CASE REPORT

Classical eye signs in bacterial endocarditis

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Learning point for clinicians
Acutely unwell patients may present in wide range of ways. It is vital to recognize those critically unwell patients who present ambiguously. In this case report, a patient with life-threatening endocarditis presented to an eye casualty department with visual deterioration.

A 21-year-old man presented to the eye casualty department via optician referral. He complained of loss of vision in his right eye 5 days previously. The optician queried a macular bleed and unilateral ‘papilloedema’ of the right eye. The patient gave a history of general malaise for a number of months with anorexia, headaches and weight loss over a period of weeks. It was noted that he had developed left facial weakness and dysarthria. He had a history of bicuspid aortic valve stenosis but did not attend for follow-up for the preceding 2 years.

On general examination the patient appeared cachectic and anaemic. On ophthalmic examination, visual acuity was 6/60 + 1 right eye and 6/9 left eye. Fundoscopy revealed bilateral Roth spots and right optic disc swelling with haemorrhage noted at his right macula. He underwent retinal photography as displayed in Figure 1.

The patient was referred to the medical team for management. The differential diagnoses included subacute bacterial endocarditis, haematological malignancy, anaemia and immunocompromise.

Cardiovascular examination revealed an ejection click and a systolic murmur that radiated to the carotids. Neurological examination demonstrated left facial weakness and Medical Research Council (MRC) grade 4/5 power in left upper and lower limbs. The remainder of neurological examination was otherwise unremarkable.

Blood tests revealed a normocytic anaemia with iron deficiency and raised inflammatory markers. Six sets of blood cultures grew Streptococcus mitis/oralis. Viral screen was negative.

Computerized tomography (CT) of the brain visualized an acute right middle cerebral artery (MCA) infarction thought secondary to septic emboli. In view of the CT findings, an urgent magnetic resonance angiography of the brain was performed. Multiple areas of acute infarction in the right frontal, temporal and parietal lobes were identified with post-contrast enhancement suggestive of acute cerebritis. There was also irregular narrowing of a segment of the right MCA and suspicion of a pseudoaneurysm. The patient underwent transthoracic echocardiography demonstrating bicuspid aortic valve disease with severe stenosis and moderate regurgitation. He deteriorated rapidly following this with haemodynamic instability requiring inotropic support. Subsequent transoesophageal echocardiography demonstrated a destructed aortic valve with a number of vegetations attached to the aortic valve leaflets and also affecting the anterior mitral valve leaflet. There was torrential aortic regurgitation and the appearance of an aortic root abscess.

The patient was treated with intravenous antibiotics and underwent aortic valve replacement and mitral valve repair with warfarinization. The post-surgical period was complicated by right hemisphere intracerebral haemorrhage requiring emergency decompressive hemi-craniectomy and a right middle cerebral artery mycotic aneurysm was occluded by coiling. Neurosurgical intervention was concluded with right restorative cranioplasty ~2 months after initial hemi-craniectomy.
The patient has made a remarkable recovery with intensive rehabilitation. His follow-up continues under the care of the stroke team.

**Discussion**

Roth spots are white centred retinal haemorrhages reportedly discovered by a Swiss pathologist named Moritz Roth in 1872.1 Although Roth is credited with the eponym, it is Moritz Litten who first described pale centred haemorrhages and the association with infective endocarditis in 1878.1,2 It is more correct to refer to these haemorrhages as Litten spots. The pale centre of these lesions may be due to leucocyte accumulation or platelet-fibrin plugs.1,3 Litten spots can occur secondary to endocarditis, but may also be seen in other disease states.

Litten spots are cited as the least common physical finding in infective endocarditis, occurring in 2% of patients.3 Further ophthalmic signs of infective endocarditis include conjunctival haemorrhages, chorioretinitis and endophthalmitis; the latter two being more commonly seen in fungal endocarditis.4

**Conclusion**

This case highlights the ocular findings in sub-acute infective endocarditis. Presentation of such acutely unwell patients via the emergency eye casualty service is rare, and timely recognition of signs and symptoms is vital in ensuring emergency medical intervention.

**References**