

Unilateral Anemic Retinopathy Mimicking Central Vein Occlusion in a Patient with Menorrhagia

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Abstract

Unilateral anemic retinopathy is an uncommon but reversible condition. A 43-year-old female presented with right eye blurring of vision for one week duration. She also had menorrhagia for a year. Examination showed visual acuity of counting fingers (right eye) and 6/6 (left eye). Right funduscopy showed optic disc swelling with retinal hemorrhages, cotton wool spots, Roth's spots, tortuous vessels and macular edema. The left fundus was normal. Systemic examination revealed severe pallor with presence of pansystolic murmur. The uterus was enlarged. Her hemoglobin level was 4.7g/dl while peripheral blood film revealed hypochromic microcytic anemia. Other blood parameters and counts were normal. Blood transfusion was performed and she underwent a myomectomy by the gynecologist. Her vision improved to 6/6 and the fundus lesions resolved within three weeks. This case highlights the uncommon findings of unilateral anemic retinopathy mimicking a central vein occlusion. Workup for this self-limiting condition should exclude lymphoproliferative malignancies and coagulopathies.

Keywords: Anemic Retinopathy; Anemia; Menorrhagia; Uterine Fibroid; Retinal Vein Occlusion

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Introduction

Retinal abnormalities have long been described in anemic patients. Anemic retinopathy is due to the decrease in number of circulating red blood cells and/or hemoglobin. The

severity of retinopathy reflects the severity of the anemia. Changes seen in this condition include flame-shaped hemorrhages (including hemorrhages with white centers, known as Roth's spots), hard exudates, and cotton-wool spots. Causes of decreased visual acuity in anemia include hemorrhages involving the macula, macular edema, optic disc edema and ischemic optic neuropathy. Anemic retinopathy generally presents as a bilateral condition. There have been a few reported cases of unilateral anemic retinopathy. We report a case of unilateral anemic retinopathy mimicking central retinal vein occlusion secondary to menorrhagia due to underlying uterine fibroid.

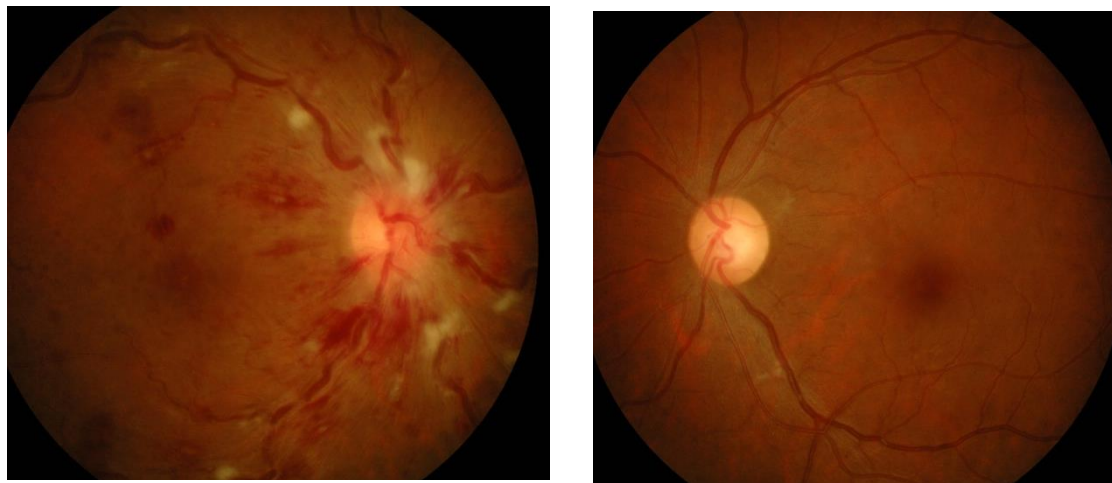
Case Report

A 43-year-old female presented with one-week duration of painless blurring of vision in the right eye. Initially in patches, the blurring of vision became coalescent but mainly confined to the central vision. Otherwise, there were no other ocular symptoms. She had history of recurrent prolonged menses for the past one year. Consequently, she was easily fatigued and had decreased effort tolerance while doing her daily household chores. There was no history of weight loss or anorexia. She had not seen any gynecologist for this problem. She was diagnosed to have hypertension since 3 years ago. With treatment, her blood pressure readings were usually within the normal range.

