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CASE REPORT

# Bilateral Macula Involving Sub hyaloid and Peripapillary Haemorrhages in Severe Pancytopenia: Transient Visual Loss and Recovery with Observation: A Case Report

**Dr C R Asla Jahan, MBBS, DO, DNB in Ophthalmology[1*], Dr Aswathi Muraleedharan, MBBS, MS[1],**

**Dr Gopal S Pillai, MBBS, MS, DNB, FRCS[2], Dr Rehna Rasheed, MBBS, MS, DO, FRCOph[3],**

**Dr Niveda G, MBBS, MS resident[4], Dr Jasleen Ashish Choudhary, MBBS, MS resident[4]**

[1]Vitreoretinal surgery fellow at Amrita Institute of Medical Sciences, Kochi, Kerala, India

[2]Head of the department of Ophthalmology and Vitreoretinal Surgery, Amrita Institute of Medical Sciences, Kochi

[3]Consultant, Retina and Uvea Services, Amrita Institute of Medical Sciences, Kochi.

[4]Department of Ophthalmology, Amrita Institute of Medical Sciences, Kochi.

[*]**Corresponding author**: Dr C R Asla Jahan, MBBS, DO, DNB in Ophthalmology,

Vitreoretinal surgery fellow at Amrita Institute of Medical Sciences, Kochi, Kerala, India

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**ABSTRACT**

**Background:** Retinal haemorrhage is a recognised ocular manifestation of bone marrow failure, but bilateral macula involving pre-retinal haemorrhage with its visual course is rarely documented with serial fundus photography.

Case presentation: A 37-year-old male with complaints of blurring of vision in both eyes for 10 days was admitted for pancytopenia under evaluation as he was diagnosed with multiple retinal haemorrhages from outside hospital. At presentation at our hospital, visual acuity was 6/9 in the right eye and 6/6 P with N6 in both eyes and intraocular pressures of 15 and 16 mmHg. Fundus photography showed bilateral boat shaped macular sub hyaloid haemorrhages, dense haemorrhages along the superotemporal arcade adjacent to the optic disc, and scattered intraretinal haemorrhages. Haemoglobin was 8.0 g/dL, platelets 15 × $10^3$/µL, white cell count 2.7 × $10^3$/µL (calculated absolute neutrophil count ≈0.62 × $10^3$/µL) and absolute reticulocyte count 15.6 × $10^3$/µL, with erythropoietin 326.8 mIU/mL; PT/INR was normal. Haematological management included eltrombopag, tranexamic acid and ciclosporin. Visual acuity subsequently fell to 6/60 in the right eye and 6/24 in the left eye as haemorrhage involved the fovea. Nd:YAG laser hyaloidotomy was considered, but because blood counts remained low the patient was observed closely. On serial photography the haemorrhages contracted progressively and cleared from the macula, and visual acuity recovered to 6/6 in both eyes.

**Conclusion:** Severe pancytopenia can produce bilateral macular sub hyaloid haemorrhage with transient, marked visual loss when the fovea is involved. Even so, close observation without hyaloidotomy, while blood counts remained low, was followed by spontaneous resolution and full visual recovery. A dilated fundus examination should accompany the work-up of severe cytopenia, and retinal intervention should be approached conservatively while thrombocytopenia persists.

**Keywords**: Pancytopenia; Thrombocytopenia; Aplastic Anaemia; Pre-Retinal Haemorrhage; Eltrombopag.

## INTRODUCTION

Marrow failure syndromes, including aplastic anaemia, myelodysplasia, leukaemia and drug- or immune-mediated cytopenias, can cause a haemorrhagic retinopathy through the combined effects of thrombocytopenia and anaemia. Classic descriptions show retinal bleeding to severe thrombocytopenia accompanied by anaemia, and the two together appear to carry greater risk than either alone [1,2,3]. Haemorrhages can be intraretinal, sub internal limiting membrane (sub-ILM), subhyaloid or vitreous haemorrhage.

Severe aplastic anaemia is defined by a hypocellular marrow with at least two of the following: neutrophils below 0.5 × $10^9$/L, platelets below 20 × $10^9$/L and reticulocytes below 20 × $10^9$/L [4,5]. Standard treatment combines immunosuppression (ciclosporin, with or without antithymocyte globulin) and the thrombopoietin-receptor agonist eltrombopag, or haematopoietic stem-cell transplantation [4,5,6].

