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SHORT COMMUNICATION

Brucella meningitis and papilledema in a child

J. LEVY, M. SHNECK, M. MARCUS, T. LIFSHITZ

Department of Ophthalmology, Soroka University Medical Center, Ben-Gurion University of the Negev, Beer-Sheva - Israel

PURPOSE. *To report a rare case of* Brucella *meningitis with papilledema in a child and to discuss the findings of neurobrucellosis in children.*
METHODS. *A 6-year-old girl was admitted with headache, fever, and vomiting for 1 week. Her family reported intake of raw unpasteurized goat's milk in the past. Meningeal signs were strongly positive. Bilateral moderate optic disc edema with flame-shaped hemorrhages was observed.*
RESULTS. *The diagnosis of* Brucella *infection was established by positive blood culture for* Brucella *species, serum agglutination titer of antibodies to* Brucella *>1:160, and positive CSF culture. After treatment consisting of trimethoprim-sulfamethoxazole, rifampin, and doxycycline, the patient's condition gradually improved. One month later, the papilledema disappeared. One year after presentation, the patient remains free of symptoms.*
CONCLUSIONS. Brucella *meningitis must be ruled out in symptomatic patients reporting ingestion of raw unpasteurized goat's milk. Papilledema is a frequent clinical feature, but irreversible visual impairment is extremely rare. (Eur J Ophthalmol 2005; 15:818-20)*

KEY WORDS. Brucella*, Meningitis, Papilledema*

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INTRODUCTION

Brucellosis is still endemic in the Mediterranean and Middle Eastern countries with an incidence of up to 70/100,000 population (1, 2). The usual source of infection is the raw milk of goats, sheep, or camels. A variety of clinical presentations and complications have been documented, including nervous, musculoskeletal, genital, cardiac, and respiratory systems involvement. The ocular complications reported in patients with brucellosis include dacryoadenitis, episcleritis, chronic iridocyclitis, nummular keratitis, multifocal choroiditis, exudative retinal detachment, optic neuritis, and papilledema as result of meningeal involvement (3-6). Only a few cases of neurobrucellosis have been reported in children (1). We herein present a rare case of *Brucella* meningitis with papilledema in a child and discuss the findings of neurobrucellosis in children.

Case report

A 6-year-old girl was admitted with headache, fever, and vomiting for 1 week. The patient's family reported intake of raw unpasteurized goat's milk in the past. Medical history was unremarkable. On examination her temperature was 38.2 °C, heart rate 91, and blood

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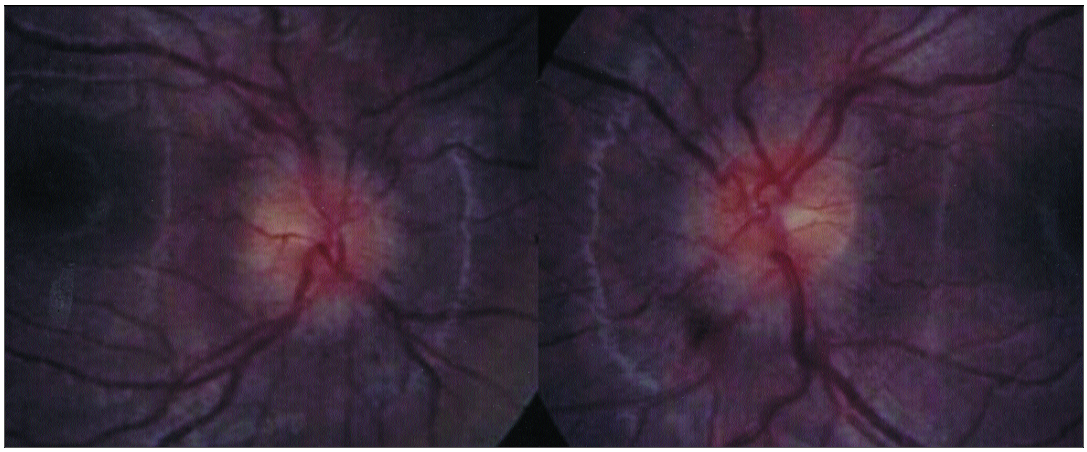

Fig. 1 - *Bilateral optic disc appearance at presentation. Moderate optic disc edema with flame-shaped hemorrhages can be observed.*

