Endogenous bacterial endophthalmitis (EE) is recognized as a major cause of visual loss with an associated mortality rate and is a diagnostic challenge in the early stages of the disease, with 16% to 63% of cases being initially misdiagnosed (T. L. Jackson, S. J. Eynw, E. M. Graham, and M. R. Stanford, Surv. Ophthalmol. 48:403–423, 2003, and M. J. Greenwald, L. G. Wohl, and C. H. Sell, Surv. Ophthalmol. 31:81–101, 1986). We present a case of EE in which the patient presented with an overall clinical picture suggestive of fungal endophthalmitis but was subsequently found to have an atypical gram-positive (Streptococcus anginosus) infective endocarditis.

**CASE REPORT**

A 62-year-old man presented with cloudy vision in the left eye. This was preceded by a 4-week history of redness, pain, and photophobia.

Over the previous year, he had been undergoing extensive investigations for a history of progressive weight loss, general malaise, lethargy, and recurrent oral candidiasis. Investigations included blood tests, radiological investigations, colonoscopy, and repeated bone marrow biopsies, and anemia of chronic disease was the working diagnosis for which he had had multiple blood transfusions.

Past medical history included successful treatment for non-Hodgkin's lymphoma and poorly controlled non-insulin-dependent diabetes.

At his local hospital, he was treated for anterior uveitis with intensive topical steroids and cycloplegics with no improvement. Five weeks later, he was admitted under our unit for further investigation.

He was cachectic and pale; cardiovascular examination showed signs consistent with mitral regurgitation and combined aortic valve disease. The patient had tender hepatomegaly but no splenomegaly. He had finger clubbing and nail splinter hemorrhages.

Vision on admission was 6/12 and 6/60 in the right and left eye, respectively. Slit lamp examination showed perilimbal injection and cells in the anterior chamber with a white 1-mm hypopyon in the left eye. Fundus examination showed a white fluffy preretinal lesion superonasal to the left optic disk (Fig. 1) and right diabetic retinopathy.

In view of the initial fundal picture of the fluffy lesion, chronic course of the disease, previous oral candidiasis, and history of repeated blood transfusions, a provisional diagnosis of candidemia with metastatic Candida endophthalmitis was made. Initial blood parameters were hemoglobin 9.1, neutrophilic leucocytosis, erythrocyte sedimentation rate 114, and C-reactive protein 55. A diagnostic vitrectomy was planned, and intravenous antifungal therapy was commenced. Systemic workup included a trans-esophageal echocardiogram (TOE) which showed mitral regurgitation with signs of vegetation and a probable tear in the anterior mitral leaflet.

Twenty-four hours later the patient became pyrexial and blood cultures revealed growth of S. anginosus. With a diagnosis of subacute bacterial infective endocarditis (IE) he was commenced on intravenous benzylpenicillin (1.2 g per 4 h) and gentamicin (1 mg/kg of body weight/day).

The patient underwent urgent vitrectomy with intravitreal injection of ceftazidime and vancomycin. The rest of the septic screen, including the vitreous and cerebrospinal fluid samples, was negative.

Follow-up TOE 2 weeks later showed disruption of the anterior mitral leaflet, and the patient had to undergo emergency mitral valve replacement. Macroscopic examination of the valve confirmed the presence of the vegetation (Fig. 2).

The postoperative clinical course was uneventful. Intravenous antibiotic treatment was continued for two weeks and then substituted for oral therapy. His visual acuity remains hand movements in the left eye, and the eye remained pain free.

**Comment.** Endogenous endophthalmitis is a rare but serious condition that occurs when microorganisms cross the blood-ocular barriers and multiply within the eye. The most common source of infection is IE (3). Fungi cause this disease more often than gram-positive or gram-negative bacteria (4).

S. anginosus is a member of the S. milleri group (SMG) and is a commensal found in the mouth, nasopharynx, throat, and sinuses.

A recent review of the causes of bacterial endocarditis showed that S. milleri IE was associated with a longer than average duration of evolution before diagnosis. They are unique among streptococci because of their propensity to produce pyogenic infections complicated by multiple abscesses (5). The chronic nature of presentation and the initial clinical findings were suggestive of ocular fungal infection, which may reflect the pathogenic nature of this uncommon microorganism. Although the SMG has been associated with a variety of conditions such as IE, sinusitis, orbital cellulitis (6), intraorbital abscess formation, and cavernous sinus thrombosis (5),
endogenous bacterial endophthalmitis resulting from SMG has been reported only twice previously (1, 3) and we could not find any reports of endogenous bacterial endophthalmitis caused by the organism S. anginosus. Vegetations were documented in 88% of cases of S. milleri-positive blood culture patients, with valvular perforations present in 31%, of which 41% required surgical intervention within 1 month of presentation due to valvular dysfunction (7).

S. anginosus should be considered in the differential diagnosis of a slowly progressive endophthalmitis when fungal infection is considered likely, and an urgent systemic septic screen, including vitreous biopsy, should be undertaken as appropriate antibiotic therapy will help in reducing significant morbidity and mortality.

REFERENCES