We describe a patient with bilateral macula involving sub hyaloid haemorrhages in the setting of severe pancytopenia, with transient visual loss to 6/60 and 6/24 on foveal involvement, followed by full recovery to 6/6. Serial colour fundus photographs document the course. The case illustrates the dilemma between Nd:YAG hyaloidotomy and observation in a profoundly thrombocytopenic patient.

## CASE REPORT

A 37-year-old male was admitted under Medical Oncology and Haematology for pancytopenia under evaluation. He presented with blurring of vision in both eyes 10 days back and consulted an outside hospital from where he was diagnosed as a case of pancytopenia and was referred for further evaluation.

## CLINICAL FINDINGS

Anterior segment examination was normal in both eyes. Visual acuity was 6/9 in the right eye 6/6P in left eye. Near vision was N6 in both eyes. Intraocular pressure was 15 mmHg (right) and 16 mmHg (left). Fundus examination showed a normal disc with multiple intraretinal haemorrhages predominantly in the peripapillary area and sub hyaloid haemorrhage involving the macula in both eyes.

Colour fundus photographs at presentation (Figure 1) showed, in each eye, a well-demarcated boat shaped sub hyaloid haemorrhage in the macular region with a horizontal sedimentation level. Dense, dark, dome-shaped haemorrhages lay along the superotemporal arcade adjacent to the optic disc, together with peripapillary haemorrhages and scattered dot-blot and flame-shaped intraretinal haemorrhages in the posterior pole.

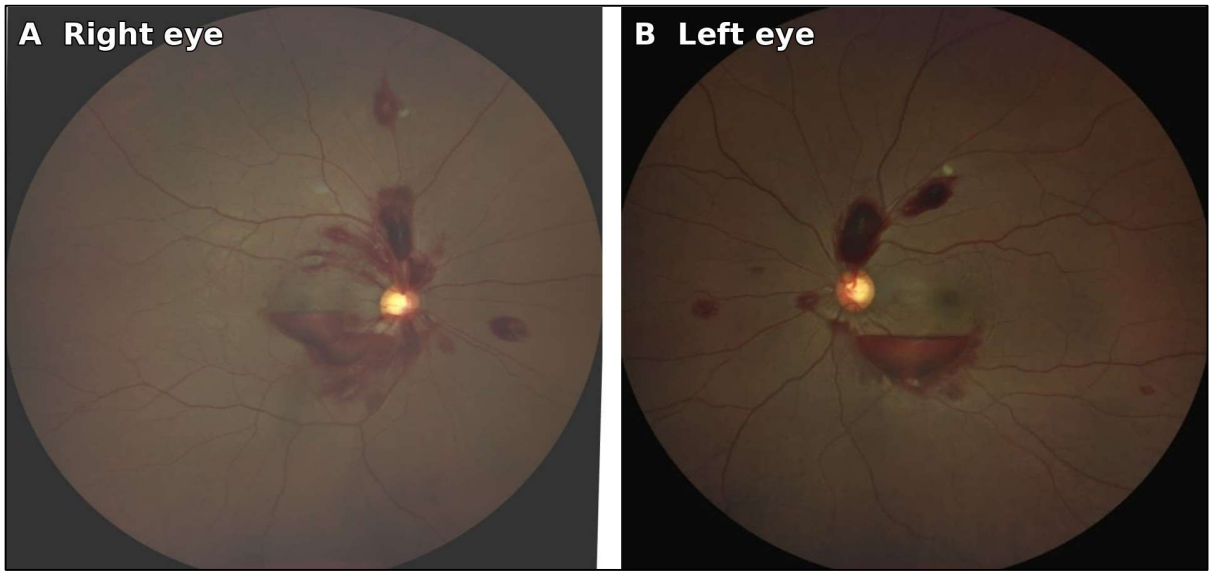



***Figure 1.*** *Baseline colour fundus photographs of the right eye (A) and left eye (B), showing boat-shaped macular sub hyaloid haemorrhages with a sedimentation level, dense peripapillary haemorrhages along the superotemporal arcade, and scattered intraretinal haemorrhages.*

## INVESTIGATIONS

Laboratory results are summarised in Table 1. There was pancytopenia with severe thrombocytopenia (15 × $10^3$/μL), anaemia (haemoglobin 8.0 g/dL; normocytic, MCV 97.2 fL; raised RDW 19.8%), and leucopenia with neutropenia (white cell count 2.7 × $10^3$/μL; calculated absolute neutrophil count ≈0.62 × $10^3$/μL). The reticulocyte count was inappropriately low (0.615%; absolute 15.6 × $10^3$/μL) despite a markedly raised erythropoietin level (326.8 mIU/mL). PT and INR were normal and the APTT was not prolonged, arguing against a coagulation factor defect. Renal and liver function, calcium, electrolytes and bilirubin were normal, and LDH was marginally raised (263 U/L). The peripheral smear confirmed aplastic anemia.

