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A Rare Case of Latent Syphilis Mimicking Dermal Angiitis of Ulcerative Necrotic Type: A Case Report

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ABSTRACT

Diagnosing syphilis, a bacterial sexually transmitted infection, is often challenging due to its multitude of clinical symptoms. Even though the variety of clinical symptoms of syphilis is well understood, unusual presentations can develop. Due to diagnostic challenges and treatment delays brought on by the disease's ability to mimic other skin conditions, deviate from typical clinical presentations, and take on unusual forms, atypical presentations represent a serious risk of spreading. This case report presents an unusual manifestation of latent syphilis mimicking dermal angiitis of ulcerative necrotic type with trophic ulcers on left tibia in a 45-year-old woman with a significant past medical history. The patient first presented with rashes on the skin of the neck and extremities, along with swelling in the ankle joints and feet, and the presence of ulcers on the left tibia. Following instrumental and laboratory examinations, the multidisciplinary team decided that this could be an unusual manifestation of latent syphilis infection. As for the treatment, reconstructive or restorative surgery on the main arteries was not offered, instead necrectomy, debridement and regular dressings in the purulent surgery department was carried out. This case report highlights the need for timely diagnosis and treatment of uncommon manifestations of syphilis in order to prevent further transmission and complications.

Keywords: Latent syphilis, dermal angiitis, necrectomy

INTRODUCTION

Syphilis, which has been extensively termed the great imitator, is of substantial clinical interest because of its vast range of clinical and dermatological symptoms. Due to the recent return of the disease, the future dermatologists would have to familiarize themselves with the clinical manifestations of syphilis, especially those that depart from its traditional presentations. [1]

An estimated 6 million new cases of syphilis in people aged 15 to 49 are found annually throughout the world.[2] The prevalence of syphilis among men who have sex with men (MSM) has been steadily increasing, especially among those who are HIV-positive, despite efforts to eradicate the illness. Syphilis has been common across the world in recent decades, especially in Russia, China, Southeast Asia, Africa and Western Europe, where it has resulted in major public health problems.[3]

Treponema pallidum is a spiral-shaped, highly mobile, Gram-negative bacteria. The spirochetes enter the human body directly by injury to the mucosal surfaces of the

vagina or anal area, or through oral-genital or genital-genital contact with an infected partner. Other methods of transmission include transplacentally, which happens after maternal spirochetemia, and vertically, which happens during birth when the baby touches the mother's vaginal lesion. Before any clinical symptoms show up, the illness must incubate for around 21 days.[2]

There are four stages in the natural course of syphilis: primary, secondary, latent, and tertiary.[3]

Primary syphilis: The initial stage of syphilis often presents as a single, indurated, painless, ulcerative chancre two to three weeks after direct contact with another person's infectious lesion. While chancres are most frequently observed on the penis, they can develop practically anywhere there is direct contact with infectious lesions, and sometimes they go unnoticed.[4]

Secondary syphilis - The most prevalent clinical form of syphilis, secondary syphilis, mainly affects women or members of the MSM community. The symptoms that often precede or follow secondary syphilis include malaise, myalgia, headache, sore throat, or low-grade fever. Three to twelve weeks after a chancre goes away, or sometimes simultaneously, hematogenous spread of spirochaetes results in further infection symptoms.[4]

Latent Syphilis: Latent syphilis, which exhibits no clinical symptoms, develops after untreated secondary syphilis. At this point, serological testing is the sole method to detect the infection. Early latent syphilis may appear between the primary and secondary stages or following the resolution of the secondary stage.

The CDC set a 1-year cut-off to differentiate between early latent and late latent syphilis since the highest rate of recurrences (about 25% of treated persons) happens in the first year after infection.[4]

Tertiary Syphilis: Tertiary, or late, syphilis is a systemic, multiorgan disease that occurs years or even decades after the initial infection and affects around one-third of untreated but infected individuals. This comprises late neurosyphilis (general paresis or tabes dorsalis), gummatous syphilis, and cardiovascular syphilis.[4]

Even though syphilis's skin symptoms are widely known, leukocytoclastic vasculitis is rarely linked to it. Leukocytoclastic vasculitis (LCV), a small vessel vasculitis, is typified by a neutrophil-based inflammatory infiltration with fibrinoid necrosis and "leukocytoclasia," which is the term for the fragmentation of nuclei into pieces. LCV is related with a wide range of diseases, including ANCA-associated vasculitis, cryoglobulinemia, IgA vasculitis, infections, malignancies, and systemic and infectious diseases such rheumatoid arthritis and systemic erythematous lupus (SLE). [5] Usually accompanied by cutaneous indications, fever, arthralgia, and myalgia, it presents as painful purpuric lesions in the lower and upper extremities [6]

Our work aims to raise clinician awareness of this uncommon condition by presenting an exemplary case report of latent/primary syphilis-associated cutaneous necrotic vasculitis, with a focus on prompt intervention and diagnostic problems.

CASE REPORT

We are exploring a case of a patient, 45 years, a resident of Grodno, Belarus, presented on January 10, 2025, with multiple complaints primarily involving the skin and joints. Symptoms began on January 1, 2025, when the patient noticed rashes on the skin of the neck and extremities (Figure 1), along with swelling in the ankle joints and feet, and the presence of ulcers on the left tibia (Figure 2).

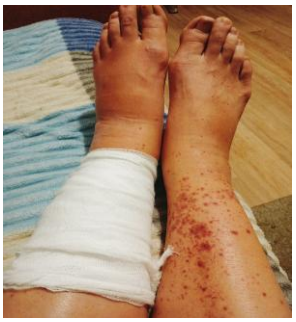

Figure 1. Swelling in the ankle joints and feet, and the presence of ulcers on the left tibia.

