

## Case Report

# Retinal hemorrhage in severe anemia in children: A Case Report

Shashi Kant Dhir<sup>1</sup>, Amarpreet Kaur<sup>1</sup>, Gurmeet Kaur<sup>2</sup>, Meenal Batta<sup>3</sup>, Avneet Kaur<sup>4</sup>, Manish Gupta<sup>4</sup>

<sup>1</sup>Assistant Professor, <sup>2</sup>Professor and Head, Department of Pediatrics, <sup>3</sup>Senior Tutor, Department of Physiology, <sup>4</sup>Post graduate student, Department of Pediatrics, GGS Medical College, Faridkot, Punjab, India

### Abstract

Retinal hemorrhages are usually seen in diabetes, hypertension, trauma, bleeding diathesis and in conditions associated with raised intracranial pressure and less commonly with severe anemia. The retinal hemorrhages in the megaloblastic anemia have been reported in adults but this finding in children is rare. We present one case of severe anemia presenting with sudden unilateral painless loss of vision due to retinal hemorrhages.

**Keywords:** Retinal Hemorrhages, Severe Anemia, Megaloblastic Anemia, Children

Corresponding author: Shashi Kant Dhir, MD, IAP Fellowship in Neonatology, Assistant Professor, Department of Pediatrics, Guru Gobind Singh Medical College, Faridkot, Punjab, India  
drshashikantdhir@gmail.com

This article may be cited as: Dhir S K, Kaur A, Kaur G, Batta M, Kaur A, Gupta M. Retinal hemorrhage in severe anemia in children: A Case Report. Int J Com Health and Med Res 2015;1(1):30-2.

**Article Received on:** 10-11-15

**Accepted on:** 12-12-2015

## INTRODUCTION

Anemia is a common problem in children. Most of the complications of severe anemia are well documented but less literature is available on ocular complications of anemia. The most common ocular manifestations described are retinal hemorrhages, tortuous retinal veins, cotton-wool exudates and disc edema.<sup>1</sup>

There is paucity of data on ocular complications of anemia in children and most of the cases of severe anemia with or without thrombocytopenia exhibiting the retinal hemorrhages have been described in adults.<sup>2-5</sup> The long term impact of this complication is significant and awareness of presence of retinal hemorrhages will help the pediatricians in early identification of the disease and treatment options, if needed. We present one case of severe anemia presenting with sudden

unilateral painless loss of vision due to retinal hemorrhages.

## CASE REPORT

A 12 year old girl, eldest of three siblings, presented to the department with the complaint of fatigability for 3 months, blurring of vision in left eye for two months and pallor. There was no chronic blood loss from any site, menorrhagia, and worms in stool. The child had not received any treatment for the anemia. The blurring of the vision was gradual in onset and now the child could only perceive light. There was no night blindness in either eye before the symptom. There was no history of diabetes or hypertension. There was no past history of trauma to the eye or head. She had normal height and weight as per age. The child was conscious and had normal higher mental functions. Pallor was present and there was no jaundice, cyanosis, clubbing or lymphadenopathy. On systemic examination, there were no hepatosplenomegaly, renal mass or cardiac murmur. In the eye examination, only perception of light was there in left eye and visual acuity was 6/6 in the right eye. On retinal examination there were retinal hemorrhages present in the affected eye. The right eye was normal. The child was investigated for the cause of retinal haemorrhages and no ophthalmic etiology was found and only severe anemia was present amongst the systemic causes. The child was further investigated for the cause of anemia and complete blood count, peripheral blood film and bone marrow aspiration was done. The hemoglobin was 2.2g/dl, mean corpuscular volume was 109fl, mean corpuscular hemoglobin was 34pg, and mean corpuscular haemoglobin concentration was 34 g/dl. The total leucocyte and platelet count was normal. Peripheral blood film revealed the presence of target cells, macro-ovalocytosis, hypersegmented neutrophils, and tear drop cells. The bone marrow examination further confirmed the diagnosis as megaloblastic anemia. The patient was treated as per the unit protocol and her RBC indices improved, the child was discharged in due course but her blurring of vision and the retinal hemorrhages although improved but continued to persist in the left eye. Informed consent was taken from the father of the child and privacy of the child was maintained. The patient was followed upto three months after which she does not visit the hospital, thus we were not able to carry further

correlation with treatment of anemia. This was the limitation of present case.