**Table 1.** Laboratory results at presentation

| Parameter | Result | Reference range |
|---|---|---|
| Haemoglobin | 8.0 g/dL | 13.0–17.0 |
| Haematocrit | 24.3% | 40.0–50.0 |
| RBC count | 2.50 × $10^6$/μL | 4.5–5.5 |
| MCV / MCH / MCHC | 97.2 fL / 32.0 pg / 32.9 g/dL | 83–101 / 27–32 / 31.5–34.5 |
| RDW | 19.8% | 11.6–14.8 |
| Platelet count | 15 × $10^3$/μL | 150–400 |
| Mean platelet volume | 9.89 fL | 6.8–10 |
| White cell count | 2.7 × $10^3$/μL | 4.0–10.0 |
| Neutrophils / lymphocytes | 22.9% / 70.1% | 60–80 / 20–40 |
| Absolute neutrophil count (calculated) | ≈0.62 × $10^3$/μL | – |
| Reticulocytes (% / absolute) | 0.615% / 15.6 × $10^3$/μL | 0.5–1.0 / 26–126 |
| Erythropoietin | 326.8 mIU/mL | 3.22–31.9 |
| PT / INR | 14.4 s / 0.98 | 12.8–16.6 s |
| APTT | 26.8 s | 28.1–33.9 s |
| LDH | 263 U/L | 0–248 |
| Creatinine / urea | 0.90 / 33.6 mg/dL | 0.7–1.2 / 19–44 |
| AST / ALT / ALP | 19.9 / 25.5 / 64.5 IU/L | 0–50 / 0–40 / 0–130 |
| Total bilirubin | 0.49 mg/dL | 0–1.1 |
| Sodium / potassium | 139.1 / 3.9 mmol/L | 136–145 / 3.5–5.1 |
| HIV-1/2 (p24 Ag and Ab) | Non-reactive (index 0.07) | – |
| Blood group | A Rh D positive | – |

Abbreviations: ALP, alkaline phosphatase; ALT, alanine aminotransferase; APTT, activated partial thromboplastin time; AST, aspartate aminotransferase; INR, international normalised ratio; LDH, lactate dehydrogenase; MCH/MCHC/MCV, mean corpuscular haemoglobin/haemoglobin concentration/volume; PT, prothrombin time; RDW, red cell distribution width.

## TREATMENT

Systemic management was directed by haematology. The patient received oral tranexamic acid 500 mg and eltrombopag 50 mg, ciclosporin capsules.Ophthalmic management was close observation, as described below.

## FOLLOW-UP AND OUTCOME

During follow-up the haemorrhage enlarged to involve the fovea in both eyes, and visual acuity dropped to 6/60 in the right eye and 6/24 in the left eye. Because the haemorrhages were dense and central, the possibility of Nd:YAG laser hyaloidotomy was UNDER consideration. In view of the persistently low platelet and other blood counts, and the bleeding risk of intervention, the decision was made to observe closely. Blood parameters remained low during this period. The patient was reviewed on weekly basis. Fundus evaluation

showed progressive contraction of the macular sub hyaloid haemorrhages in both eyes (Figures 2 and 3). The sedimentation level was lost, and the peripapillary haemorrhages shrank and darkened. At the later visit, the right eye retained a small pigmented macular haemorrhage and a small haemorrhage adjacent to the disc, and the left eye a small residual dark haemorrhage at the macular (Figure 3). The final photographs (Figure 4) show clearance of the haemorrhages in both eyes. Visual acuity recovered to 6/6 despite the blood counts having remained low throughout the course

