

## A Study Of Clinical Profile And Visual Outcome In Patients Undergoing Vitrectomy For Vitreous Hemorrhage

Dr. Akash kumar\*, Dr. Neha Satish Saswade\*\*, Dr. Sujit M. Murade\*\*\*, Dr. Darshana B. Rathod\*\*\*\*, Dr. Bhagyashree Meshram\*\*\*\*\*, Dr. Sneha .T Shah\*\*\*\*\*

\*Fellow In Medical Retina At Shroff Eye Center, New Delhi, \*\*Fellow In Pediatric Ophthalmology At Narayana Nethralaya, Bangalore, \*\*\*Associate Professor, LTMMC, Mumbai, \*\*\*\*Additional Professor, TNMC, Mumbai, \*\*\*\*\*Fellow In Vitreo-Retina At LVPEI, Hyderabad, \*\*\*\*\*House Officer In KEM ,Mumbai, Department Of Ophthalmology, Tertiary Hospital

**Abstract:** Background: Aim & Objective: To study the epidemiology of vitreous hemorrhage in patients presenting without retinal detachment. To study various etiology of vitreous hemorrhage. To study visual outcome in patients with non resolving vitreous hemorrhage required vitrectomy surgery. To study prognostic factors (age, sex, and vitreous hemorrhage in diabetic patients, hypertensive patients, ARMD, Eales diseases) affecting visual outcome in vitreous hemorrhage. Material And Methods: Study included 34 patients out of which 13 have diabetes, 6 have hypertension, 7 have both diabetes and hypertension, 6 have past history of tuberculosis and 2 have no systemic illness. Examination included preoperative and postoperative best corrected visual acuity, slit lamp examination, intraocular pressure, ultrasound B scan and dilated fundus with indirect ophthalmoscope. Result: Majority patients (38.2%) were in the age group of 51-60 years with the mean age 51.35 years. Males [73.5%] had higher incidence of vitreous hemorrhage than females and incidence of vitreous hemorrhage was higher in lower socio-economic group. Diabetes Mellitus and Hypertension were the most common co-morbidities with Proliferative diabetic retinopathy, Eales diseases and Branch Retinal vein occlusion are the important Risk factors for vitreous hemorrhage. Most common presenting symptom of vitreous hemorrhage is sudden loss of vision [52.9%] followed by gradual loss of vision and blurring loss of vision. Patients who received pan retinal photocoagulation and Anti-vegf have better visual outcome post-operatively. Pan retinal photocoagulation, Epiretinal membrane, traction band, macular edema, and choroidal neovascular membrane are the intra operative findings noted intra-operatively. Preoperatively most of the cases of vitreous hemorrhage had visual acuity in the group of Perception of light and finger counting close to face. Post-operatively 15 patients have visual acuity in group of 6/18-6/9. Among them 8 were PDR, 4 cases of Eales disease and 3 were BRVO cases. Visual acuity of 8 cases belongs to group of 6/60 – 6/24 which include 5 PDR, 2 BRVO and 1 Eales disease. Post-operatively 7 patients developed complications. Raised IOP seen in 3 cases which includes 2 PDR cases and 1 Eales disease. Cataractous lens noticed in 2 PDR cases. Retinal detachment developed in 1 PDR case. Re-vitreous hemorrhage occurred in 1 Eales disease. 2 cases underwent re-surgery. Re-vitrectomy done in 1 case of Eales disease for re-vitreous hemorrhage. Re-vitrectomy with silicone oil insertion done in 1 PDR case for retinal detachment. Conclusion: Visual impairment due to Vitreous hemorrhage may be prevented by early detection of cause by appropriate investigations and treatment. [Kumar A Natl J Integr Res Med, 2021; 12(5): 7-10]

**Key Words:** Vitreous Hemorrhage, Diabetes, Hypertension, BRVO, Eales Diseases, Indirect Ophthalmoscope

**Author for correspondence:** Dr. Akash kumar, Fellow In Medical Retina At Shroff Eye Center, A-9, Kailash Colony, Lala Lajpat Rai road, Pin :- 110048, New Delhi. E-Mail: akashkumaranand@gmail.com  
Mobile: 7715928691

