

ANEMIC RETINOPATHY AS A CAUSE FOR IMPAIRED VISION IN A CHILD WITH CHRONIC RENAL FAILURE: A CASE REPORT

Shah RK¹, Lamichhane S²

¹Department of Ophthalmology, Childrens' hospital for eye, ENT and rehabilitation services (CHEERS), Bhaktapur, Kathmandu, Nepal, ²Department of Clinical Pharmacology, Maharajgunj Medical Campus, Institute Of Medicine, Tribhuvan University, Nepal

ABSTRACT

Ocular manifestations in chronic renal failure (CRF) can be related to uremia, anemia or systemic diseases causing renal impairment. Anemia is a common feature of advanced CRF but not a commonly reported cause of visual impairment in such patients. Here, we report a case of anemic retinopathy as a cause for visual loss in a ten years old girl with CRF.

This child presented with sudden loss of vision in left eye (LE) for a week. She was diagnosed with CRF, eight months ago. She was severely anemic (hemoglobin: <8 g/dl) for last 8 months despite being treated with recombinant human erythropoietin.

Visual acuity in right eye (RE) was counting finger at 2 feet and counting finger at 1 foot in LE. Ocular examination showed dense posterior sub-capsular cataract in RE. She was unaware about the poor vision in her RE. LE fundus examination showed extensive superficial and deep retinal hemorrhage along with white centered hemorrhages (Roth's spot) and macular edema.

Anemia secondary to renal failure when severe can present with anemic retinopathy and can be the only ocular finding in children.

KEYWORDS

Anemia, anemic retinopathy, chronic renal failure, retinal hemorrhage, roth's spot

CORRESPONDING AUTHOR

Dr. Samir Lamichhane
Department of Clinical Pharmacology, Maharajgunj
Medical Campus, Institute of Medicine, Tribhuvan
University, Nepal;
Email: dr.samirlamichhane@iom.edu.np

INTRODUCTION

Anemia in advanced Chronic Renal Failure (CRF) is a common association. Erythropoietin deficiency, shortened red blood cell survival and nutritional deficiency secondary to anorexia are some well-known mechanisms for development of anemia in CRF.¹ Ocular manifestations in CRF usually result from uremia, anemia, hypertension or systemic conditions causing renal impairment. Isolated ocular effect of anemia in CRF patients is a rare finding. Here we report anemic retinopathy as a specific cause for visual impairment in a 10-year old child with CRF.^{2,3}

CASE REPORT

A ten-year old girl who had been diagnosed with CRF eight months back, was brought by her father to the eye OPD of our hospital with sudden painless loss of vision in left eye (LE) for one week. She was a prematurely delivered child at 31 weeks of gestation and had required neonatal intensive care for first three months of her life.

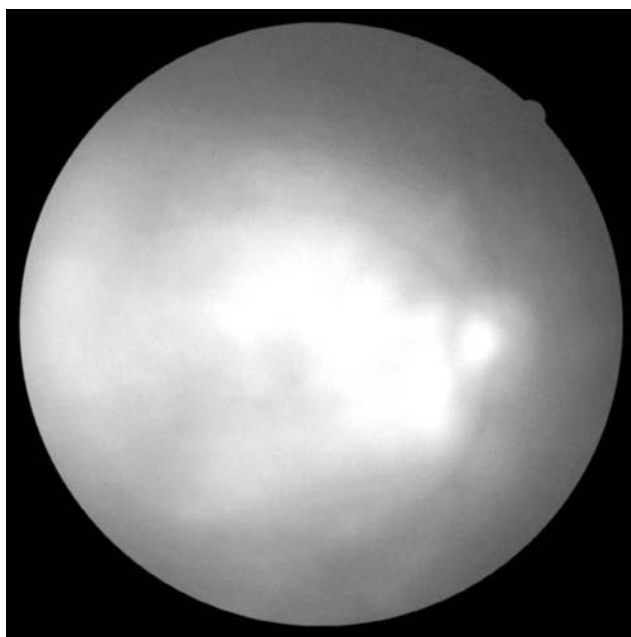


Fig. 1:

On examination, best corrected visual acuity was counting finger at 2 feet in right eye (RE) and counting finger at 1 foot in left eye (LE). Conjunctival pallor was appreciable in both eyes (BE). Her pupils in BE were sluggishly reactive to light with no relative afferent papillary defect. Right eye fundus could not be evaluated due to dense posterior sub-capsular cataract (Figure 1). However, fundus evaluation under mydriasis of LE revealed extensive retinal hemorrhage in peri-papillary area and posterior pole. Multiple white centered hemorrhages (Roth's spots) could be seen superior and inferior to the vascular arcade. There was a diffuse edema involving the macula in the same eye (Figure 2).