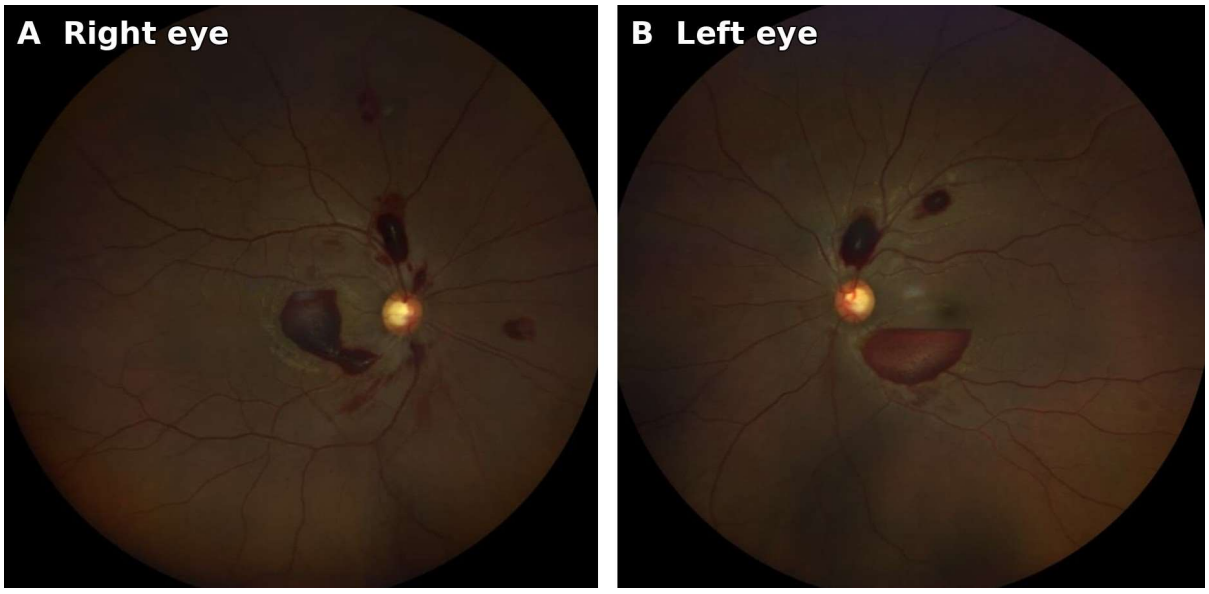



*Figure 2. Early follow-up photographs of the right eye (A) and left eye (B). The macular haemorrhages have contracted and, in the right eye, become more compact and darker; a sedimentation level persists in the left eye.*

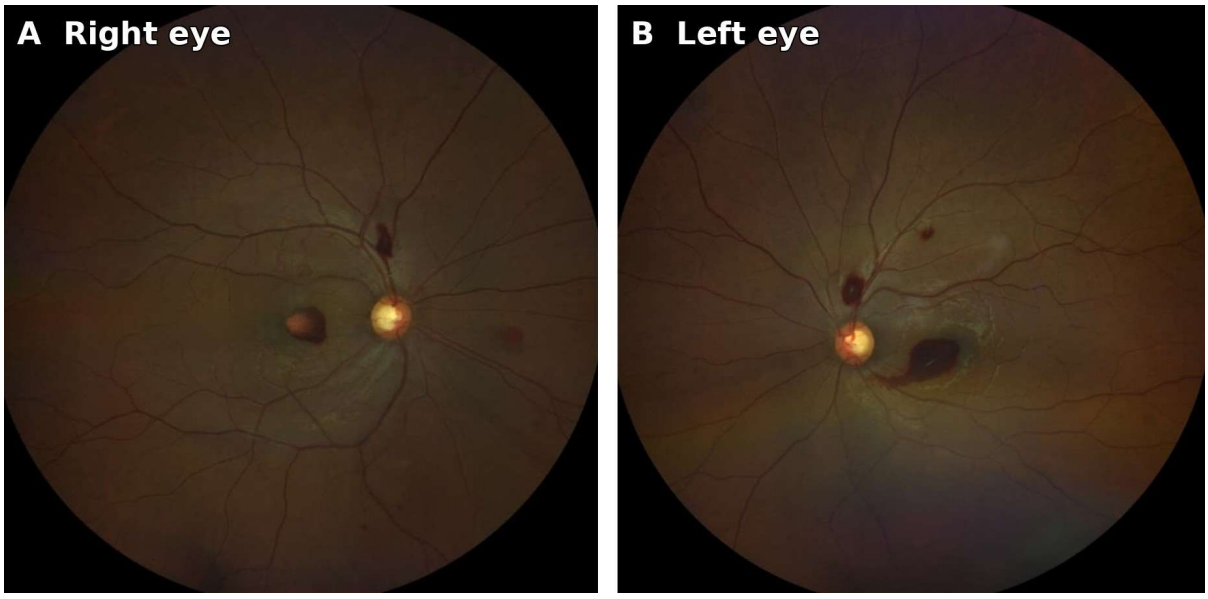



*Figure 3. Intermediate follow-up photographs of the right eye (A) and left eye (B), showing a small residual pigmented/dark macular haemorrhage and shrinking peri-papillary haemorrhages.*