**Introduction:** Vitreous hemorrhage (VH) is the extravasation of blood into the vitreous body<sup>1</sup>. The vitreous gel is avascular. VH occurs when blood leaks from ruptured vessels into the vitreous cavity. It may occur suddenly, without pain. VH usually happens in adult patients with proliferative diabetic retinopathy, retinal break, retinal vein occlusion, posterior vitreous detachment, or ocular trauma. Furthermore, retinal arterial macroaneurysms, choroidal neovascularization, intraocular tumors, and other

diseases may also lead to VH<sup>1</sup>. Patients with VH may suffer from acute blurring of the affected eye. The influence on visual acuity caused by VH itself may persist from days to months until the blood is removed or absorbed. Nevertheless, the underlying diseases which lead to VH might cause permanent visual impairment. Traditionally, vitrectomy is recommended if the blood in the vitreous has not been absorbed after 2 to 3 months<sup>2</sup>. Fortunately, three conditions cause 59 to 88.5% of VH cases: proliferative diabetic

This is an Open Access article distributed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), allowing third parties to copy and redistribute the material in any medium or format and to remix, transform, and build upon the material for any purpose, even commercially, provided the original work is properly cited and states its license.

retinopathy, posterior vitreous detachment (PVD), and ocular trauma<sup>1</sup>. The outcome of vitreous hemorrhage, often depends on the pathology, and the speed of detection different individuals, various baseline factors and patient profile, and recognition of them becomes important, for example case of vitreous hemorrhage in diabetic mellitus may have different outcome compared to a patient of hypertension. Similar, two patients may behave different outcome if one has control diabetes mellitus and the other does not. Also, the condition and behaviour varies from geographical location and racial variation, so population based study in different parts of the world is required<sup>3</sup>.

**Material & Methods:** This is a prospective observational study. The study was conducted on patients presenting with vitreous hemorrhage in the outpatient department of Ophthalmology in tertiary care hospital, willing to give written informed consent after approval from Ethics committee Board from November 2017-November 2019. 34 patients out of which 13 have diabetes, 6 have hypertension, 7 have both diabetes and hypertension, 6 have past history of tuberculosis and 2 have no systemic illness. A detailed history was taken to find out age, Sex, Clinical history, chief ocular complaints, Systemic illness, previous ocular history, Family history, Personal history and any Relevant medical history. These patients underwent pre and post vitrectomy Best Corrected Visual Acuity measurement by Snellen's chart for distant vision, Jaeger's chart for near vision, Anterior segment examination by Slit Lamp, Intraocular Pressure by Goldmann Applanation Tonometer, Dilated fundus examination by keelar Indirect Ophthalmoscope using 20 D lens, OCT and Ultrasound B scan. OCT and Dilated fundus examination done by using tropico plus eye drops instilled every 5 minutes for three times.

**Results:** In our study, out of 34 patients, 2 patients (5.9%) were less than 30 years, 5 patients (14.77%) between 31-40 years, 13(38.2%) between 51-60 years. 25 (74%) patients were male and 9 (26%) were female, out of 25 male, maximum 9 (36%) belongs to 51-60 years age group and minimum 2(8%) from less than 30 years age group. Out of 9 female, maximum 4(44.40%) belongs to 51-60 years age group and no female present before 30 years age group<sup>4</sup>. Out of 34 patients, lens status of 28 cases is phakic and lens status of 6 patients is aphakic. In

our study 13 (38%) patients have diabetes mellitus and 6(18%) patients have hypertension and 7 (20%) patients have both diabetes and hypertension. 6(18%) patients have past history of tuberculosis and only 2(6%) patients in our study presented with no systemic illness, maximum 20(58.8%) patients belongs to PDR group. 8 (23.5%) patients belongs to Eales disease, 5(14.7%) patients in BRVO group and only 1 (2.9%) patients from wet armd group<sup>4</sup>.

In our study 12(35.3%) patients were complained of symptoms from less than 1 month and 10(29.4%) were from 1-3 months and 12(35.3%) were from more than 3 month, sudden loss of vision 18 (52.9%) were main complaint. Gradual Loss of vision was noticed by 7(20.6%) cases. Red curtain in front of eye was noticed by 4 (11.8%) patients. And blurring of vision was noticed by 5 (14.7%) patients. Out of 18 patients of sudden onset loss of vision, 7 patients were presented within less than 1 month of duration, 6 were presented within 1-3 months and 5 were presented after 3 month of duration.

Out of 7 patients of gradual onset loss of vision, only 1 patient presented within 1 month of duration, 2 were in 1-3 months and 4 were after 3 months of duration. Out of 4 patients of Red curtain in front of eye, 1 patients each from less than 1 month and between 1-3 months, 2 were presented within after 3 month. Out of 5 patients of blurring of vision, 3 were presented before 1 month, 1 patient presented each from 1-3 month and after 3 months. During surgery out of 20 patients of PDR, in 8 patients PRP were noticed, NVD/NVE was noticed in 10 patients, macular edema was present in 4 patients and Traction band was present in 1 patients. Sclerosed blood vessels were noticed in all 8 patients of Eales diseases. ERM was noticed in 3 BRVO patients. 1 patient of wet armd had CNVM.

