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Presumptive Syphilitic Polyarthritis Mimicking Seronegative Rheumatoid Arthritis in a Resource-Limited Setting: A Case Report and a Lesson for General Practitioners in Remote Areas

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Abstract

Background: Syphilis is a multi-systemic sexually transmitted infection capable of mimicking numerous diseases, including rheumatoid arthritis. Musculoskeletal involvement in secondary syphilis is rare and may be easily overlooked, especially where diagnostic capacities are limited. This report highlights atypical clinical features, diagnostic constraints, and therapeutic response in a patient facing diagnostic and treatment affordability barriers.

Case Presentation: A 29-year-old woman presented with progressive symmetric polyarthritis without any syphilitic stigmata. Initial investigations suggested seronegative rheumatoid arthritis; however, a reactive Venereal Disease Research Laboratory (VDRL) test prompted a presumptive diagnosis of syphilitic polyarthritis despite the absence of confirmatory treponemal tests due to unavailability and unaffordability. Treatment with weekly benzathine penicillin G for three weeks resulted in complete symptom resolution and VDRL seronegativity on follow-up at three and six months.

Conclusion: In resource-poor settings, high clinical suspicion for syphilis is critical in unexplained polyarthritis when confirmatory diagnostics are inaccessible. Early presumptive diagnosis using VDRL testing and adequate prompt treatment prevents unnecessary complications and public health risks, including congenital syphilis.

Keywords: Syphilis, polyarthritis, rheumatoid arthritis, resource-limited setting, diagnostic challenges

List of abbreviations

Abbreviation	Definitions
ANC	Antenatal Care
Anti-CCP	Anti-Cyclic Citrullinated Peptide
CDC	Centre for Disease Control
CRP	C-Reactive Protein
ESR	Erythrocytes Sedimentation Rate
LMICs	Low-and middle-income countries
NTDs	Neglected Tropical Diseases
RA	Rheumatoid Arthritis
TPPA	Treponema Pallidum Particle Agglutination Assay
VDRL	Venereal Disease Research Laboratory

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Introduction

Syphilis remains a significant public health challenge despite a wide range of available screening tests and effective treatment options. Though not one of the Neglected Tropical Diseases (NTDs) like its Yaw's counterpart, it is a sexually transmitted infection caused by Treponema pallidum. Recent figures indicate that syphilis is re-emerging globally,[1] with over six million new cases reported annually in young and middle-aged adults.[2] Syphilis can also be transmitted transplacentally from an infected pregnant woman to her fetus,

causing congenital syphilis. Worldwide, more than 700,000 cases of congenital syphilis and about 390,000 adverse fetal and neonatal outcomes were reported in 2022. These outcomes include 150,000 stillbirths and early fetal deaths, 70,000 neonatal deaths, 55,000 preterm/low-birth weight, and 115,000 infants with disfiguring stigmata of congenital syphilis.[3] The overall prevalence of syphilis among pregnant women in sub-Saharan Africa is estimated to be 2.7%, inferring that about one million pregnancies are at risk each year.[4] In Nigeria, the prevalence varies across regions and demographic groups, with the World Bank/WHO Antenatal Care (ANC) syphilis data showing an upward trend from 0.41% in 2021 to 0.6% in 2023.[5]

Syphilis has a spectrum of clinical manifestations, presenting typically with a painless genital, oral or anal rash (chancre) in the primary phase, while the secondary stage usually shows as muco-cutaneous maculopapular rash. A latent, asymptomatic stage comes before the final devastating late or tertiary syphilis, which is characterized by gummatous lesions, cardiovascular complications, neurosyphilitic manifestations and even dementia. In low- and middle-income countries (LMICs), clinicians often encounter diagnostic difficulties due to inadequate laboratory resources and patient financial constraints, resulting in delayed diagnosis, improper treatment, and heightened risk of disease transmission, including congenital syphilis.

Syphilis can be a great imitator with unusual manifestations such as syphilitic rupia, erythema multiforme-like lesions, leukoplakia-like glossitis, palatal perforations and polyarthritis resembling reactive arthritis.[6,7] These polymorphous presentations pose a diagnostic challenge leading to missed diagnoses, delayed treatments, and increased risks of transmission, including congenital syphilis. The ability of syphilis to mimic autoimmune diseases like rheumatoid arthritis (RA), often leads to misdiagnosis and inappropriate management, highlighting the critical need for high index of suspicion and broad differential diagnosis.[7,8]

Syphilitic polyarthritis is a rare presentation of secondary syphilis that has not been extensively documented and reported in Nigeria. Therefore, this case report presents a child-bearing-aged woman with presumptive syphilitic polyarthritis initially masquerading as RA, stressing the need for clinicians, especially those working in remote locations and resource-limited settings to consider syphilis in the differential diagnosis of unexplained polyarthritis. It also highlights diagnostic challenges due to a lack of accurate diagnostic tests for RA and specific serological tests for syphilis, necessitating the use of readily-available options like rheumatoid factor and non-treponema tests (VDRL).

Case Presentation

A 29-year-old female patient, mother of three in a polygamous marriage, presented at Almanzoor Diagnostic and Clinical Services, Bauchi, Nigeria with a 2-month history of gradually worsening joint pain affecting almost all the joints in her body, including hands, wrists, elbows, knees, ankles, feet, neck, and back. The joint pain was more severe at rest, relieved by movements and associated with early morning stiffness lasting up to an hour, but no joint swelling. There was no past history of genital sore, generalized rashes, fever, weight loss, alopecia, sore throat, visual disturbance, sensory changes, or past history or diagnosis STIs. The patient had previously sought care at three different health facilities, including a teaching hospital, where haemoglobin electrophoresis and serum uric acid were requested but she defaulted follow up after two visits at the teaching hospital because of cost and absence of a rheumatologist.