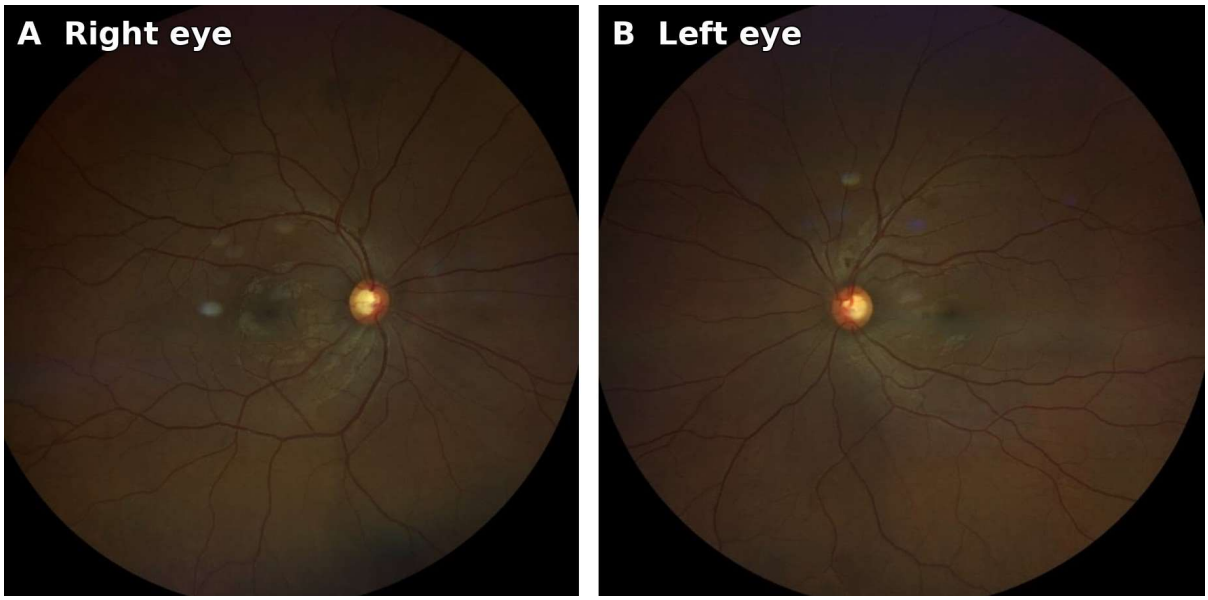



*Figure 4. Final follow-up photographs of the right eye (A) and left eye (B), showing resolution of the sub hyaloid and peripapillary haemorrhages*

## DISCUSSION

This case describes extensive bilateral retinal haemorrhages involving the premacular and peripapillary regions in a patient undergoing evaluation for pancytopenia. The principal clinical consideration is the association between a potentially significant systemic haematological abnormality and haemorrhagic retinal changes.

Retinal bleeding in cytopenic states reflects capillary fragility and impaired primary haemostasis when platelets are low, aggravated by anaemic hypoxia. Rubenstein and colleagues emphasised the additive effect of thrombocytopenia and anaemia [1], and white-centred haemorrhages occur across a range of haematological disorders [2]. Our patient had both a platelet count of 15 × $10^3$/µL and haemoglobin of 8.0 g/dL. Normal PT/INR and a non-prolonged APTT argue against a coagulopathy. A superimposed Valsalva-type pressure surge can precipitate sub-ILM bleeding in a thrombocytopenic eye [7] and should be sought in the history.

