Roth’s Spots as an Only Sign of Acute Myeloid Leukemia

A 26 years male presented to us with intermittent low grade fever for 1 month. The fever had three or four peaks per day and the maximum temperature documented in the period so far was 101.4°F. It subsided after antipyretic use and was associated with generalized weakness for the same duration. No specific history was elicited suggesting involvement of any other organ systems. Notably, the patient didn’t have any bleeding episodes, cough or altered bowel habits. He was a farmer and had no known addiction to tobacco or alcohol. The patient denied high-risk sexual behaviour or close contact with any known cases of tuberculosis.

General examination revealed elevated temperature (101.2°F), mild pallor without any evidences of mucosal bleeding or oropharyngeal candidiasis. However, he had prominent gum hypertrophy (Fig. 1) with enlarged tonsils. No sternal tenderness, lymphadenopathy or visceromegaly could be documented. On direct ophthalmoscopy we found multiple retinal hemorrhages with pale centres (Fig. 2) in both eyes. A diagnosis of multiple Roth’s spots was made. Examination of the other systems was non-contributory. A Complete Blood Count showed a hemoglobin of 4.3 gm/dl, total white cell count of 48000/cmm, with 80% blasts and occasional Auer Rods (Fig. 3). The platelet count was 21000/cmm. and few normoblasts were seen in the blood smear. Blood biochemistry including serum uric acid was within reference range. No microorganisms were grown in blood culture and transesophageal echocardiography was normal. A bone marrow aspirate showed about 75% blasts, many of which contained Auer Rods (Fig. 4). The blasts were positive for Sudan Black (Fig. 5) and Myeloperoxidase but negative for PAS. Granulocyte components were greater than 10% with maturation upto neutrophil stage, and the impression was that of AML (FAB subtype M2).

Roth’s spots have been traditionally linked with subacute bacterial endocarditis (SBE), but have also been seen in numerous conditions such as leukemia and anemia. Leukemias are a group of heterogeneous neoplastic disorders of white blood cells and the usual external signs of acute leukemia are pallor, cutaneous and mucosal bleeding, sternal-tenderness, lymphadenopathy and hepatosplenomegaly. In leukemia, Roth’s spots, the white-centered retinal hemorrhages, may represent a cluster of leukemic cells. However, there are very few documentations of such association in world literature. This patient had no prominent external signs of leukemia. More interestingly, there was no evidence of pre-retinal or vitreous hemorrhages despite thrombocytopenia. This finding of Roth’s spots led us to an eventual diagnosis of AML and this case underlines the fact that the clinical detection of Roth’s spots is not exclusively limited to SBE. We would also like to suggest that direct ophthalmoscopy should be routinely performed in all cases of otherwise unexplained fever particularly when there is a relative paucity of systemic findings.

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