes		1	3	1	-	3
c)hypertension		1	2	-	-	-
2) others		4	1	1	1	5
Ocular trauma		5	8	2	1	1
<b>Total</b>		<b>11</b>	<b>21</b>	<b>11</b>	<b>6</b>	<b>10</b>

**Table 6: Table showing visual acuity on admission and at last follows up in different etiology group**

No	Etiology	On Admission						On Follow Up					
		* N O P L	* H M	*CF- 2/60	3/60- 6/60	6/36- 6/18	6/12- 6/6	NO PL	HM	CF- 6/60	6/60- 6/36	6/18- 6/12	6/12- 6/6
	Spontaneous												
1	Vascular Disorder	1	10	16	7	-	1	1	3	5	8	8	10
a)	Perivacilitis	-	5	10	4	-	1	-	-	3	3	7	7
b)	*DM	1	5	4	3	-	-	1	3	2	5	1	1
c)	*HTN	-	-	2	-	-	-	-	-	-	-	-	2
2	Others	2	10	2	1	1	-	3	7	2	-	3	1
	Ocular trauma	4	10	6	1	-	1	4	2	3	3	1	9
	<b>Total</b>	<b>7</b>	<b>30</b>	<b>24</b>	<b>9</b>	<b>1</b>	<b>3</b>	<b>8</b>	<b>12</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>20</b>

\*PL- perception of light, \* HM-hand movement, \*CF- counting finger, \* DM-Diabetes Mellitus,\*HTN-hypertension.

**Complication-** Retinal and vitreoretinal fibrosis, neovascularization and non-absorption were common complications. Complication were minimal in cases of ocular trauma while retinal fibrosis was observed in 36% cases of perivasculitis .non absorption ,rubeosis iridis and secondary glaucoma were observed in cases of diabetes mellitus (Table 7).

In most of cases (72%) visual acuity at the time of presentation was Hand movement to 2/60 while only 3 cases had vision 6/36 or better. In 1 cases of hypertension vision was not recorded as patient was unconscious. In 4 cases of ocular trauma vision was no perception of light .In 44% of cases visual acuity was better than 6/36 at the time of last follow up. 46% cases of diabetes did not show any improvement (Table 6).

**Table 7: Table showing incidence of complication in vitreous hemorrhage**

(No of cases in which follow up was done -59)

S No	Complication	No of cases	%
1	Fibrosis	15	25.42%
	i)Retinal	9	15.25%
	ii)vitreoretinal	6	10.17%
2	Neovascularization	12	20.33%
	i)retinal	4	6.78%
	ii)vitreoretinal	6	10.17%
	Iii)iris	2	3.38%
3	Non absorption	10	16.94%
4	Fluid vitreous	4	6.78%
5	Retinal detachment	3	5.08%
6	Secondary glaucoma	2	3.38%
7	Macular degeneration	2	3.38%
8	Vitreous membrane	2	3.38%

## Discussion

The prevalence of vitreous haemorrhage usually 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. In our study, males outnumbered females. These observations are similar to those made Lean and Gregor [6]. This higher incidence among males was probably due to greater prevalence of trauma and perivasculitis. Overall the incidence of vitreous haemorrhage was greatest between 16-45 years (68%). Incidence of vitreous haemorrhage was higher in lower socio-economic group. This can be explained by high risk of exposure to trauma, under nutrition and poor environmental hygiene. In present study Unilateral eye involvement was more common (94.67%), an observation similar to Dana et al. [7]. Vitreous haemorrhage was more common in urban population. Urban –rural ratio was 1:0.92.

Results showed that vascular disorders (48%) and ocular trauma (29.33%) were the leading causes. Perivasculitis was the commonest cause among vascular disorders, followed by diabetes and hypertension. In the present series, the incidence of Perivasculitis was higher. These findings are not consistent with observation of Morse et al and Lean and Gregor, Kumar D et al [6, 8, 9]. This difference may be attributed to higher incidence of infectious diseases i.e. tuberculosis and syphilis in India as a result of malnutrition and poor hygienic conditions. In present study ocular Trauma was found to be responsible for 29.33% cases of

vitreous haemorrhage. While considering individual etiological factors the ocular trauma showed highest incidence. Rotimi et al was 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 [10].

**Clinical presentation-**Lean and Gregor found that sudden appearance of floaters with or without loss of vision were main complaints [6]. In the present study sudden loss of vision, with or without appearance of red curtain in front of eye were the main complaints. Most of the patients (45.3%) presented within a week, 80.0% within one month. This early presentation can be attributed to sudden onset of visual symptom and associated complaints due to ocular trauma.

**Treatments modalities-**Assessment of efficacy of management was difficult in present series because of: Limited number of cases, Unpredictable course of vitreous; haemorrhage, the pattern of absorption was variable in different etiological groups. In our study it was observed that in the group of patients treated only by Medical management overall recurrence rate was 55%. Among the various sub groups, the patients treated by systemic steroids showed the best result with a recurrence rate of 46.6%. In our study was 10% recurrence was noted in patients treated with photocoagulation. Other author also found the good results by photocoagulation [7, 11, 12, 13]. In this study there were 10 cases where vitreous haemorrhage persisted for 6 month. All these cases were referred to

higher for vitrectomy but only one patient came fall follow up in which no recurrent was observed. So efficacy of surgical management was not evaluated. Apart from ophthalmoscopy changes another very important parameter was visual acuity which was a subjective test for assessment of rate of absorption and efficacy of management. This cannot be taken as a yardstick as it is subject to changes caused by pre-existing retinal pathology and subsequent complications of vitreous haemorrhage. In cases of perivasculitis the visual recovery was good as in most of the cases it was possible to find out the cause and specific treatment was given. In diabetic retinopathy the visual recovery was not satisfactory probably because of preexisting vitreoretinal fibrosis and associated maculopathy, and also because of high incidence of non-absorption.

