

Ocular Complications of Brucellosis: a Case Report

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ABSTRACT

A 21-year-old female was referred for severe bilateral visual loss 3 weeks after a diagnosis of brucellosis. On ocular examination she had bilateral optic nerve head swelling, preretinal hemorrhages and retinal vasculitis. The patient was diagnosed with bilateral optic neuritis secondary to brucellosis and developed optic atrophy and severe visual loss despite medical treatment. Brucellosis can lead to various types of ocular involvement including vasculitis, optic neuritis and retinal hemorrhage.

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Introduction

Brucellosis is an infectious disease which affects people at any age. Despite the reduction in the prevalence of brucellosis, it still poses a serious health threat worldwide. The highest prevalence of brucellosis occurs in the Middle East, South Europe, and South America. A survey in Saudi Arabia revealed that 19.2% of the population are serum positive and 2.3% have previous history of clinical brucellosis.¹

Brucella is a gram-negative aerobic coccobacillus invading cells especially reticuloendothelial cells. Four types of Brucella affect humans: melitensis, abortus, suis and canis. Brucella melitensis causes the highest morbidity with severe complications.² The systemic symptoms of brucellosis are fever, exhaustion, loss of appetite, muscle cramps, weight loss, weakness, backache, headache, joint pain, cough, nervousness, abdominal pain, diarrhea, and constipation. Visual symptoms are reduction in visual acuity due to optic neuritis, vasculitis and preretinal hemorrhage. Serum agglutination, ELISA and/or blood culture are used to confirm the diagnosis of brucellosis.¹

We hereby report a patient with bilateral optic neuritis and retinal vasculitis secondary to brucellosis.

Case Report

A 21-year old female presented with edema and pain in the joints, fever and headache. Wright agglutination titer was 1/1280. The patient was diagnosed with brucellosis and underwent treatment with rifampin and tetracycline. Following treatment, the patient developed bilateral visual loss. Visual acuity was as low as light perception (LP) in both eyes. Ocular motility was limited and pupillary reflexes were reduced considerably in both eyes. Ocular examination revealed optic nerve head swelling accompanied by subhyaloid hemorrhages. The patient was hospitalized and underwent MRI and MRA, which were unremarkable. Cerebrospinal fluid (CSF) and blood culture tests were negative. Wright titer was 1/80, Coombs Wright titer was 1/80 and 2ME titer was 1/40. Anti-toxoplasmosis antibody titer and PPD tests were negative. Blood glucose level, sodium and potassium serum and EKG were normal. The patient received co-trimoxazole, doxycycline, rifampin, oral prednisolone, and dexamethasone injections and was referred to Farabi Eye Hospital for further evaluation where examination revealed vision limited to hand motions in both eyes (three months after disease onset). Slit lamp examination was unremarkable. No sign of iridocyclitis

was observed. Intraocular pressure was within normal limits in both eyes. Fundoscopic examination revealed preretinal hemorrhages, blurred optic disc margins and retinal vasculitis. Fluorescein angiography showed vascular leakage, hemorrhage, fluorescein staining of vessels and hyperfluorescence of the disc. Since systemic signs were still present, treatment was continued. Retinal hemorrhage and exudates improved in both eyes one month later, however the patient developed bilateral optic atrophy and visual acuity was limited to hand motions. Ocular motility was normal. Wright titer was 1/80 and 2ME test was negative.

Discussion

Brucellosis is an infectious disease which may affect most parts of the body. Ocular involvement may take different forms. In a survey conducted by Gangor et al. 38 out of 147 patients with brucellosis had ocular signs including conjunctivitis (17.7%), anterior uveitis (4.1%), posterior uveitis (0.7%), dacryoadenitis (1.4%) and episcleritis (2.1%). They noted that such complications were mostly observed in patients with chronic brucellosis.²

The patient reported herein developed bilateral optic neuritis and retinal vasculitis progressing to bilateral optic atrophy despite medical treatment. Ocular brucellosis may be due to the direct invasion of the bacillus into the eye or development of immunologic responses. Alfaran reported a case of endophthalmitis caused by direct bacterial invasion (*brucella melitensis*).³ Van Rooyen reported a case of keratoconjunctivitis resulting from direct contact with brucella vaccine in the eye of a veterinarian eventually leading to retinal abscess formation, cataract and uveitis necessitating enucleation despite medical treatment.⁴

Uveitis is reported to be due to immune complexes², thus its development is similar to arthritis. Akduman et al reported a patient with brucellosis who underwent vitrectomy due to uveitis. Vitreous fluid sample was positive for brucella agglutination test.⁵ Abd-Elrezak reported a patient with bilateral optic neuritis resulting from brucellosis.⁶ The patient improved after receiving anti-brucellosis medications and steroids. Cavallaro et al introduced a patient with brucellosis who developed bilateral papilledema. The patient was cured after taking anti-brucellosis medication without steroid therapy.⁷ Gunogor, in a recent report, introduced an isolated cotton wool spot as a sign of brucellosis⁸ and Levy et al presented a six year old girl with brucella meningitis and papilledema.⁹

One possible explanation for failure of treatment in our case is possible bacterial resistance to conventional antibiotics such that the systemic signs persisted for several months. Another possible explanation is ongoing immunological processes and their destructive effects. Bacterial resistance is one of the major problems in the treatment of brucellosis. Our patient also had bilateral limitation of abduction which improved throughout the course of follow-up and might have had central nervous system origin.

In summary, brucellosis may cause various types of ocular involvement including vasculitis, optic neuritis and retinal hemorrhage and lead to severe complications in certain cases. A detailed ocular examination including funduscopy should be performed in all patients with brucellosis.

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