Out of 34 patients, 22 patients presented with vision in between PL+ to FCCF. Most of cases in this group belong to above 50 years of age group. 9 cases presented with vision in between 1/60-3/60, only 3 cases whose vision is 6/60 or above.

Out of 34 patients, 15 patients improved in 6/18-6/9 vision group after surgery and maximum 6 belongs to age group 51-60 years and 3 cases each from 31-40 & 41-50 years age group. 8 patients improved in 6/60-6/24 vision group in which 3 patients are from 51-60 years age group

and 2 cases each from 41-50 years & above 60 years age group. 8 patients improved in 1/60-3/60 vision group in which 3 cases are from 51-60 years and 2 cases each from 31-40 & above 60 years of age group, 3 patients whose vision doesn't improve from PL+ to FCCF. Out of 34 patients, 15 males and 7 females whose vision is in between PL- to FCCF. 7 males and 2 females presented with vision in between 1/60-3/60, 3 males whose vision is 6/60 or above. Out of 15 patients whose vision improved in group 6/18-6/9, 7 are males and 5 are females. 8 cases whose vision improved in vision group 6/60-6/24 in which 1 is female and 7 are males.

8 cases whose vision improved in vision group 1/60-3/60 in which 1 is female and 7 are males, 3 cases whose vision doesn't improve more than FCCF in which 2 are female and 1 is male. Out of 22 patients belongs in preoperative vision PL+ to FCCF group, 15 cases from PDR group, 5 from Eales disease, 1 from BRVO and 1 from Wet ARMD group. 9 patients belong to 1/60-3/60 vision group, in which 4 cases are from PDR, 2 are from Eales and 3 from BRVO group. 3 cases belong to 6/60-6/24 vision group, in which 1 patient belongs to each from PDR, Eales and BRVO group. Out of 15 patients whose vision improve in vision group 6/18-6/9, 8 cases belong to PDR group, 3 cases are from BRVO and 4 cases from Eales<sup>5</sup>.

8 cases whose vision improves in vision group 6/60-6/24, 5 cases belong to PDR group, 2 cases from BRVO and 1 from Eales<sup>5</sup>. 8 cases whose vision improves in vision group 1/60-3/60, 4 cases belong to PDR group, 3 from Eales and 1 from wet ARMD. Out of 34 patients, 12 patients whose duration of symptoms is less than 1 month, in which 7 cases is presented with vision in group PL+ to FCCF and postoperative 3 patient improved in 1/60-3/60 vision group, 1 case improved in 6/60 -6/24 vision group, 3 patients improved in 6/18-6/9 vision group. 4 patients presented in 1/60-3/60 vision group and postoperatively 1 patient improved 6/60 -6/24 vision group and 3 patients improved in 6/18-6/9 vision group<sup>6</sup>.

Patients presented in 6/60-6/24 vision group and improved in 6/18-6/9 vision group after surgery. 10 patients whose duration of symptoms is between 1-3 months in which 7 cases is presented with vision in group PL+ to FCCF and postoperative 3 patient improved in 1/60-3/60

vision group, 4 cases improved in 6/60 -6/24 vision group, 3 patients presented in 1/60-3/60 vision group and postoperatively 1 patient improved in 1/60-3/60 vision group and 2 patients improved in 6/18-6/9 vision group. 12 patients whose duration of symptoms is more than 3 months in which 8 cases is presented with vision in group PL+ to FCCF and postoperative 3 patients remain in vision group PL+ to FCCF, 2 cases improved in 1/60 -3/60 vision group, 1 patient improved in 6/60-6/24 vision group and postoperatively 2 patients improved in 6/18-6/9 vision group. 2 cases presented each from 1/60-3/60 & 6/60-6/24 vision group and all 4 patients improved in vision group 6/18-6/19. Out of 34 Patients, 7 patients developed complications and all cases presented with vision in group PL+ to FCCF and maximum patients improved to 1/60 -3/60 vision group postoperatively, 2 female patients [raised IOP in 1 patient and cataractous lens in 1 patient] have developed postoperative complication<sup>7</sup>. 5 male patients in which raised IOP noted in 2 cases, cataractous lens, Re-vitreous haemorrhage and Retinal detachment occur in 1 patient each. Out of 8 Eales patients, 1 patient in which postoperative raised intraocular pressure is noted and Re-vitreous haemorrhage occur in 1 patient, out of 20 PDR patients, raised intraocular pressure is noted in 2 patients, cataractous lens noted in 2 cases, retinal detachment occur in 1 patient<sup>7</sup>.