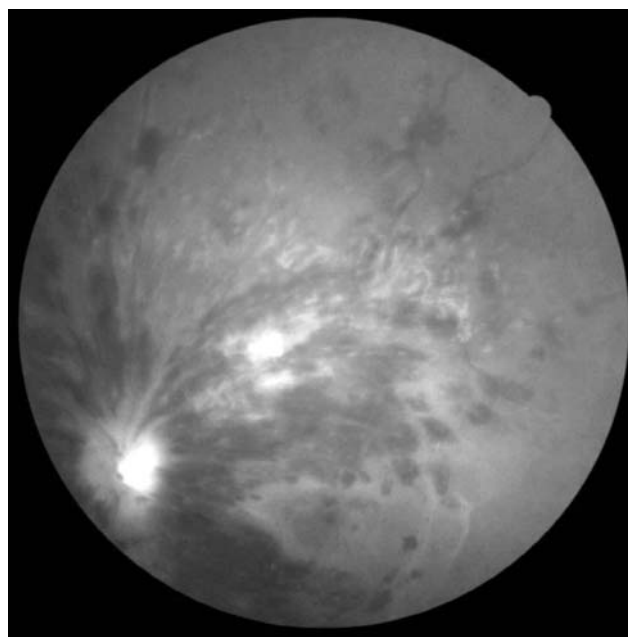


Fig. 2:

Retinoscopy in LE showed a hyperopic shift (+3.00D in 90° and +4.75D in 180° respectively).

Blood pressure in her right hand in sitting position was 100/60 mm of Hg.

Hematological work up showed very high serum urea (240 mg/dl) and creatinine (9mg/dl). She had been anemic with hemoglobin level below 8g/dl for last eight months. Her hemoglobin level at the time of presentation was 6.8g/dl. Since then she had been on weekly human recombinant erythropoietin as blood transfusion could not be done due to increased serum potassium level ($K^+=5.67$ mg/dl).

She had been planned for peritoneal dialysis by her treating physician.

DISCUSSION

Renal hypoplasia with or without urinary tract malformation is the commonest cause of CRF in children within first decade of life.⁴ With a history of premature birth and age of onset of renal impairment, the probable cause of renal failure in this case could have been renal hypoplasia. Unlike in adults, where common causes of CRF are systemic diseases like hypertension and diabetes mellitus (DM),^{2,3} retinal changes in children are usually direct effects of uremia or anemia. Some changes can be associated with hemodialysis as well.

Common anterior segment finding in CRF patients are lid edema, conjunctival pallor and corneal calcification whereas retinal findings include hypertensive retinopathy, diabetic retinopathy, maculopathy and disc pallor.² Retinal hemorrhages in CRF patients can be secondary to systemic conditions causing renal impairment like hypertension and DM or due to the effects of impaired renal function

like severe anemia. A cross-sectional study showed retinal hemorrhages in nearly one-fourth of patients with severe anemia (<8g/dl) and almost one-third of patients with concomitant anemia and thrombocytopenia.⁵ Though in this case hemoglobin level had been persistently below 8g/dl, platelets count was within normal range. Associated macular edema, vitreous hemorrhage or sub-hyaloid hemorrhage in anemic retinopathy can lead to visual impairment.⁶

In this case macular edema was the cause for visual impairment.

Anemia, which is a common feature of advanced renal failure, can cause extensive retinal hemorrhage along with macular edema. In pediatric age group, where systemic diseases like hypertension and DM are not likely causes for renal impairment, anemic retinopathy can be the only ocular finding.

REFERENCES

1. Babitt JL and Lin HY. Mechanisms of Anemia in CKD. *J Am Soc Nephrol* 2012; 23: 1631-4.
2. Bajracharya L, Shah DN, Raut KB and Koirala S. Ocular evaluation in patients with chronic renal failure - a hospital based study. *Nepal Med Coll J* 2008; 10: 209-14.
3. Reddy GN, et al. Ocular Manifestations in Chronic Renal Failure Patients. *J Med Sci and Clin Researches* 2015; 3.
4. Ardissino G, Dacco V, Testa S, Bonaudo R, Appiani AC, Taioli E, et al. Epidemiology of Chronic Renal Failure in Children: Data From the ItalKid Project. *Pediatrics* 2003; 111: 4.
5. Carraro MC, Rossetti L, Gerli GC. Prevalence of retinopathy in patients with anemia or thrombocytopenia. *Eur J Haematol.* 2001 Oct; 67: 238-44.
6. Shitole SC, Tapan JP. Ocular manifestations in patients with nutritional anaemia. *Ind J Basic and Applied Med Resc* 2014; 3: 89-94.