American Journal of Medical Case Reports, 2020, Vol. 8, No. 12, 471-473
Available online at http://pubs.sciepub.com/ajmcr/8/12/10
Published by Science and Education Publishing
DOI:10.12691/ajmcr-8-12-10

Early Neurosyphilis in an Immunocompetent Patient: A Case Report

Ankit Dubey*, Jaspreet Dhanjal, Chukwuemeka A. Umeh

Department of Internal Medicine, Hemet Valley Medical Center, Hemet, California, USA
*Corresponding author: Ankit.dubey@phh.ms

Received July 23, 2020; Revised August 25, 2020; Accepted September 03, 2020

Abstract While the prevalence of syphilis had seen a significant decrease in the post-antibiotic era, it can still present in immunocompromised patients. While it is rare for immunocompetent patients to present with advanced stages of Syphilis, prompt recognition and diagnosis is imperative to prevent serious complications. We present the case of a 52 year old immunocompetent female who was diagnosed with syphilis 30 years ago who presented with vague symptoms including a rash, blurred vision, and headache and was diagnosed with early neurosyphilis.

Keywords: *neurosyphillis, immunocompetent*

Cite This Article: Ankit Dubey, Jaspreet Dhanjal, and Chukwuemeka A. Umeh, "Early Neurosyphilis in an Immunocompetent Patient: A Case Report." *American Journal of Medical Case Reports*, vol. 8, no. 12 (2020): 471-473. doi: 10.12691/ajmcr-8-12-10.

1. Introduction

Syphilis is caused by the spirochete bacterium, *Treponema pallidum*. Syphilis is most commonly spread via sexual contact, but can also be transmissible through blood contact/transfusions, mother to fetus in utero, and even skin breaks in contact with infectious lesions. Clinical findings and manifestations are dependent on the stage of the disease. The stages of syphilis are primary, secondary, latent, and tertiary. Primary syphilis presents weeks to months after infection with painless, ulcerative lesions (chancre) in the genital area [1]. Chancres may heal a few weeks after infection with or without treatment, however syphilis can quickly progress to a systemic disease with widespread dissemination. If left untreated, approximately 25% of individuals will develop subsequent secondary syphilis 1 to 4 months after infection. This stage represents a systemic infection and can present with various findings. It typically presents with lymphadenopathy, and a diffuse macular or papular rash on the trunk and extremities that includes the palms and soles. Secondary syphilis may also present with condylomata lata, alopecia and general constitutional symptoms. Less common manifestations include gastrointestinal, musculoskeletal, renal, and neurological abnormalities. The latent stage of syphilis refers to when an individual is shown to have *Treponema pallidum* on serologic testing, but is asymptomatic. Latent syphilis is categorized as early (infection occurring in previous 12 months) or late (infection occurring after 12 months, or unknown time of infection) [2]. About 25-40% of untreated individuals will develop tertiary (late) syphilis ranging from 1 to 30 years after infection [3]. Clinical findings can be highly variable in tertiary syphilis as it can affect any organ system. Common manifestation include dilated aorta and aortic valve regurgitation (aortitis), granulomatous nodular lesions (gummas) that can occur anywhere but usually on skin or bone, and general paresis and tabes dorsalis (neurosyphilis). While the prevalence of syphilis had seen a significant decrease in the post-antibiotic era, it can still present in immunocompromised patients. While it is rare for immunocompetent patients to present with advanced stages of Syphilis, prompt recognition and diagnosis is imperative to prevent serious complications. We present the case of a 52 year old immunocompetent female who was diagnosed with syphilis 30 years ago who presented with vague symptoms including a rash, blurred vision, and headache and was diagnosed with early neurosyphilis.