**Complication-**In the present study retinal and vitreoretinal fibrosis was observed in 15 cases and hence was the commonest complication. It was more common when the haemorrhage was localized to posterior pole and was probably the result of metaplastic change in endothelium of vessels. Vitreous membrane formation was found in 2 cases and traction retinal detachment was seen in three cases, this is in accordance to the view formed by other workers [14]. In the present series rubiosis of iris was observed in 2 cases, one each of diabetes and perivasculitis.

Non absorption was observed in 12% cases out of which two cases were of diabetes mellitus and one perivasculitis, while in remaining 4 cases diagnosis remained obscure. In these cases larger amount of blood with clot formation and diseases underlying retina might be the cause. It was not possible to find out the exact cause for non-absorption as the facilities for sophisticated investigations were not available.

## Conclusion

A detailed history and thorough examination including ophthalmoscopy of the fellow eye helped in correlating etiological diagnosis of vitreous haemorrhage. Specific line of therapy was instituted in cases where etiology was established resulting in early resolution of vitreous haemorrhage, reduced recurrence rate and useful visual recovery. The photocoagulation was found to be effective in our analytic study and should be tried especially in cases of retinal perivasculitis and diabetes mellitus to prevent recurrence of vitreous haemorrhage. Time taken for absorption of vitreous haemorrhage was variable, late absorption has also been observed

therefore the treatment should be continued for six months or more.

**Funding:** Nil,

**Conflict of interest:** None.

**Permission of IRB:** Yes

## References

1. Spraul CW, Grossniklaus HE. Vitreous Hemorrhage. *Surv Ophthalmol.* 1997 Jul-Aug;42(1):3-39.
2. Green RL, Byrne SF. Diagnostic ophthalmic ultrasound. In Ryan SJ, editor. *Retina*, 3rd ed. St.Louis: CV Mosby, 2001. Vol 1. pp 245-51.
3. Panton RW, Goldberg MF, Farber MD. Retinal arterial macroaneurysms: risk factors and natural history. *Br J Ophthalmol.* 1990 Oct;74(10):595-600.
4. Chang TS, Aylward GW, Davis JL, Mieler WF, Oliver GL, Maberley AL, Gass JD. Idiopathic retinal vasculitis, aneurysms, and neuro-retinitis. *Retinal Vasculitis Study. Ophthalmology.* 1995 Jul;102(7):1089-97.
5. Nischal KK, James JN, McAllister J. The use of dynamic ultrasound B-scan to detect retinal tears in spontaneous vitreous haemorrhage. *Eye (Lond).* 1995;9 ( Pt 4):502-6.
6. Lean JS, Gregor Z. The acute vitreous haemorrhage. *Br J Ophthalmol.* 1980 Jul;64(7):469-71.
7. Dana MR, Werner MS, Viana MA, Shapiro MJ. Spontaneous and traumatic vitreous hemorrhage. *Ophthalmology.* 1993 Sep;100(9):1377-83.
8. Morse PH, Aminlari A, Scheie HG. Spontaneous vitreous hemorrhage. *Arch Ophthalmol.* 1974 Oct;92(4):297-8.
9. Kumar D, Saxena RC, Saxena S. Vitreous haemorrhage in Eales' disease. *Afro-Asian J Ophthalmol* 1995; 13: 19-22.
10. Rotimi-Samuel A, Aribaba OT, Mbadugha CA, Ilo AO, Onakoya AO, Akinsola FB, Adefule-Ositelu AO. Etiology of Vitreous Haemorrhage in Guinness Eye Centre, Lagos University Teaching Hospital over a Two Year Period (June 2007-May 2009). *Nig Q J Hosp. Med* 2010; 20(4): 162-164.
11. Early Treatment Diabetic Retinopathy Study Research Group. Early photocoagulation for diabetic

retinopathy: ETDRS Report Number 8. *Ophthalmology* 1991; 98: 756-85.

12. Saxena S, Jalali S, Meredith TA, Holekamp NM, Kumar D. Management of diabetic retinopathy. *Indian J Ophthalmol*. 2000 Dec;48(4):321-30.

13. Tinley CG, Gray RH. Routine, single session, indirect laser for proliferative diabetic retinopathy. *Eye*

(Lond). 2009 Sep;23(9):1819-23. doi: 10.1038/eye.2008.394. Epub 2009 Jan 9.

14. Cleary PE, Ryan SJ. Experimental posterior penetrating eye injury in the rabbit. I. Method of production and natural history. *Br J Ophthalmol*. 1979 May;63(5):306-11.

.....  
**How to cite this article?**

Raghuwanshi S, Rashmi Kumar, Raghuwanshi SK. Study of clinical profile and management of vitreous haemorrhage . *Int J Med Res Rev* 2016;4(3):294-300. doi: 10.17511/ijmrr.2016.i03.02.  
.....