

Retinal Bleeding Associated with Aplastic Anemia: Case Report

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Abstract

Introduction: Aplastic anemia presents with pancytopenia and can be life-threatening and therefore it is necessary to detect it immediately. Patients usually come to the emergency department with weakness and paleness caused by anemia, fever and sepsis caused by leucopenia and hemorrhagic phenomena caused by thrombocytopenia. Although there are studies showing the link between aplastic anemia and retinal hemorrhage, it is rare that the patient's first complaint is of blurred vision. In this report, we will describe a case of a retinal hemorrhage which had been caused by aplastic anemia.

Case Report: A 21-year-old female patient came to the emergency department complaining of blurred vision in both eyes, in particular the left. A fundus examination showed there was a pre-retinal hemorrhage in the left eye and Roth's spots in the right eye. Also, the laboratory results detected aplastic anemia which had not previously been diagnosed.

Conclusion: This case revealed that a differential diagnosis of aplastic anemia should be considered when a patient comes in complaining of blurred vision. We present a case complaining of lost vision caused by retinal hemorrhage due to aplastic anemia and discuss the link between retinal hemorrhage and aplastic anemia within literature.

Keywords: Pancytopenia; Aplastic Anemia; Pre-Retinal Hemorrhage; Retinal Hemorrhage; Roth's Spot

Introduction

Aplastic anemia presents with pancytopenia and can be life-threatening and therefore it is necessary to detect it immediately. It is linked to autoimmune cells destruction in bone marrow [1]. Patients usually come to the emergency room with weakness and paleness caused by anemia, fever and sepsis caused by leucopenia and hemorrhagic phenomena caused by thrombocytopenia [2].

There can be many causes of Retinal hemorrhage such as anemia, bacterial endocarditis, pre-eclampsia, hypertensive retinopathy, diabetic retinopathy, intracranial haemorrhage, traumatic brain injury etc.

Mansour, *et al.* reported on 18 cases of patients diagnosed with aplastic anemia, with pre-retinal haemorrhage occurring in 67% of these cases, cotton wool spots in 38%, optic disc layer and vitreous haemorrhage in 13% and optic disc edema in 6% [2].

Although there are couple studies showing the link between aplastic anemia and retinal hemorrhage, it is rare that the patient's first complaint is of blurred vision. Further, it is not within examination protocol to consider hemotological diseases in the differential diagnosis for blurred or lost vision.

Blurred vision is an important warning sign. It can indicate the risk of permanent damage to the patient's vision in the emergency room as it can be caused by conjunctivitis, glaucoma, retinal artery thrombosis, increased intracranial pressure, infarction etc. Therefore, it is necessary to check both central and peripheral reasons.

We present a case complaining of lost vision caused by retinal hemorrhage due to aplastic anemia and discuss the link between retinal hemorrhage and aplastic anemia within literature.

Case Report

A 21-year-old female came to the emergency room complaining of blurred vision in her left eye. It had started two hours before and there was also some blurriness in her right eye as well. The patient also complained that she had been feeling weak for the past few months and had experienced nosebleeds several times and had menstrual bleeding for past week. There was no use of alcohol or tobacco, known diseases or regular medication use reported. The patient had never complaint of vision disorders before.

Physical examination; her general condition was good, blood pressure was 120/80 mmHg, pulse 80 per minute, respiratory rate 13 per minute, and appeared pale. On ophthalmic examination; best corrected visual acuity was 0.9 and 0.05 in her right and left eye. Globe movements were free and painless in all directions. Intraocular pressures were in the normal range for both of the eyes. Pupils were equally reflective to light and there was no relative afferent pupil defect. The anterior segment examination was normal for both of the eyes. The dilated fundus examination revealed bilateral a white centered multiple retinal hemorrhage consistent with Roth's spot morphology (Figure 1).

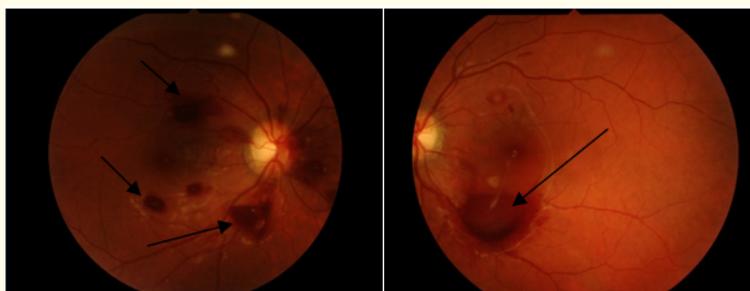


Figure 1: Bilateral pre-retinal haemorrhage (black arrows).

