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Case Report

Acute Syphilitic Optic Neuritis in an Older Adult: A Case Report

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Abstract

Background: Treponema pallidum can invade the central nervous system during early infection and cause neurosyphilis, including acute syphilitic optic neuritis. In recent years, the number of syphilis cases in younger age groups as well as in older age groups has been increasing; however, diagnosing central nervous system syphilis remains challenging because of its multiple clinical manifestations. Herein, we present the case of an older man with acute syphilitic optic neuritis and meningitis.

Case presentation: A male in his 80s, who tested negative for human immunodeficiency virus, presented with a sudden onset of blurred vision. An optic nerve protrusion was identified on magnetic resonance imaging. Based on this finding, combined with clinical optic symptoms and increased T. pallidum hemagglutination assay and T. pallidum particle assay levels in his cerebrospinal fluid, he was diagnosed with acute syphilitic optic neuritis.

Conclusion: This case highlights the importance of considering acute syphilitic optic neuritis in the differential diagnosis, even in patients older than 80 years. Magnetic resonance imaging plays a crucial role in making accurate diagnoses and preventing unnecessary procedures. The increasing incidence of recurrent syphilis introduces diagnostic challenges, highlighting the need for early identification and management of neurosyphilis.

MeSH Keywords: Syphilis; Neurosyphilis; Radiology; Optic neuritis; Treponema pallidum

List of Abbreviations

CNS: Central Nervous System; GCA: Giant Cell Arteritis; HIV: Human Immunodeficiency Virus; RPR: Rapid Plasma Reagin

Introduction

Syphilis, an infection caused by Treponema pallidum, is divided into the following stages: primary, secondary, latent, and tertiary. Although neurosyphilis was previously thought to appear in the tertiary phase of the condition, it has now been demonstrated that T. pallidum can invade the central nervous system *via* hematogenous spread from the infection site during the early clinical course of the disease [1]. The diagnosis of neurosyphilis requires elevated Rapid Plasma Reagin (RPR) and T. Pallidum Hemagglutination Assay (TPHA) levels in the cerebrospinal fluid and neurological or neuropsychiatric symptoms; Magnetic Resonance Imaging (MRI) findings also aid in the diagnosis [2,3]. Patients with optic neuritis comprise approximately 0.5 to 5.1% of syphilis infection cases, and the number of syphilis cases is expected to increase acutely in the future [4,5]. Additionally, older adults have been frequently infected with syphilis in recent years [6]. However, there have been no reports of optic neuritis due to syphilis in patients aged > 80 years.

In this report, we describe the case of acute syphilitic optic neuritis in a patient in his 80s who presented with vision loss. MRI revealed a projection of the optic disc, consistent with recent literature [7].

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Case Presentation

An 82-year-old male patient presented with a sudden onset of blurred vision. His previously corrected visual acuity of 1.0 in both eyes deteriorated to 0.3. His initial visit to a local ophthalmologist was inconclusive, leading to a referral to our facility for further evaluation.

In addition to the loss of visual acuity, no other significant neurological abnormalities were detected on physical examination. Ophthalmological examination revealed optic disc edema. Serological tests showed elevated RPR and TPHA titers (38.2 R.U. and 4,303 T.U., respectively), and lumbar puncture revealed an increased cerebrospinal fluid cell count of 99 (comprising 90% mononuclear cells), protein level of 87 mg/dL, RPR of 3.2 R.U, and TPHA at a dilution of 1 in 5,120. The patient tested negative for human immunodeficiency virus.

MRI of the brain (Figure 1) revealed optic disc protrusions on T2-weighted imaging. Postcontrast T1-weighted imaging was not performed because of the patient's impaired renal function.

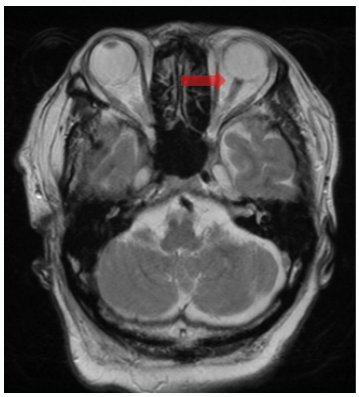

Figure 1: T2-weighted image shows protrusions of both optic discs (arrow).