## DISCUSSION

Retinal hemorrhages are usually seen in diabetes, hypertension, trauma, bleeding diathesis and with condition associated with raised intracranial pressure.<sup>6</sup> However, literature reports that retinal hemorrhages and bilateral optic disc swelling can be seen in anemic children. As hematocrit in red blood cells decreases, retinal veins become dilated and tortuous, with multiple bilateral intra-retinal haemorrhages, some of which may have white centre. Most retinal hemorrhages in anemia have dot, blot, flame, or splinter appearances. Other ocular findings include vitreous hemorrhage, optic disc swelling, and cotton wool spots. It is important to note that among anemic patients, adults are more likely to develop retinal hemorrhages than are children.<sup>7</sup> Blood investigations can confirm a diagnosis of anemia. Lam S<sup>2</sup> described a case of a 33-year-old woman who was found to have megaloblastic anemia with thrombocytopenia and both fundi showed retinal venular dilatation and tortuosity, superficial and deep intra-retinal hemorrhages, white-centered retinal hemorrhages, and optic disc edema. Both the megaloblastic anemia and retinal changes resolved promptly after she received vitamin B12 and folate supplements. This case indicates that megaloblastic anemia should be suspected as a cause of bilateral retinal hemorrhages.

Megaloblastic anemia is a group of disorders characterized by the presence of distinctive morphologic appearances of the developing red cells in the bone marrow. The marrow is usually cellular and the anemia is based on ineffective erythropoiesis. The cause is usually a deficiency of either cobalamin (vitamin B12) or folate, but megaloblastic anemia may occur because of genetic or acquired abnormalities that affect the metabolism of these vitamins or because of defects in DNA synthesis not related to cobalamin or folate. In some cases of megaloblastic anemia (anemic conditions that have a common failure mechanism in which the body is unable to synthesize adequate amounts of normal DNA), there is concomitant leucopenia and thrombocytopenia, reflecting the abnormal development of white blood cells and platelets resulting in a low platelet count and, occasionally,

bleeding complications. Platelet count may be moderately reduced, rarely to <40000/microlitre.<sup>8</sup> The platelet count was normal thus ruling out the thrombocytopenia as the cause of the retinal hemorrhage.

Similar to present case, Mishra A<sup>6</sup> described a case of 15 year old child who was referred with complains of diminution of vision in his right eye. The child was diagnosed with large white centered subhyaloid retinal hemorrhages were seen in both of his eyes and megaloblastic anemia and was appropriately managed with packed RBC transfusion and injection hydroxycobalamine. The retinal hemorrhages gradually resolved, and the patient was discharged with a normal vision in both his eyes. The retinal hemorrhages in the megaloblastic anemia have been reported in adults and in patients with alcohol abuse due to the combined deficiency of folate and Vitamin B12<sup>2,9</sup> in previous studies, but this finding in children is rare case. The present case found improvement of visual acuity and partial resolution of the lesions. Hence, in view of foregoing literature, the purpose of this report is to highlight the occurrence of anemic retinopathy due to nutritional deficiency in children in developing countries.

### Conclusion

The present case suggests that we should suspect severe anemia, especially megaloblastic anemia as a cause of unexplained retinal hemorrhages in children and retinal examination should be done in all cases of severe anemia for timely detection and management of this dreaded complication.

### REFERENCES

1. Holt JM, Gordon-Smith EC. Retinal abnormalities in diseases of the blood. *Br J Ophthalmol* 1969;53(3):145–60
2. Lam S, Lam BL. Bilateral retinal hemorrhages from megaloblastic anemia: case report and review of literature. *Ann Ophthalmol* 1992;24(3):86–90.
3. Al-Mondhiry H, Al-Hilali A. Severe anemia. Clinical observations in 100 patients with very low hemoglobin levels. *Arch Intern Med.* 1979;139(9):1053–4.

4. Majji AB, Bhatia K, Mathai A. Spontaneous bilateral peripapillary, subhyaloid and vitreous hemorrhage with severe anemia secondary to idiopathic thrombocytopenic purpura. *Indian J Ophthalmol* 2010;58(3):234–6.
5. Haddadin AA, Shammam AG, Maayah JF. Unilateral macular hemorrhage as the only presentation of megaloblastic anemia in pregnancy. *Saudi Med J* 2000;21(9):880–1.
6. Mishra A, Gururaja R, Aggarwal S, Bhargava N, Chaudhary B. Megaloblastic anemia in a teenage patient. *Medical Journal Armed Forces India* 2014. Article in Press.
7. Liechty JM, Greenwood I. Causes of Retinal Hemorrhages and Papilledema in Young Children. *Optometry & Visual Performance* 2014;2(6):307-13.
8. Chaturvedi PK, Kumar N, Ravindu, Varshney A. Retinal bleed and cutaneous manifestation in megaloblastic anemia, a rare presentation. *Muller Journal of Medical Sciences and Research* 2015;6(2):1885-6.
9. Markar MA, Peiris JB, D Silva GU. Retinopathy in megaloblastic anemias. *Trans R Soc Trop Med Hyg* 1969;63:398-406.

**Source of support:** Nil

**Conflict of interest:** None declared