Other physical examinations were normal.

There were not any abnormalities on the computer brain scan (CT) and the magnetic resonance imaging (MRI).

The laboratory results revealed pancytopenia as hemoglobin: 5.38 d/dL, white cell count: $1.29 \times 10^9/L$, red cell count: $1.9 \times 10^{12}/L$, platelets: 17.6×10^9 and urine analysis white blood cell: 1, red blood cell: 41. Leukopenia as neutrophile: 0.2, lymphocyte: 1.28, eosinophil: 0, monocyte: 0.06, basophil: 0.04. Ferrous, ferritin, serum iron banding capacity were in normal range.

The patient took 3 units of irradiated erythrocyte suspension and 8 units of irradiated platelet suspension and was hospitalized with pre-diagnosed aplastic anemia and a retinal hemorrhage. The bone marrow biopsy confirmed a case of aplastic anemia of unknown cause. Two days later, the patient had fully recovered and was discharged.

Discussion

Aplastic anemia incidence is two per million in Europe and Jordan, 3.94 per million in Thailand. Generally there are higher rates in Asia. Unlike other auto-immune diseases, the sex ratio is almost 1:1 [3].

Despite the fact that retinal hemorrhage in aplastic anemia is relatively frequent, patients usually come to hospital for reasons other than blurred vision [2]. In literature, we found six cases reporting blurred vision as their first complaint (Table 1). The ages of the patients in these cases vary between 4 and 60 years old. Our case is 21-year-old and fits within the age range in the literature. The sex ratio is 1:1 as aplastic anemia ratio in literature.

	Age	Sex	Fundus Examination	Hemoglobin (g/dL)	Platelets (/μL)	Smoking, Use Alcohol, Diseases	Other Symptoms
Andrew R Lee, 2016 [1]	60	Male	Preretinal hemorrhage, infratemporal disc hemorrhage,	-	4000	Hypertension, hyperlipidemia, type 2 DM, sleep apnea, glaucoma suspec-tion	Petechia, gingiva bleeding, lethargy, weakness
Tatyana I Metelitsi-na, 2017 [4]	4	Female	Dilated pupil, vitreous hemorrhage, optic disc edema, peripheral retinal ischemia	10.6	94000	-	-
Ghosh S, 2007 [5]			Subhyaloid hemorrhage				
David Z Wechsler, 2004 [6]	57	Male	Bilateral retinopathy, intraretinal hemorrhage	6.8	9000	Type 2 DM	Hematuria, lethargy, ecchymosis
J D Groove, 2008 [7]	51	Female	Periocular ecchymosis, hemorrhagic chemosis, proptosis	8.6	22000	Hypertension, hypo-tiroidi, epilepsy	Petechia
Mesut Erdurmuş, 2005 [8]	17	Male	Subhyaloid hemorrhage, Roth Spot, subconjunctival hemorrhage	4	5000		

Table 1: Cases of aplastic anemia first complaining of vision disorders.

The platelet count ranged from 4000 to 9000 x 10⁹ in the 6 cases and it was 17.6 x 10⁹ in our case. In our case, the platelet counts in 4 of the 7 cases were under 20,000, with one case undetermined. There is a higher risk of retinal hemorrhages with this platelet count as well as an increased chance of spontaneous bleeding.

Pancytopenia and bone marrow deficiency can cause massive bleeding in multiple organs and comorbidity. Ocular comorbidity is only one of them. Retinal ischemia can be observed if anemia occurs heavily and suddenly [8]. The prognosis of retinal hemorrhages in aplastic anemia is usually good and is spontaneously resolved with replacement therapy [2].

In the emergency room, transfusions can limit the progress of retinal hemorrhage and reduce retinal ischemia with increased hemoglobin and platelet levels. For that reason, it is important to diagnose early and start transfusions in the emergency room [9].

Conclusion

Aplastic anemia should be considered in the differential diagnosis of sudden blurred vision. It caused by anemia or thrombocytopenia. Therefore, when sudden blurred vision caused by anemia or thrombocytopenia, in order to minimise retinal hemorrhages and the damage of ischemia the patient should be treated with replacement therapy. The diagnosis of retinal hemorrhage due to aplastic anemia should be kept in mind in patients presenting with blurred vision.

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