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Case Report

Megaloblastic anemia in a teenage patient

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Here we describe an interesting case of a child who was referred to this department with complains of diminution of vision in his right eye. When evaluated, multiple large white centered subhyaloid retinal hemorrhages were seen in both his eyes. The child gave a history of having initially presented with high grade fever, for which he was thoroughly investigated and accurately diagnosed as a case of megaloblastic anemia due to vitamin B 12 deficiency. He was appropriately managed with packed RBC transfusion and injection hydroxycobalamine, following which the patient became a-febrile. Childhood vitamin B 12 deficiency itself is extremely rare,[7] and so is megaloblastic anemia as the sole cause of pyrexia.[8] Subsequently at the time of his discharge, he noticed a decreased vision in his right eye and was referred to us. The patient was managed conservatively and followed up with regular vision testing as well as retinal examinations. The retinal hemorrhages gradually resolved, and the patient was discharged with a normal vision in both his eyes.

Introduction

Retinal hemorrhages are usually seen in diabetic and/or hypertensive retinopathy, trauma, bleeding diathesis and with an increased intracranial pressure.[1] Retinopathy due to megaloblastic anemia though rare, has been reported previously in literature.[2] However Roth spots, in a case of megaloblastic anemia is considered very rare indeed.[3–5] Finally subhyaloid hemorrhage, due to megaloblastic anemia is so rare that to the best of our knowledge it has been reported of only once earlier in literature.[6]

Case report

A 15 year old male patient, diagnosed with megaloblastic anemia was referred to the eye department, 4 days after his hospital admission, with complains of diminution of vision (DOV) in his right eye. Ocular examination revealed his best corrected visual acuity (BCVA) reduced to 6/60 in the right eye.

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The rest of the anterior segment, including the intraocular pressure (IOP) was normal i.e. 14 mm of hg as measured by the non contact tonometer (NCT). However a dilated fundoscopy revealed multiple, large, white centered subhyaloid retinal hemorrhages involving the macula [Fig. 1a]. The left eye examination revealed a normal vision of 6/6 (unaided). The anterior segment and the IOP (15 mm of hg NCT) too were normal. Fundoscopy revealed Roth's spots, similar to those in the right eye; however in the left eye the macula was not involved [Fig. 1b]. A detailed history revealed that the patient had been admitted with a history of fever of 5 days duration. He also had a history of generalized weakness and dyspnea on exertion for the past 2 months. Other than the patient being a strict vegetarian there was no other positive family or personal history. Physical examination on his presentation to the hospital had revealed a temperature of 101.2° F, pulse rate 100/minute, respiratory rate 28/minute, gross pallor and mild spleenomegaly. There was no cyanosis, icterus or lymphadenopathy. The patient was investigated thoroughly to evaluate the cause of the severe pallor and fever [Table 1]. The patient's hemoglobin was 4.3 gm/dl. The other positive findings were the low serum iron and serum B12 levels i.e. 45.4 μg/dl and <83.0 pg/dl respectively, while the serum folic acid levels were normal (11.00 ng/ml). The peripheral blood smear (PBS) revealed abnormalities in the morphology of RBCs i.e. anisocytosis, poikilocytosis, macrocytes, macroovalocytes and basophilic stippling with occasional NRBC's. Bone marrow aspiration study revealed erythroid hyperplasia with megaloblastic changes suggestive of dimorphic anemia predominantly megaloblastic anemia. A provisional diagnosis of megaloblastic anemia was made and the patient was managed with packed RBC's, 3 units, over a period of 3 days. Simultaneously he was also started on injection hydroxycobalamine 1 mg, intramuscularly, daily for the next 7 days. Within 24 h of starting the above treatment the patient had become a febrile. His hemoglobin too had gradually increased to 9.1 gm/dl over the next 72 h. It was at this stage that he had noticed a DOV in his right eye and was referred for an ophthalmological review. Optical coherence tomography (OCT) done subsequently, confirmed the above mentioned fundus findings [Fig. 2a and b]. The patient was started on topical non steroidal anti inflammatory (NSAID) eye drops and was followed up on a regular basis. The hemorrhages gradually resolved [Fig. 3] and simultaneously the patient's vision too slowly improved. He was finally discharged 2 weeks after admission with a normal vision of 6/6 in both eyes and a blood