2. Case Report

A 52 year old female with underlying methamphetamine use, human papillomavirus (HPV), and history of syphilis presented to the emergency department (ED) with symptoms of right eye pain, redness, and blurry vision for 10 days. She stated that it felt like a "hole going through her eye". Upon further questioning, the patient revealed that she had first been diagnosed with syphilis about 30 years ago after she had sexual contact with a syphilis positive man. She was treated for it back then with full resolution of her symptoms. She has had no recurrent sexually transmitted disease (STD) testing after that. About two weeks prior to admission, the patient had sexual contact with the same partner. Since then, she noticed the presence of vaginal lesions that were occasionally tender but claimed that they went away spontaneously. Upon review of systems, the patient noted that she has associated symptoms of rash and headache. Her rash appeared around the same time as her ocular

symptoms and was located on her chest, back, and palms. It was described as non-pruritic, erythematous, and non-tender in nature. Her headache was dull and constant in nature, and occasionally worse with light. In the ED, her labs revealed reactive fluorescent treponemal antibody absorption (FTA- Abs) and she was admitted for further workup.

On admission, the patient's vitals were unremarkable and her CBC showed no leukocytosis. She tested negative for human immunodeficiency virus (HIV). A urine drug screen was positive for amphetamines. Her neurological exam was unremarkable with negative Kernig's and Brudzinski's signs. Her ocular exam was significant for right eye conjunctivitis with decreased visual acuity. Her skin exam revealed a diffuse erythematous maculopapular rash involving the entire trunk and her palms bilaterally. Lastly, a vaginal exam was also performed with no significant findings. She received a dose of IM penicillin and was scheduled for a lumbar puncture to rule out neurosyphilis. Her lumbar puncture revealed a cerebrospinal fluid (CSF) WBC 29/microL, Monocyte 26/microL, Glucose 49/microL, and Protein 89mg /dL. Additionally, CSF was reactive for VDRL with 1:2 titers. The patient was started on IV penicillin and discharged to a skilled nursing facility for 14 days of IV penicillin therapy.

3. Discussion

3.1. Epidemiology

Since 2000, the number of syphilis cases in the United States has been rising, and has nearly doubled. There has been a greater rise of primary and secondary syphilis in men, particularly amongst homosexual and bisexual males. As of 2018, the overall rate of primary and secondary syphilis in the United States was 10.8 cases per 100,000 population [3].

Prior to the introduction of penicillin, neurosyphilis was a relatively common complication, occurring in approximately 25-35% of syphilis patients. Since the introduction of antibiotics, the majority of neurosyphilis cases are seen in persons with HIV. It is difficult to say for certain the number of patients with late syphilis due to the lack of reliable testing and reporting of late disease cases. However following the increasing overall cases of syphilis, there has been an increasing amount of late syphilis cases as well. In 2018, the CDC reported 12.3 cases per 100,000 cases of late stage syphilis in the United States [3].

3.2. Clinical Presentation and Diagnosis

Neurosyphilis is usually divided into early and late stages based on cerebral structures that are affected. The early stages of the disease usually affect the cerebrospinal fluid (CSF), meninges, and vasculature and can be asymptomatic on presentation or present as meningitis, ocular syphilis, otosyphilis, or meningovascular syphilis. [3,5]. Asymptomatic neurosyphilis can occur weeks to months after initial contact but usually does not occur after two years. On the other hand, symptomatic meningitis can occur as early as one year after initial contact, but can also present several years later. Patients with syphilitic meningitis usually present with concomitant ocular and/or secondary syphilis symptoms, as was the case with this patient [6]. Meningitis symptoms typically manifest as headaches, nausea, vomiting, confusion, and stiff neck. Ocular syphilis usually manifests as decreased visual acuity but can affect just about any part of the ocular structure including, optic nerve, uvea, and retinal vasculature [7].

