

Case Report

Bilateral Frosted Branch Angiitis in a Patient with Tuberculous Meningoencephalitis

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Abstract

Purpose: To present a case of frosted branch angiitis with tuberculous meningoencephalitis who was followed up for 18 months after treatment.

Methods: Case report.

Results: A 19-year-old female with tuberculous meningoencephalitis complained of bilateral blurred vision, and presented with frosted branch angiitis and macula edema in both eyes. Treatment with systemic glucocorticoid and standard anti-tuberculosis medicine totally resolved the retinal periphlebitis and macular edema, with vision improvement achieved at the 18-month follow-up.

Conclusion: Frosted branch angiitis could be secondary to tuberculous meningoencephalitis. Based on standard anti-tuberculosis medicine, systemic glucocorticoid may help in the remission of frosted branch angiitis. (*Eye Science 2015; 30: 75–76*)

Keywords: frosted branch angiitis; tuberculous meningoencephalitis; glucocorticoid

A 19 year-old female came to our clinic complaining of bilateral blurred vision. Two weeks previously, she had experienced a headache and high fever with mental disorders. Cerebrospinal fluid (CSF) showed pleocytosis (640 cells/mm³, 78.5% lymphocytes) with normal biochemistry and CSF pressure. Mycobacterium tuberculosis was found in the CSF by a modified acid-fast bacillus staining, while no bacteria or fungi were revealed by staining and culture of the CSF. Levels of positive mononuclear cells with purified protein derivative (PPD)

antigen were 68% in blood and 13.5% in CSF, while levels of positive mononuclear cells with early secrete antigen 6 (ESAT-6) were 67% in blood and 11% in CSF. Hepatitis, HIV, and syphilis were excluded, as were autoimmune diseases. Brain magnetic resonance imaging (MRI) showed no abnormal changes. Tuberculous meningoencephalitis was diagnosed by the neurologist and anti-tuberculosis (TB) medicine (isoniazid 0.3 g, rifampicin 450 mg, ethambutol 0.75 g, and pyrazinamide 1.5 g daily) was initiated. At presentation, her best corrected visual acuity (BCVA) was 20/400 in the right eye and 20/800 in the left eye. On exam, a quiet anterior segment and vitritis were observed; bilateral perivascular white sheathing was present mainly in the vein, with severe macular edema evident in optical coherence tomography (OCT) images. Vascular leakage was present but a non perfusion area was absent, as determined by fluorescein angiography (FA) (Figure 1). A diagnosis of frosted branch angiitis was made and oral 60mg prednisone daily was prescribed based on her anti-TB medicine. Her BCVA improved to 20/64, with remission of angiitis, after seven days. The prednisone was tapered 5 mg per week until discontinuation after three months, and her BCVA increased to 20/32 OU, with total resolution of the vasculitis. Overall, isoniazid and rifampicin were continued for eighteen months, while ethambutol and pyrazinamide were stopped after six months. At eighteen months follow-up, her BCVA was stable, and a quiet retina with 1+ vitreous cells and absorption of the macular edema were observed (Figure 2). No acid-fast bacilli were found in a recheck of the CSF.

Frosted branch angiitis (FBA), first reported in a

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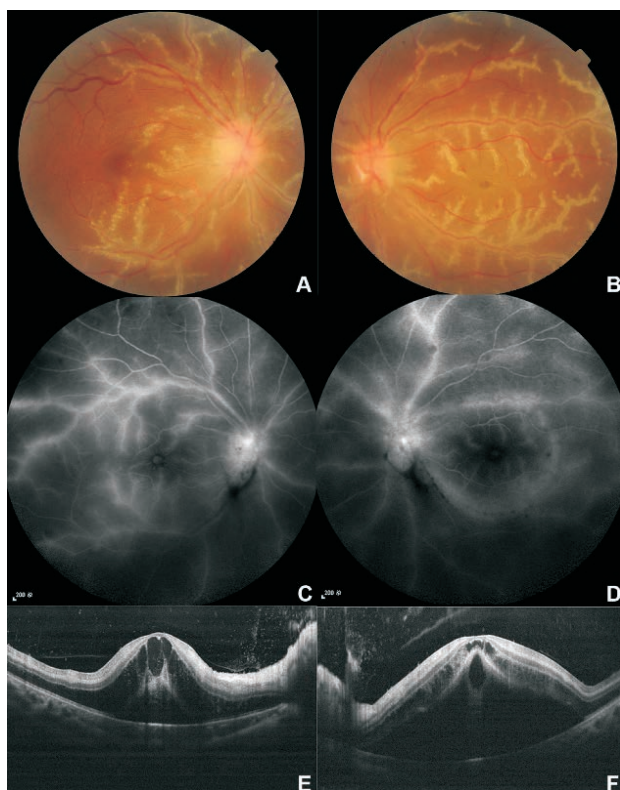


