The eye: A lifesaver! An unusual case of Anemic Retinopathy secondary to Malnutrition and its recovery

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Abstract

A 22-year-old female was admitted with fever, disorientation and sudden decrease of vision in the emergency. Her evaluation showed tachycardia of 100/min and blood pressure of 90/70 with severe pallor. Her fundus examination showed findings of massive preretinal haemorrhage and Roth spots primarily restricted to the posterior pole. The ophthalmologist’s findings were strongly suspicious of retinopathy associated with Haemoglobinopathies, blood tests revealed her to have a hemoglobin of 1.8 gm/dL and other reports suggestive of severe B12 and Folate deficiency. She also had systemic findings of gross anemia. After ruling out other causes of anemia she was finally diagnosed as a case of Megaloblastic anemia with decreased vision and retinopathy as a very noteworthy feature. She was treated with blood transfusions and B12 and Folate supplementation which showed a prompt response in the resolution of haemorrhages and once stable was discharged home.

Keywords: Malnutrition, Retinopathy of Anemia, Severe Anemia

Introduction

Anemic retinopathy is usually asymptomatic with findings ranging from retinal hemorrhage, cotton wool spots, venous tortuosity, and occasionally white-centered hemorrhages called Roth spots. Carraro et al. reported the incidence as 28%, especially when the hemoglobin level is below 8 g/dL. The incidence goes further higher to 38% when there is coexisting thrombocytopenia.[1]

There have been other similar reports; however, a closer look shows them to be different in terms of the severity of the systemic and retinal findings and is thereby unique.[2-4] After taking appropriate ethical and institutional consent, we have proceeded to report this unusual case due to its multispecialty appeal and usefulness in our day to day practice. Correction of the underlying deficiencies is the standard treatment ensuring a favorable outcome.

Case History

A 22-year-old female presented to the emergency with altered sensorium, fever, and sudden drop in vision. She was noted to be moderately built with pallor; her blood pressure on presentation was 90/70 and pulse at 100/min. Her visual acuity was counting fingers at 1 m for both eyes and anterior segment examination normal. A dilated fundus exam showed the presence of multiple preretinal, premacular, and subhyaloid hemorrhages primarily centered around the posterior pole [Figures 1 and 2].

She was admitted into the intensive care unit and underwent a detailed systemic evaluation. Her diagnostics [Table 1] also included a chest X-ray [Figure 3], bone marrow biopsy, and abdominal ultrasound (USG). Considering the endemicity, she
was initially treated with intravenous antimalarials, however, stopped once reports proved otherwise. Considering her blood report, she was also evaluated for dengue; however, that was also ruled out. After a process of exclusion, she was diagnosed to have severe megaloblastic anemia secondary to nutritional deficiency with associated anemic retinopathy.

She was then on treated with 6 units of packed cell transfusion and 6 units of platelet transfusion and correction of serum B12 and folate with supplementation. At discharge, apart from blood parameters already enumerated, her visual acuity had improved to 3/60 and 6/36 right and left eye, respectively, and the fundus showed marked resolution of hemorrhages [Figures 4 and 5]. She was discharged on iron and folic acid supplementation with planned follow-up in 1 week; however has not been seen since.

**Discussion**

Retinopathy secondary to anemia has been usually noted in literature to be an incidental finding and has been reported due to various underlying systemic conditions. The clinical picture is of hemorrhages, venous dilatation, and nerve fiber layer infarctions secondary to the hypoxia. The associated increase in intravascular pressure causes exudation, and thrombocytopenia if any can make it worse.

By way of our case report, we wish to highlight three points.

The first point is the uniqueness of our patient in the severity of retinal findings and associated anemia, and associated B12 and Folate deficiency. Unlike previous reports, she was not an alcoholic, negative for pernicious anemia or other blood coagulopathies neither did she have any underlying malignancy. The patient was already developing cardiomegaly which could signify early symptoms of cardiac failure; hence, identification also indirectly reduced the mortality that may have otherwise occurred.

Second, it is interesting to note that despite the apparently alarming vision loss and retinal changes which we have clearly

![Figure 1: Right eye showing preretinal and subhyaloid hemorrhages](image1)

![Figure 2: Left eye showing subhyaloid hemorrhages with Roth spots on the posterior pole](image2)

![Figure 3: Chest X-ray showing cardiomegaly](image3)

| Table 1: Investigations at presentation and at discharge |
|---------------------------------------------------------|
| **Date** | **Test** | **Report** |
|----------|----------|------------|
| Day 1    | Hemoglobin (Hb) | 1.8 mg/dL |
|          | Platelet  | 22,000 cell/microliter |
|          | Leucocytes| 1500 per cumm |
|          | Liver function test (LFT) | Normal transaminases |
|          | Serum. B12 | 38 pg/mL (200-900 pg/mL) |
|          | Serum. Folate | 9.4 ng/mL (140-658 ng/mL) |
|          | Sickling  | Negative |
|          | Malaria and Dengue | Negative |
|          | Chest X-ray | Cardiomegaly |
|          | Bone Marrow Biopsy | Thrombocytopenia, Erythroid hyperplasia, reduced platelet formation suggestive of nutritional Anemia |
|          | USG       | Hepatosplenomegaly |
|          | Endoscopy with gastric biopsy | Normal, Neg for Pernicious Anemia |
| Day 16   | Hb        | 10.3 g/dL |
|          | Total leucocyte count | 8300 |
|          | Platelet count | 2,37,000 cells/microliter |
documented pre‑and post, the response to standard treatment was still very reassuring. Our clinical picture clearly documents this and cannot underscore the need to treat the primary condition itself.

Third, we wish to highlight the role of all medical professionals in being extremely vigilant in identifying such patients who might present with seemingly unrelated symptoms but are in fact presentations of the same disease. Our thorough investigation also indirectly highlights that just nutritional deficiency can create such a worrisome picture with wide‑reaching consequences, which to our knowledge has not been reported before. Recent literature has shown that Anemia in women is very prevalent in India, especially in regions where the patient hails from.[8] The other morbidities associated with such patients who fall within the childbearing age are their pregnancies, which are associated with higher maternal and perinatal mortality, low birth weight infants, and premature birth.[9,10] It is, therefore, imperative to identify them, thereby improving our own national targets and the overall health standards of the country.

Conclusion

Anemia has a high prevalence in India and can have varied presentations, hence, the need for all medical professionals to keep a keen watch for such clinical situations. Retinopathy of anemia per se is not an uncommon condition, tends to be asymptomatic, and noted incidentally as part of the general workup of such patients. A thorough multipronged team effort is the need of the hour, thereby ensuring that such uncommon presentations still yield a favorable outcome and prevent the development of other morbidities and their long‑term implications.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that her name and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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