Based on the serological and cerebrospinal fluid results and the optic lesion observed on MRI, the final diagnosis was acute syphilitic optic neuritis. Later, the patient confessed that he had a history of extramarital sexual intercourse with multiple partners. After intravenous administration of penicillin G at a dose of 15 million units per day, the patient's symptoms improved rapidly.

Discussion

In recent years, the incidence of syphilis has increased. Known as the "great masquerader," syphilis can mimic the clinical presentations of other diseases. We present the case of acute syphilitic optic neuritis that was incorrectly diagnosed during the initial visit to an ophthalmologist, imposing significant diagnostic challenges.

Syphilis progresses in four stages: primary, secondary, latent, and tertiary. Ocular involvement can occur at any stage and may lead to blindness if left untreated [8]. Diagnosing syphilitic optic neuritis is particularly challenging. Approximately 40% of patients are initially misdiagnosed; therefore, their vision is not fully recovered [4].

Our patient was diagnosed with acute syphilitic optic neuritis. Ocular involvement is observed in >3% of syphilis cases [9,10] and may be an early indicator of neurosyphilis [11]. Optic nerve involvement, which causes papilledema, optic perineuritis, and optic neuritis, is the second most common form of syphilitic ocular impairment [12]. Fundoscopic examination of syphilitic optic neuritis usually shows optic disc swelling in at least one eye [13].

Radiological findings in optic nerve syphilis are limited [13-15], but they are generally classified into two categories: 1) lesions confined to the optic disc and the transitional zone between the optic disc and optic nerve and 2) inflammation of the optic nerve sheath or dura mater, suggesting perineuritis.

The first type is characterized by optic disc protrusion and mild swelling of the optic nerve, with minimal or no enhancement on postcontrast MRI [13,14]. In this case, optic disc bulging observed on MRI was consistent with that observed in previous studies [13,14]. In the second type, inflammation of the optic nerve sheath or dura mater reflects significant enhancement of the optic nerve sheath on Contrast-Enhanced MRI (CE-MRI) [15].

The differential diagnosis of syphilitic optic neuritis includes cat-scratch disease and Giant Cell Arteritis (GCA). Cat-scratch disease often shows optic disc protrusion and contrast enhancement on MRI, which are atypical findings of syphilitic optic neuritis [16]. This finding helps to differentiate cat-scratch disease from syphilitic optic neuritis. Additionally, the "central bright spot sign" seen on CE-MRI is characteristic of GCA [17] but is not found in optic nerve syphilis, which helps distinguish GCA from syphilitic optic neuritis. In our case, common symptoms of GCA, such as headache and jaw claudication, were not observed, although CE-MRI was not performed because of impaired renal function.

Older adults have been more frequently infected with syphilis in recent years than ever [6]. However, to our knowledge, cases of acute optic neuritis due to syphilis have not been reported in older individuals aged >80 years. We believe that this case will aid in the diagnosis of neurosyphilis in future patients as syphilis infections are becoming common. In developed countries, the number of sexually active older adults who benefit from advanced medical care has increased, making active syphilis a common disease in aging societies.

Conclusion

Our case highlights the importance of considering secondary syphilis in the differential diagnosis. Our findings suggest that based on the characteristic radiological features, along with serological testing, syphilitic infection should be promptly considered. As the number of syphilis infections has rapidly increased in older individuals, awareness of this condition can facilitate early diagnosis and appropriate treatment.

Learning Point

Syphilitic optic neuritis should be considered in the differential diagnosis of acute vision loss, especially in elderly patients, as syphilis infections are increasingly observed in this demographic.

Magnetic Resonance Imaging (MRI) plays a crucial role in diagnosing syphilitic optic neuritis, helping to identify optic disc protrusion and other characteristic radiological features.

Early recognition and treatment of syphilitic optic neuritis are essential to prevent permanent visual impairment, emphasizing the importance of considering syphilis even in non-HIV-infected older adults.

The rising incidence of syphilis, including in older populations, necessitates increased awareness among clinicians to facilitate prompt diagnosis and appropriate management.

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