Figure 1 Bilateral frosted branch angiitis in a patient with tuberculous meningoencephalitis at presentation. Perivascular white sheathing of exudates was displayed as well as a swollen optic disc in the right and left eyes, determined by color photography (A,B). Fluorescein angiography showed extensive vascular and optic disc leakage (C, D). Large cystoid spaces and subretinal fluid accumulation were revealed by optic coherence tomography (E,F).

Japanese patient, is a rare kind of retinal periphlebitis that is typically characterized by retinal perivascular white sheathing. Most patients with FBA are otherwise healthy young people, although autoimmune disease or infections with microorganisms like viruses, tuberculo-protein, toxoplasmosis, anti-streptolysin O, measles, rubella, have been associated with FBA^{1,2}. Nevertheless, the tubercle bacillus is not commonly found in FBA patients³, and little is known about the pathogenesis and prognosis in a patient with concomitant tuberculous meningoencephalitis. A case of FBA in a patient with tuberculous meningitis was reported to resolve after 25 days of treatment with glucocorticoid⁴. Unfortunately, she dropped out afterwards and her long-term prognosis is unknown.

In our case, *M. tuberculosis* was found in the CSF and the number of ESAT-6 positive mononuclear

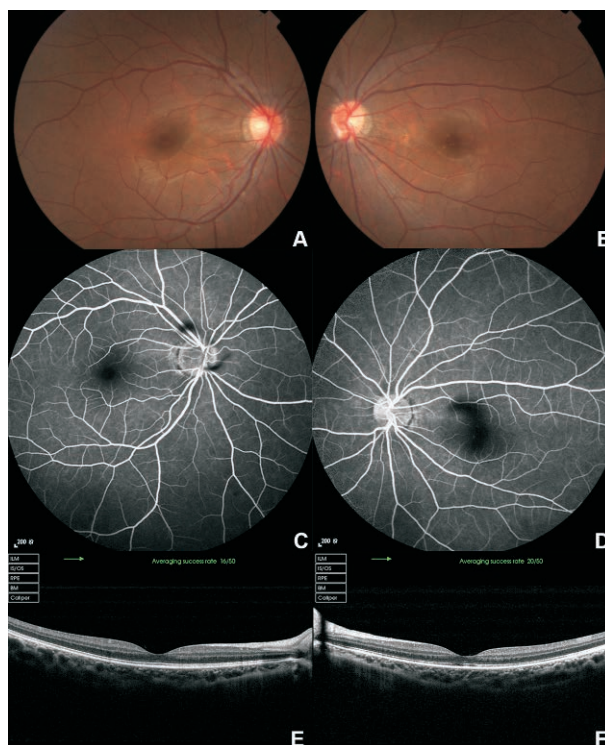


Figure 2 Resolved frosted branch angiitis at 18 months of follow-up after treatment. Resolution of retinal vasculitis with a well-demarcated optic disc was revealed (A, B). No vascular leakage (C, D) was evident. The bilateral maculas showed nearly normal contours and reflectivity (E, F).

cells was elevated in the CSF, which favored the tubercle bacillus as the pathogen. We considered that FBA may not be caused directly by an attack of *M. tuberculosis*, but may reflect an immune response to the tubercle bacillus. Therefore, using standard anti-TB treatment, prompt glucocorticoid administration could help in the remission of frosted branch angiitis in patients with tuberculous meningoencephalitis, thereby restoring vision. However, the rareness of FBA limits the design of randomized controlled trials to evaluate the optimal treatment.

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