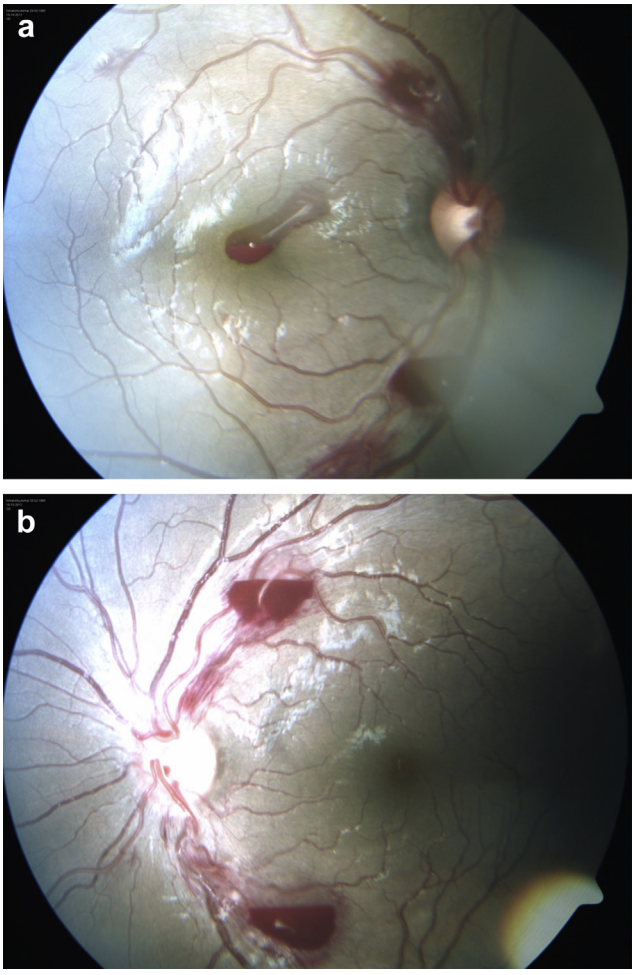

Fig. 1 – (a) Fundus photograph of the right eye. Note the subhyaloid hemorrhage overlying over the macula. (b) Fundus photograph of the left eye. Note the multiple subhyaloid hemorrhages. However the macula is spared.

Table 1 – Investigations carried out to diagnose the cause of anemia and fever.

S. No	Investigations	Report
1.	Hemoglobin	4.3 gm/dl
2.	Platelet count	175,000
3.	Total leukocyte count	6×10^9/Liter
4.	Differential leukocyte count	
	Polymorphs	42
	Monocytes	02
	Leucocytes	57
	Eosinophils	03
5.	MCV	114.8
	MCH	37.4
	MCHS	32.6
6.	Reticulocytes	1–2%
7.	Serum folic acid	11 ng/ml
8.	PCV	13%
9.	Serum bilirubin	1.0
10.	Serum amylase	60 U/L
11.	Serum albumin	4 gm/dl
12.	Widal test	–ve
13.	Thyroid test	
	T3	0.72 ng/ml
	T4	7.22 μg %
	TSH	0.9983 micro IU/ml
14.	Osmotic fragility test	WNL
15.	HBs Ag	–ve
16.	Sickling test	–ve
17.	Stool for occult blood	–ve
18.	AST	21 U/L
19.	ALT	26 U/L
20.	Dengue serology	–ve
21.	HIV	–ve
22.	Blood for malaria parasite	–ve
23.	G_6PD	18.95 U/G.HB
24.	RFT	WNL