The macular lesions were boat-shaped with a horizontal level, reflecting layering of red cells under gravity within a sub hyaloid space. Optical coherence tomography can distinguish between a sub hyaloid and sub Internal limiting membrane

haemorrhage: sub-ILM haemorrhage lies beneath a thin taut hyper-reflective membrane, whereas subhyaloid blood lies beneath a detached posterior hyaloid. The distinction matters because Nd:YAG laser hyaloidotomy, which drains blood into the vitreous cavity, has given good long-term results in selected eyes with dense premacular haemorrhage and visual loss [8]. In this patient the indication was genuinely debatable: visual had fallen to 6/60 and 6/24 with foveal involvement, which would ordinarily favour early hyaloidotomy to shorten the period of visual loss and limit toxicity of blood in contact with the macula. Against this, both eyes were affected, platelets and other counts remained low, and any laser-induced bleeding or vitreous haemorrhage would have been difficult to manage. We therefore chose close observation, and the haemorrhages cleared spontaneously. This outcome supports observation as a reasonable first approach in selected thrombocytopenic patients, provided follow-up is close and intervention remains available if the haemorrhage persists or the fovea is threatened by clot organisation.

The haematological picture of severe thrombocytopenia, neutropenia below 1.0 × $10^9$/L and an inappropriately low reticulocyte response with markedly raised erythropoietin is consistent with hypoproliferative marrow failure, and the combination of ciclosporin and eltrombopag mirrors standard therapy for aplastic anaemia [5,6]. The retinal haemorrhages resolved in the setting of ongoing haematological treatment, although the contribution of treatment versus natural resolution cannot be separated in a single case. Ophthalmic surveillance is reasonable during long-term eltrombopag, and blood pressure monitoring is relevant to ciclosporin therapy.

**Clinical implications.** (1) Patients admitted with severe cytopenia should have a dilated fundus examination, because haemorrhage may be mistaken for other pathology or be symptomatic only late. (2) Colour photography and OCT document morphology and follow resolution. (3) Hyaloidotomy should be weighed against bleeding risk; where counts remain low, close observation can be effective, with laser reserved for non-resolving collections and ideally performed with platelet support. (4) The retinal findings reinforce the urgency of correcting thrombocytopenia.

**Limitations.** This is a single case. The natural history of such haemorrhages is favourable, so the role of observation in the recovery cannot be separated from that of haematological treatment, and we cannot compare outcome with hyaloidotomy.

## CONCLUSION

Bilateral macula-involving sub hyaloid haemorrhage in severe pancytopenia can reduce vision to 6/60 and 6/24 yet resolve with close observation, with recovery to 6/6, even while blood counts remain low. Early dilated fundus examination, multimodal imaging and close collaboration between retina and haematology services are central to protecting vision, and hyaloidotomy decisions should be individualised to platelet status and bleeding risk.

## DECLARATIONS

### Ethical approval

The case was managed in accordance with the principles of the Declaration of Helsinki. Informed written consent was obtained

**Conflicts of interest**: The authors declare no conflict of interest.

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## REFERENCES

1. Rubenstein RA, Yanoff M, Albert DM. Thrombocytopenia, anemia and retinal hemorrhage. American journal of ophthalmology. 1968 Mar;65(3):435-9.
2. Duane TD, Osher RH, Green WR. White centered hemorrhages: their significance. Ophthalmology. 1980 Jan 1;87(1):66-9.
3. Kincaid MM, Green MR. Ocular and orbital involvement in leukemia. Survey of ophthalmology. 1983 Jan 1;27(4):211-32.
4. Camitta BM, Rappeport JM, Parkman R, Nathan DG. Selection of patients for bone marrow transplantation in severe aplastic anemia.
5. Marsh JC, Ball SE, Cavenagh J, Darbyshire P, Dokal I, Gordon-Smith EC, Keidan J, Laurie A, Martin A, Mercieca J, Killick SB. Guidelines for the diagnosis and management of aplastic anaemia. British journal of haematology. 2009 Oct 1;147(1):43.
6. Townsley DM, Scheinberg P, Winkler T, Desmond R, Dumitriu B, Rios O, Weinstein B, Valdez J, Lotter J, Feng X, Desierto M. Eltrombopag added to standard immunosuppression for aplastic anemia. New England Journal of Medicine. 2017 Apr 20;376(16):1540-50.
7. Duane TD. Valsalva hemorrhagic retinopathy. Transactions of the American Ophthalmological Society. 1972;70:298.
8. Ulbig MW, Mangouritsas G, Rothbächer HH, Hamilton AP, McHugh JD. Long-term results after drainage of premacular subhyaloid hemorrhage into the vitreous with a pulsed Nd: YAG laser. Archives of Ophthalmology. 1998 Nov 1;116(11):1465-9.

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