General and systemic examinations revealed normal findings with preserved joint range of motion, no effusion, normal neurological and ophthalmic findings, and no mucocutaneous lesions or lymphadenopathy.

Investigations

The results of investigations done based on availability and affordability were genotype AA, the serum uric acid mildly elevated (564µMol/L - normal range up to 480µMol/L), RF negative, and ESR not done. Subsequently, she was placed on oral Allopurinol for a month but the symptoms progressively worsened and she could not afford a repeat uric acid test.

Given her symptoms and polygamous family structure, HIV screening and Venereal Disease Research Laboratory (VDRL) were requested. The results returned positive VDRL and non-reactive HIV. She was then sent to a referral laboratory for C-reactive protein (CRP), anti-cyclic citrullinated peptide (anti-CCP), and Treponema pallidum particle agglutination assay (TPPA), however these tests were not available at that time. Due to financial constraints, she was unable to travel to a distant city for the tests which limited the diagnostic evaluation. Despite these limitations, given the patient's clinical presentation and positive VDRL, a diagnosis of probable syphilitic polyarthritis was made despite the consideration of a number of differentials as summarized in Table 1.

Table 1: Differential Diagnosis of Polyarthritis and Supporting Evidence

Condition	Supporting Factors	Factors Against
Rheumatoid Arthritis	Symmetric pain, morning stiffness, worse at rest, relieve by exercise	No swelling/deformity, RF negative, specific tests not done
Gout	Mild elevated uric acid	Polyarticular pattern atypical, female premenopausal, no response to Allopurinol
Viral/Reactive Arthritis	Polyarthritis possible	Duration >6 weeks, no preceding infection
Connective Tissue Disorders	Possible seronegative features	No systemic features; markers unavailable
Syphilitic Arthritis	Positive VDRL, high-risk profile; treatment response	No rash, treponemal confirmatory tests not available

Treatment

Since the duration of the syphilis could not be estimated, the patient was treated with weekly intramuscular benzathine penicillin 2.4 million units for 3 weeks based on CDC recommendations for latent syphilis where infection duration is uncertain. Analgesics were prescribed for pain relief, and partner notification was advised.

Outcome and Follow-Up

The patient showed significant improvement in her symptoms a week after the commencement of treatment. By the third week, she was pain-free and fully recovered. VDRL tests repeated at second and third months' post-treatment were non-reactive with no recurrence of joint pains, indicating a successful response to therapy.

Discussion

This case highlights the need of considering syphilis in the differential diagnosis of polyarthritis, especially in patients with unusual symptoms, atypical presentations or high-risk factors.[6,7,8] The patient's symptoms of joint pain and morning stiffness, combined with a positive VDRL test, led to a diagnosis of presumptive syphilitic polyarthritis. Despite the unavailability of confirmatory tests such as TPPA and anti-CCP, the patient's quick and favourable response to treatment with benzathine penicillin supports the diagnosis of syphilitic arthritis.

The patient's journey through numerous healthcare facilities, as well as her inability to afford additional investigations owing to financial constraints, exemplify the obstacles many patients face in resource-limited settings of LMICs.[9,10] The clinical picture, the mildly elevated serum uric acid level, and failure to respond to Allopurinol were not classical of gouty arthritis, and the negative RF test made rheumatoid arthritis less likely, even though anti-CCP was not done and seronegative RA exists. [6,7,8] Therefore, in the context of this scenario, the positive VDRL test was an important diagnostic clue and important learning point for healthcare workers in remote areas.

The significant improvement in the patient's symptoms following treatment with benzathine penicillin, and the subsequent negative VDRL tests post-treatment further support the diagnosis of syphilitic polyarthritis. This case stresses the importance of clinicians maintaining a high index of suspicion for syphilis, especially in high-risk populations, and including it in the differential diagnosis of polyarthritis. [6,7,8]

Diagnostic Challenges and Public Health Implications

Syphilitic polyarthritis is difficult to diagnose because of its vague presentation, which might resemble other rheumatological disorders. Syphilis can be readily overlooked in resource-limited settings with inadequate diagnostic skills, resulting in delayed treatment, increased morbidity, and the risk of congenital syphilis. Recent studies on the global burden of syphilis underlines the need for more surveillance, improved diagnostics, and effective treatment options to manage the disease, particularly in high-risk populations.

Patient's Perspective

"I kept searching for help because nothing was changing. Once the injections started working fast, I was very relieved. I am thankful to be well and back to my family."

Learning Points:

- Syphilis should be considered in the differential diagnosis of polyarthritis, especially in atypical or seronegative cases.
- Diagnostic limitations in low-resource environments should not delay treatment when there is a high index of clinical suspicion.
- Reactive VDRL combined with clinical response supports presumptive diagnosis in absence of treponemal testing.

Conclusion

This case report serves as an illustration of the importance of including syphilis in the differential diagnosis of polyarthritis, particularly in high-risk patients in resource-poor settings. Poverty and relative lack of diagnostic facilities highlight the need of having accessible and affordable healthcare, especially in LMICs. There is the need to revisit syphilis as a global public health challenge.

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