**Discussion:** Minimum age of patients is 29 years and maximum age is 75 years with mean age is 51.35 years and standard deviation is 10.98. Majority patients (38.2%) were in the age group of 51-60 years<sup>4</sup>. Males [73.5%] had higher incidence of vitreous hemorrhage than females. And incidence of vitreous hemorrhage was higher in lower socio-economic group. Diabetes Mellitus and Hypertension were the most common co-morbidities with Proliferative diabetic retinopathy, Eales disease and Branch Retinal vein occlusion are the important Risk factors for vitreous hemorrhage.

Most common presenting symptom of vitreous hemorrhage is sudden loss of vision [52.9%] followed by gradual loss of vision and blurring loss of vision. Patients who received pan retinal photocoagulation and Anti-VEGF have better visual outcome post-operatively. Pan retinal photocoagulation, Epiretinal membrane, traction

band, macular edema, and choroidalneo vascular membrane are the intra operative findings noted intra-operatively<sup>5</sup>. Preoperatively most of the cases of vitreous hemorrhage had visual acuity in the group of Perception of light and finger counting close to face. Post-operatively 15 patients have visual acuity in group of 6/18-6/9. Among them 8 were PDR, 4 cases of Eales disease and 3 were BRVO cases. Visual acuity of 8 cases belongs to group of 6/60 – 6/24 which include 5 PDR, 2 BRVO and 1 Eales disease<sup>6</sup>. Post-operatively 7 patients developed complications. Raised IOP seen in 3 cases which includes 2 PDR cases and 1 Eales disease. Cataractous lens noticed in 2 PDR cases. Retinal detachment developed in 1 PDR case. Revitreous hemorrhage occurred in 1 Eales disease. 2 cases underwent re-surgery. Vitrectomy done in 1 case of Eales disease for re-vitreous hemorrhage. Re-vitrectomy with silicone oil insertion done in 1 PDR case for retinal detachment<sup>7</sup>.

**Conclusion:** Visual Impairment due to vitreous hemorrhage may be prevented by early detection of common cause by appropriate investigations and treatment. Majority of patients presented with vitreous hemorrhage have comorbidities, specially diabetes mellitus and hypertension.

Whatever, the etiology, the clinical findings are identical. Fundoscopy and Bscan should be must for diagnosis. In most patients with vitreous hemorrhage, visual outcome is good. Eales diseases have better visual outcome compared other risk factors. The only factor of value in predicting the visual outcome is initial severity of visual loss. Patients with good vision at baseline had better outcome compared to patients with poor vision at baseline.

#### References:

1. Spraul CW, Grossniklaus HE. Vitreous hemorrhage. *SurvOphthalmol.* 1997; 42(1):3–39. doi: 10.1016/s0039-6257(97)84041-6., [PubMedPMIDPubMed9265701], [Google Scholar].
2. Standring Susan, Borley Neil R; et al., eds. *Gray's anatomy: the anatomical basis of clinical practice.* 40th ed. London: Churchill Livingstone; 2008.
3. Murphy William, Black Jonathan, Hastings Garth June 11 2016. *Handbook of biomaterial properties.* Springer. ISBN 9781493933051. Via Google Books.

4. Wang Ching-Yu, Cheang Wai-Man, Hwang De-Kuang, Lin Ching-Heng. Vitreous haemorrhage: a population-based study of the incidence and risk factors in Taiwan. *Int J Ophthalmol.* 2017;10(3):461-6. doi: 10.18240/ijo.2017.03.21, PMID 28393040.
5. Choovuthayakorn Janejit, khunsongkiet Preeyanuch, Patikulsila Direk, Watanachai Nawat, Kunavisarut Paradee, Chaikitmongkol Voraporn, Ittipunkul Nimitr. Characteristics and outcomes of pars plana vitrectomy for proliferative diabetic retinopathy patients in a limited resource tertiary center over an eight-year period. *J Ophthalmol.* 2019;2019:9481902. doi: 10.1155/2019/9481902, PMID 31007953.
6. Shanmugam MP1, Badrinath SS, Gopal L, Sharma T. Long term visual results of vitrectomy for Eales disease complications.
7. El Annan Jaafar, Carvounis Petros E. Current management of vitreous hemorrhage due to proliferative diabetic retinopathy. *Int Ophthalmol Clin.* 2014;54(2):141-53. doi: 10.1097/IIO.000000000000027, PMID 24613890.

Conflict of interest: None

Funding: None

Cite this Article as: Kumar A, Saswade N, Murade S, Rathod D, Meshram B, Shah S. A Study Of Clinical Profile And Visual Outcome In Patients Undergoing Vitrectomy For Vitreous Hemorrhage. *Natl J Integr Res Med* 2021; Vol.12(5): 7-10