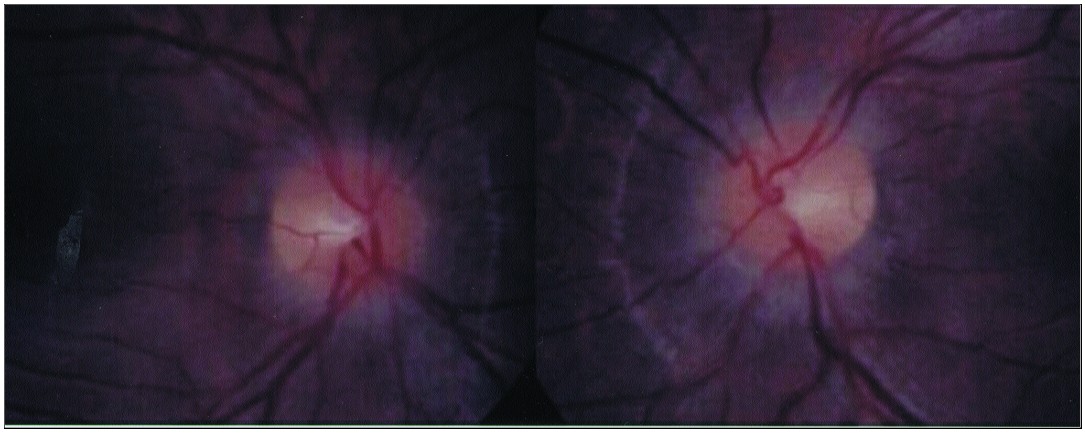

Fig. 2 - *Bilateral optic disc appearance 1 month after symptoms appeared. The optic disc edema almost completely disappeared. Visual acuity is 6/6 in both eyes.*

pressure 109/51 mmHg. She was slightly confused. There was significant neck stiffness with positive Kernig and Brudzinski signs. Ocular movements were normal. Pupils were reactive to light and no afferent pupillary defect was present. Bilateral moderate optic disc edema with flame-shaped hemorrhages was observed (Fig. 1). The rest of the neurologic examination was normal. Brain CT scan did not show brain shift or occupying mass; both optic nerves had normal appearance. Lumbar puncture was performed revealing an opening pressure of 350 mm H_2O, a white blood cell count of 96 cell/μL (90% lymphocytes), a protein level of 29 mg/dL, and a glucose level of 23 mg/dL (blood glucose level, 80 mg/dL). The patient was started on empiric intravenous gentamicin. The diagnosis of *Brucella* infection was established by positive blood culture for *Brucella* species, serum agglutination titer of antibodies to *Brucella* of 1:160 IgG and 1:480 IgM, and positive CSF culture. Treatment consisting of trimethoprim-sulfamethoxazole (TMP-SMX) first intravenously and then orally (130 mg x2/d), rifampin (300 mg x1/d), and doxycycline (35 mg/d) was also administered for 4 weeks. The patient's condition gradually improved; the fever and meningeal signs disappeared, and she was discharged after 3 weeks completely asymptomatic. When seen 1 month later, she was well, the papilledema disappeared (Fig. 2); visual acuity is 6/6 in both eyes. There is no afferent pupillary defect, color vision is normal. At last follow-up visit, 1 year after presentation, the patient remains free of symptoms.

DISCUSSION

Brucellosis is a zoonotic disease caused by the Gram-negative bacteria *Brucella* melitensis or *Brucella* abortus. It is transmitted from animals to man through the ingestion of unpasteurized milk, milk products, or uncooked meat (7). The diagnosis of systemic brucellosis

is clinically suggested in patients with fever, arthralgia, myalgias, anorexia, sweating, headache, and malaise. The onset can be acute or insidious, generally beginning within 2 to 4 weeks after inoculation (7).

The neurologic findings include fever, vomiting, headache, neck stiffness, and the presence of Kernig and Brudzinski signs. In addition, the diagnosis is established by positive agglutination titer for *Brucella* in blood of >1:160 or positive blood culture and further confirmed by positive CSF culture or an agglutination titer for *Brucella* in CSF of >1:80 (8). In adults neurobrucellosis is frequently reported in the literature with an estimated incidence of 3 to 25% of cases of generalized brucellosis (9). Children develop neurobrucellosis much less often with an estimated incidence of 0.8% (1). Different combinations of anti-*Brucella* drugs and different durations of therapy have been proposed for neurobrucellosis, with the triple combination of rifampin, TMP-SMX, and tetracycline or streptomycin being most commonly used.

Visual impairment is rare in patients with neurobrucellosis. Although papilledema has been reported in more than 50% of cases, complete resolution of the optic disc edema is usually the rule after appropriate antibiotic therapy, as in our case. Visual acuity, if reduced at presentation, usually returns to previous levels. In extremely rare cases, recovery may not occur in patients with optic neuritis. In these cases, afferent pupillary defect or reduced color vision will be present and they will probably benefit from corticosteroid, as reported in cases with marked optic disc edema and significant reduction in vision (2).

In conclusion, the possibility of *Brucella* meningitis must be ruled out in symptomatic patients reporting ingestion of raw unpasteurized goat's milk. Papilledema is a frequent clinical feature, but irreversible visual impairment is extremely rare. Initial ophthalmic examination is necessary to assess optic nerve function. Pediatricians and ophthalmologists must be alert for this serious condition, especially in endemic areas.

The authors have no proprietary interest in any of the materials or techniques used in this study.

Reprint requests to:
Jaime Levy, MD
Department of Ophthalmology
Soroka University Medical Center
P.O. Box 151
Beer-Sheva 84101, Israel
ljaime@bgu.ac.il

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