Late neurosyphilis is when the infection affects the spinal and brain parenchyma and presents as two main forms: General Paresis and Tabes Dorsalis. Both of these manifestations are classified as "tertiary syphilis" and have been studied extensively in the past. Diagnosis of neurosyphilis is largely dependent on spinal fluid examination along with clinical suspicion and whether the patient has a known history of syphilis [8]. In patients with an unknown history of primary syphilis, the first step in establishing a diagnosis is confirming a past infection of T. Pallidum with serum VDRL, RPR , FTA-ABS etc. Once a prior history has been established or the patient has a known history of Syphilis, spinal fluid should be tested with a lumbar puncture in any of the following scenarios: 1. Neurologic or Ophthalmic signs regardless of the stage of syphilis. 2. Evidence of active tertiary syphilis. 3. Treatment failure in any stage of syphilis [4,8]. After spinal fluid has been collected from a lumbar puncture, the next step is to test the CSF-VDRL reactivity. A reactive CSF-VDRL establishes the diagnosis of neurosyphilis with a diagnostic sensitivity of 67-72% [10]. If non-reactive, further analysis needs to be performed including assessing the CSF WBC, CSF Protein, and CSF-RPR reactivity [8,9,10].

3.3. Treatment

[4] Centers for Disease Control and Prevention has outlined standard treatment regimen guidelines for neurosyphilis. First line treatment is aqueous crystalline penicillin G (18 to 24 million units per day, administered as 3 to 4 million units intravenous [IV] every four hours, or 18 to 24 million units daily as a continuous infusion) for 10 to 14 days, or Procaine penicillin G (2.4 million units intramuscular [IM] once daily) plus probenecid (500 mg orally four times a day), both for 10 to 14 days. These regiments can also be used on penicillin allergy patients who have been desensitized. An alternative treatment for patients who have a mild penicillin allergy is ceftriaxone (2 g IV or IM daily) for 10 to 14 days. High dose doxycycline (200 mg orally twice a day for 21 to 28 days) also may be an effective alternative treatment but is not recommended by the CDC [3,6]. Currently there are no controlled trials that have evaluated the efficacy of standard penicillin treatment, and these recommendations are based on clinical experience.

4. Conclusion

While diagnosis for most cases of syphilis are highly anticipated and monitored in the immunocompromised population, there needs to be a high clinical suspicion for neurosyphilis in immunocompetent patients especially

those with unknown history. We present the case of a 52 year old immunocompetent female who was diagnosed with neurosyphilis and was promptly treated with prolonged IV penicillin.

References

[1] Sparling PF. Natural history of syphilis. In: Sexually Transmitted Diseases, Holmes KK, Mardh PA, Sparling PF, et al (Eds), McGraw-Hill, New York 1990. p.213.

[2] Rosahn PD. Autopsy studies in syphilis. 649 Information supplement #21, J Venereal Disease; U.S. Public Health Service Venereal Disease Division, Washington, DC 1947.

[3] United States Centers for Disease Control and Prevention. Sexually transmitted disease surveillance, 2018 https://www.cdc.gov/std/stats18/Syphilis.htm (Accessed on October 17, 2019).

[4] Sexually transmitted diseases treatment guidelines, 2015. Workowski KA, Bolan GA, Centers for Disease Control and Prevention MMWR Recomm Rep. 2015;64(RR-03):1.

[5] Conde-Sendín MA, Amela-Peris R, Aladro-Benito Y, Maroto AA. Current clinical spectrum of neurosyphilis in immunocompetent patients. Eur Neurol 2004; 52:29.

[6] Moradi A, Salek S, Daniel E, et al. Clinical features and incidence rates of ocular complications in patients with ocular syphilis. Am J Ophthalmol 2015; 159:334.

[7] Oliver SE, Aubin M, Atwell L, et al. Ocular Syphilis - Eight Jurisdictions, United States, 2014-2015. MMWR Morb Mortal Wkly Rep 2016; 65:1185.

[8] Stokes JH, Beerman H, Ingraham NR. Modern Clinical Syphilology: Diagnosis, Treatment, Case Study, 3rd ed, WB Saunders, Philadelphia 1944.

[9] Marra CM, Tantalo LC, Maxwell CL, et al. The rapid plasma reagin test cannot replace the venereal disease research laboratory test for neurosyphilis diagnosis. Sex Transm Dis 2012; 39:453.

[10] Izzat NN, Bartruff JK, Glicksman JM, et al. Validity of the VDRL test on cerebrospinal fluid contaminated by blood. Br J Vener Dis 1971; 47:162.