IMAGE DIAGNOSIS

Roth's Spots, a clinical diagnostic clue for Infective Endocarditis

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A 24-year male was admitted to the emergency ward with a history of high-grade fever (103^0 F) with fatigue and palpitations for 3 months. He had a significant history of congenital heart disease in the form of a ventricular septal defect. He had no history of alcohol consumption or intravenous drug abuse. Cardiac auscultation revealed a harsh holosystolic murmur of grade 3 intensity over the entire precordium. The fundus examination revealed multiple pale-centered retinal hemorrhages suggestive of Roth's spots (Figure 1A and 1B). On transesophageal echocardiography, mobile vegetation (8x4 mm) was seen on the aortic valve. Multiple sets of blood cultures were however sterile. In the presence of a predisposing cardiac risk factor, high-grade fever, the immunological phenomenon of Roth's spots, and aortic valve vegetation a diagnosis of infective endocarditis was made. The patient was treated with intravenous antibiotics (ceftriaxone, vancomycin, and gentamycin) for infective endocarditis for 6 weeks and improved subsequently. The patient was discharged after the full course of antibiotics and is on outpatient follow up.

Roth's spots were described by Mortiz Roth in patients with subacute bacterial endocarditis.[1] They are round, oval, or flame-shaped hemorrhages with a white spot in their center.[2] The white center represents a fibrin thrombus at the site of vessel rupture. Rupture of retinal capillaries causes extrusion of whole blood that leads to platelet adhesion to the damaged endothelium which initiates the coagulation cascade leading to platelet fibrin thrombus formation. They represent a non-suppurative or immunological phenomenon in infective endocarditis and usually occur in less than 5% of the cases. Roth's spots are not pathognomonic for infective endocarditis but are suggestive of the diagnosis. Roth's spots are the morphological manifestation of retinal capillary rupture and may be found in leukemias, severe anemia, anoxia, carbon monoxide poisoning, disseminated intravascular coagulation, hypertension or diabetic retinopathy, and pre-eclampsia.[3] ❖

NOTE: Because of size, both images are on next page

Author Contribution

Dr. Navneet Arora: Manuscript writing and patient management
Dr. Deba Prasad Dibhar: Manuscript supervision and patient management
Dr. Byanjana Bashyal: Fundus Photography
Dr. Aniruddha Aggarwal: Photo legends

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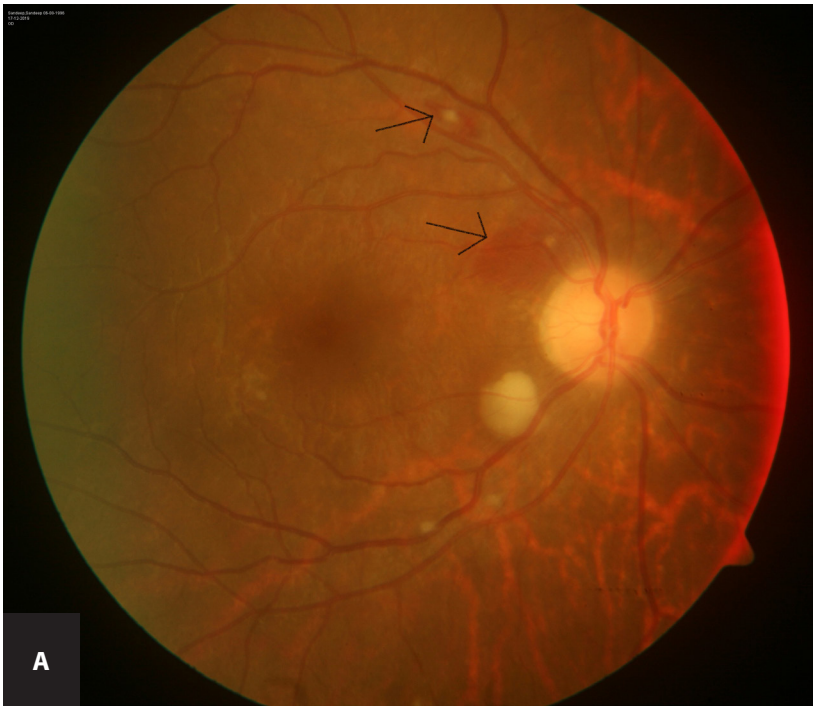

Figure 1A: The fundus photograph of the right eye of the patient shows the presence of a large (1/4th disc diameter) sized yellowish subretinal lesion suggestive of altered hemorrhage/exudate and two small white-centered retinal hemorrhages along the superotemporal arcade. There is a mild blurring of disc margins and superotemporal peripapillary retinal hemorrhage.

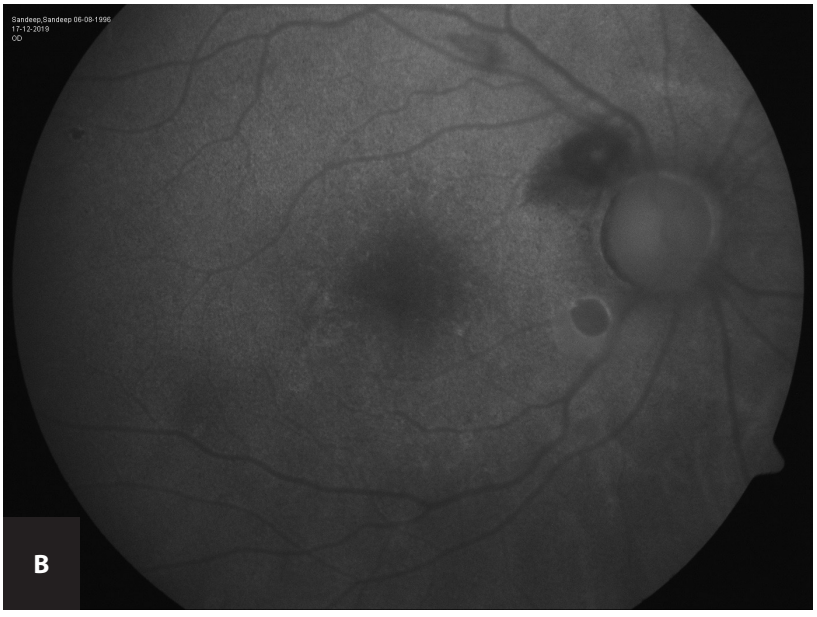

Figure 1B: The fundus autofluorescence image shows areas of blocked signal due to the overlying retinal hemorrhages.