On examination, visual acuity in the right eye was counting fingers while the left eye was 6/6. Confrontational visual field testing showed right central scotoma whereas the left eye was normal. Pupillary reflexes were normal. Anterior segment examination of both eyes was unremarkable. Fundoscopy showed generalized right optic disc swelling with splinter hemorrhages. There was also presence of multiple cotton wool spots and Roth

spots. The vessels were dilated and tortuous while the macula was edematous. The left fundus was normal. General examination revealed marked pallor, pansystolic murmur over the entire precordium and a palpable pelvic mass (Figure 1). There was no hepatosplenomegaly or lymphadenopathy.

Figure1: The right fundus showing generalized optic disc swelling with splinter hemorrhages and cotton-wool spots on initial presentation



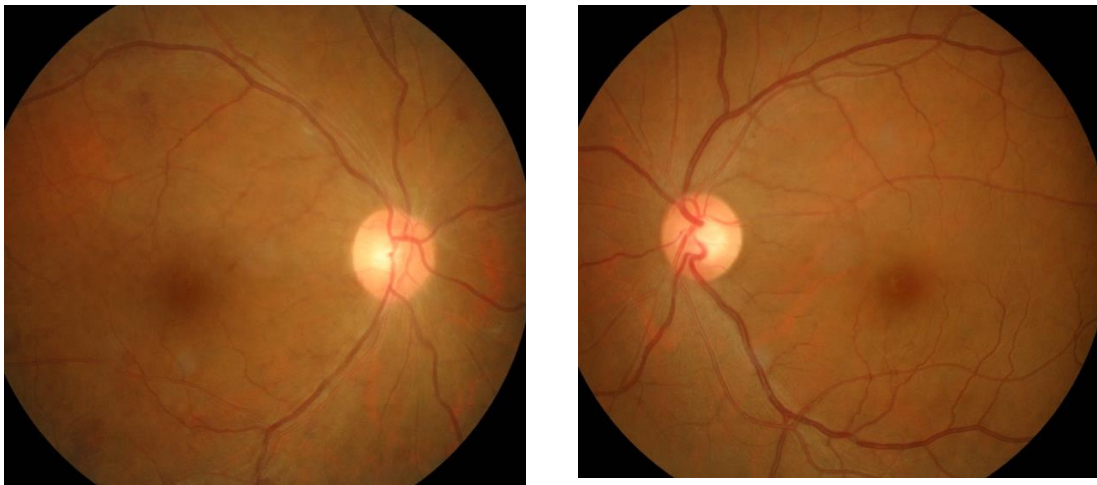
Her hemoglobin level was markedly low (4.7g/dl) but the leucocyte and platelet counts were normal. The peripheral blood picture revealed hypochromic microcytic anemia. She was referred to the gynecologist for further assessment. Transabdominal ultrasound revealed an anterior submucosal uterine fibroid measuring 10cm x 10cm. She was planned for fibroid surgery within two weeks. She was then transfused a total of four pints of packed cells. Her hemoglobin level improved to 10.9g/dl. Her right eye visual acuity also improved to 6/36 and pinhole 6/12. There was regression of optic disc swelling, cotton wool spots and macular edema (Figure 2).

Figure 2: There was regression of optic disc swelling, splinter hemorrhages and cotton wool spots after anemia was treated



She was readmitted about two weeks after her first hospitalization for elective fibroid surgery. She underwent an uneventful laparotomy and myomectomy with a further two pints of packed cells transfusion perioperatively. She was allowed home on Day 5 post-operatively with no more per vaginal bleeding and a hemoglobin level of 12.5g/dl. During follow up after one month, the visual acuity in the right eye improved to 6/6. The right fundus appearance was almost normal (Figure 3). Histopathological examination of the uterine mass revealed a benign leiomyoma.

