Ocular syphilis in an immunocompetent man

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A B S T R A C T
A healthy 47-year-old immunocompetent man from Northern Canada presented for ophthalmologic assessment after experiencing one month of right-sided photopsias, floaters, and a right lower nasal quadrant visual field defect. Optic disc swelling, vitritis, chorioretinitis, peripheral retinal infiltrates and hemorrhages were noted in the right eye. A broad right inferior arcuate and nasal visual field defect were also present. Fluorescein angiography of the right retina showed dilated disc vessels and staining of the optic disc.

Treponemal antibody testing, using chemiluminescent microparticle immunoassay, was highly positive; this was followed by a Venereal Disease Research Laboratory (VDRL) test with a titre of 1:32 and confirmed by Treponema pallidum particle agglutination (TP-PA) test. Testing did not demonstrate any co-infections.

Cerebrospinal fluid (CSF) analysis revealed strong reactivity (4+) to the Treponemal antibody by immunofluorescence antibody absorbed (IFA-ABS) test and non-reactivity by CSF VDRL test. Syphilis PCR of CSF was negative. A diagnosis of neurosyphilis was made. He was treated with ceftriaxone 2 grams IV q24h for 14 days. The vitritis gradually improved.

Familiarity with syphilis diagnostics is becoming increasingly important, especially given its recent resurgence amongst several at risk groups. This patient’s case highlights that non-reactive CSF VDRL is not a reliable test in the context of positive serum results and a compatible clinical picture. CSF Treponemal tests such as TP-PA and FTA-ABS offer higher sensitivity than non-treponemal tests such as VDRL in the context of CNS involvement and ocular syphilis.

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A healthy 47-year-old man from Northern Canada with a history of treated latent tuberculosis 5 years prior presented for ophthalmologic assessment. He had a one-month history of right-sided photopsias, floaters, and a right lower nasal quadrant visual field defect. Corrected visual acuity was 20/40 in the right eye and 20/40+2 in the left eye. Other than corneal arcus and mild cataracts, the anterior segments of both eyes were normal. Optic disc swelling, vitritis, chorioretinitis, peripheral retinal infiltrates and haemorrhages were noted in the right eye (Fig. 1A). A broad right inferior arcuate and nasal visual field defect were present (Fig. 2). Other than hypertensive retinopathy, the posterior segment of the left eye was normal. The left visual field had scattered non-specific peripheral and nasal defects. Fluorescein angiography of the right retina showed dilated disc vessels and staining of the optic disc (Fig. 3). There was no retinal vasculitis or sheathing. Initial evaluation included a chest radiograph, complete blood count (CBC), creatinine, electrolytes, erythrocyte sedimentation rate (ESR), C-reactive protein (CRP), antinuclear antibody (ANA), HLA-B27 haplotype, and serology for syphilis and Borrelia burgdorferi.

Treponemal antibody testing, using chemiluminescent microparticle immunoassay (CMIA; Abbott Architect), was highly positive; this was followed by a Venereal Disease Research Laboratory (VDRL) test (titer of 1:32) and confirmed by Treponema pallidum particle agglutination (TP-PA) test (Fujirebio). The CBC demonstrated a mild anemia, hemoglobin 12.8 g/dl (range 14.0–18.0), and mild renal dysfunction, creatinine 1.14 mg/dl (range 0.67–1.24). The ESR was 45 mm/hr (range 0–15). The remaining tests did not demonstrate any abnormalities. Serologic testing did

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not demonstrate infection with the human immunodeficiency virus (HIV), hepatitis B virus (HBV) and hepatitis C virus (HCV). There was also no evidence of immunity to HBV. Screening for other sexually transmitted infections with urine NAAT was negative. A lumbar puncture was performed, and the cerebrospinal fluid (CSF) analysis revealed strong reactivity (4+) to the Treponemal antibody by immunofluorescence antibody absorbed test (FTA-ABS) and non-reactivity by CSF VDRL test. Syphilis PCR of CSF was negative. CSF was colorless and demonstrated normal protein concentration of 40 mg/dL (range 20–40); mildly elevated total nucleated cell count 9 cells/μL (normal, 0–5) with mature neutrophils 15%, lymphocytes 73%, monocytes/macrophages 12%; and total red cell count 2 cells/μL (normal, 0–0.003).

A diagnosis of neurosyphilis was made. He was treated with ceftriaxone 2 g IV q24 h for 14 days. The vitritis gradually improved. Two months after completing the above treatment, his corrected visual acuity improved to 20/20–1 in the right eye. Superior right optic atrophy and a residual broad inferior arcuate visual field defect remained (Fig. 1B & 2B) Fig. 3. The patient and his wife of 14 years could not recall the presence of any genital ulcers or

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**Fig. 1.** A & B. Fundoscopy. (to be published in color) A. Fundoscopy of the right eye, performed at patient presentation, demonstrating disc swelling and peripapillary haemorrhages. B. Fundoscopy of the right eye performed approximately 2 months after presentation demonstrating optic atrophy in the superior aspect of the disc and interval resolution of the acute changes seen in Fig. 1A.

A & B. Visual Field Testing. A. Visual field testing of the right eye at presentation demonstrating a broad right inferior arcuate and nasal visual field defect. B. Visual field testing of the right eye performed approximately 2 months after presentation demonstrating residual broad inferior arcuate and nasal visual field defects.
cutaneous eruptions. The patient’s wife also underwent serologic testing for syphilis, HIV, HBV, and HCV. Her treponemal antibody results were also positive with VDRL titer of 1:32. She was treated with 2.4 million units of intramuscular benzathine penicillin G weekly for three consecutive weeks. The Public Health authorities were made aware, as both patients reported additional sexual partners.

Familiarity with syphilis diagnostics is becoming increasingly important, especially given its recent resurgence amongst HIV infected patients, men who have sex with men, injection drug users, and those engaging in high risk sexual behaviours [4]. This resurgence has prompted researchers to investigate ocular syphilis in several populations [2,3]. This patient’s case highlights that non-reactive CSF VDRL is not a reliable test in the context of positive serum results and compatible clinical picture. CSF Treponemal tests such as TP-PA and FTA-ABS offer higher sensitivity than non-treponemal tests such as VDRL in the context of CNS involvement and ocular syphilis, amongst others [1].

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Consent

Written informed consent was obtained from the patient for the publication of the present case report.

Author contribution

LM collected available information and drafted the manuscript. KK provided supervision in addition to laboratory expertise. RK and JE provided the patient data. All authors provided critical review of the manuscript.

Declaration of Competing Interest

None.

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