Figure 3: Fundus appearance almost normal during follow up after fibroid surgery



Discussion

Anemic retinopathy is a condition reflecting the retinal changes that occur as a result of a decrease in the number of red blood cells or amount of hemoglobin in the cells, or both. It was first described by Ulrich in 1883, who observed transient retinal hemorrhages associated with anemia in a patient with gastrointestinal hemorrhage.

The prevalence of retinopathy is in the range of 20-28% in patients with anemia alone [1-3]. These figures increase to 42-44% in anemic patients with concomitant thrombocytopenia [1, 4]. The severity of retinopathy also increases with the severity of anemia and thrombocytopenia. Up to 83% of patients with hemoglobin levels less than 8.0g/dl had fundus abnormalities, while 62% of patients with platelet count of less than $50 \times 10^9/l$ showed similar abnormalities [4].

The hemodynamic factors implicated in anemic retinopathy include venous stasis, spasm of the blood vessels, increased capillary permeability, thrombocytopenia and hypoxia [5]. Increased blood viscosity (seen in patients with leukemia or other myeloproliferative diseases) and hypotensive episodes (especially during acute blood loss) are also contributory. All this in turn lead to a decrease in retinal perfusion or defective coagulation, resulting in the changes seen in the retina.

The commonest fundus lesion seen in anemia is retinal hemorrhages. They may be superficial and flame-shaped (most common type; located in the nerve fiber layer of the retina), dot or blot hemorrhages (in the inner retinal layers), or rarely

pre-retinal or in the vitreous. Superficial flame-shaped hemorrhages may also be accompanied by white centers; they are known as Roth spots. These spots occur as a result of nerve fiber layer infarcts causing cotton-wool spots and surrounded by retinal hemorrhages. Other retinal changes in anemia include retinal edema, venous tortuosity, arteriolar narrowing, optic disc swelling and macular star formation. It is also not uncommon to find branch or central retinal vessel occlusion. As anemia is a systemic condition, the retinal changes are usually bilateral and symmetrical. However, although rare, cases of unilateral involvement have been reported.

Investigations for anemic retinopathy are mainly directed towards identifying the underlying cause of the anemia. It is important to rule out malignancies, infections and autoimmune disorders. It may also be necessary to rule out medical conditions such as diabetes mellitus, hypertension and dyslipidemia that are contributory factors to the development of Central Retinal Vein Occlusion (CRVO). This is because CRVO has fundus lesions similar to anemic retinopathy; both conditions may also co-exist simultaneously [6].

In our patient, she presented with subacute blurring of vision with central scotoma. Her posterior segment findings of unilateral flame-shaped hemorrhages, cotton-wool spots, macular edema, optic disc swelling and venous dilatation and tortuosity resembled that of central retinal vein occlusion which has been reported in a few cases of patients with anemia [2-6]. She also had

history of hypertension which further supported the diagnosis of CRVO. Unfortunately, we were unable to perform fundus fluorescein angiography in the initial stage as she was deemed not fit for it.

However, her signs and symptoms improved rapidly within a week after blood transfusion. The improved retinal perfusion and function resulted in rapid visual improvement. This supported the diagnosis of anemic retinopathy. The underlying cause of her anemia was managed by removing the large leiomyoma in her uterus via laparotomy. She has not had recurrent menorrhagia post-operatively.

Conclusion

Unilateral anemic retinopathy is an uncommon but reversible condition which may mimic a retinal vein occlusion. Lab investigations for this self-limiting condition should be done to exclude blood disorders such as lymphoproliferative malignancies, infections and coagulopathies. An ophthalmic consult in a moderate or severely anemic patient with visual complaints is mandatory as it may provide clues to the underlying cause.

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