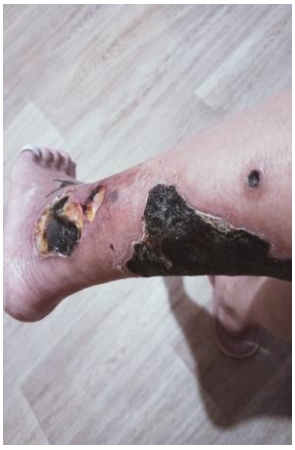

Figure 2: Ulcerative necrotic type, trophic ulcers of the left tibia

The patient initially managed symptoms independently with non-steroidal anti-inflammatory drugs (NSAIDs) and the application of honey. Upon seeking emergency care on January 18, 2025, the patient received a preliminary diagnosis of dermatitis or possible hemorrhagic vasculitis. Treatment initiated in the emergency department included amoxicillin-clavulanate, antiseptic dressings, and referral for observation by a general practitioner and surgeon, with no need for emergency hospitalization.

Subsequently, a consultation with a rheumatologist at a private medical center on January 23, 2025, indicated a diagnosis of hemorrhagic vasculitis with a cutaneous-articular manifestation. The prescribed treatment involved methylprednisolone (initially 4 tablets (16 mg) at 7 AM and 3 tablets (12 mg) at 10 AM after meals) and pentoxifylline 100 mg, taken three times a day per os. Using this treatment, the patient's condition improved, and the rashes disappeared.

In terms of the epidemiological history was unremarkable. Her social history revealed that she has been widowed for 13 years. Her late husband was registered and treated for syphilis in 1995. She reports no permanent sexual partner and one episode of unprotected sexual contact approximately six months prior to admission, with no available information regarding the partner. No specific allergy or hereditary history were noted.

Patient was hospitalized with a fever of 38,2 degrees.

The Multidisciplinary Council concluded the Clinical Diagnosis as “Dermal angiitis of ulcerative-necrotic type with trophic ulcers on the left tibia in April 2025.”

Recommendations included: Perform a colonoscopy to rule out gastrointestinal involvement, continue observation with daily wound dressings under the supervision of a surgeon. Initiate antibacterial therapy with Moxifloxacinum 400 mg, administered once daily. Tests for syphilis (by protocols every patient must be examined).

Lower Extremity Artery Examination performed on February 14, 2025 showed main blood flow with evidence of thrombotic masses causing a 35-40% stenosis in some arteries. The blood flow velocities were recorded, revealing alterations in some lower leg arteries.

Lower Extremity Vein Examination done on February 17, 2025 confirmed that deep veins were patent and compressible, with no significant abnormalities.

The ECG indicated sinus rhythm and tachycardia, with a heart rate of 108 beats per minute, alongside nonspecific ventricular conduction disorders.

The patient was evaluated to optimize blood rheology and improve microcirculation. Therapeutic intervention prescribed includes quantum therapy targeting the right cubital vein according to the established protocol.

Surgical Consultation identified the diagnosis as undifferentiated cutaneous necrotizing vasculitis, characterized by trophic ulcers on the left tibia and associated hyperthermia. The recommended management includes wound care with dressings containing water-soluble ointments (e.g. Mecol) and treatment of the primary vasculitic process.

During examination with a vascular surgeon, the patient was reassessed with the following findings: Diagnosis identified as undifferentiated cutaneous necrotizing

vasculitis with trophic ulcers of the left tibia.

Consultation with an Allergist revealed no significant evidence supporting allergy-related pathology. The patient's allergy history is unremarkable.

Laboratory tests taken during hospitalization are shown in tables 1-4.

Table 1. Hematological Investigations

Date	08.02.2025	10.02.2025	13.02.2025	10.04.2025	Reference range
RBC (x10^{12}/L)	4.06	3.86	3.79	3.9	3.7-4.9 x10^{12}/L
Hb (g/L)	131	123	124	128	120-160 g/L
WBC (x10^{9}/L)	21.2	13.34	6.51	6.4	4-9 x10^{9}/L
Platelets (x109/L)	217	216	231	210	150-450 x10^{9}/L
ESR (mm/hr)	—	49	30	17	2-15 mm/hr

Table 2. Inflammatory Markers

Date	10.02.2025	13.02.2025	21.02.2025	Reference range
CRP (mg/L)	103	16.5	2.2	0-6 mg/L
Procalcitonin (ng/mL)	0.6	0.03	—	0-0.05 ng/mL
Rheumatoid Factor (IU/mL)	17.7	—	—	0-14 IU/ml

Table 3. Coagulation Profile (Hemostasiogram)

Date	10.02.2025	18.02.2025	Reference range
APTT (sec)	19.6	23.5	22-35 sec
Fibrinogen (g/L)	8.27	3.62	2.7-4.7 g/L

Table 4. Immunology

Date	Test		Result	Reference Range	Interpretation
10.02.2025	Total Ig	IgG	18.2 g/L	7–20 g/L	Normal
10.02.2025		IgA	2.87 g/L	0.7–4.0 g/L	Normal
10.02.2025		IgM	3.49 g/L	0.4–4.0 g/L	Normal
10.02.2025	Chlamydia trachomatis	IgG	0.9 g/L	≤ 0,9	Negative
10.02.2025		IgA	0.46 g/L	≤ 0,9	Negative
10.02.2025		IgM	0.44 g/L	≤ 0,9	Negative
10.02.2025	ANCA-S (MPO/PR3) IgG		0.2	0–1	Negative
10.02.2025	ANA (by ELISA)		0.3	0–1	Negative
18.02.2025	β2-Glycoprotein I (Ig)		2.1 U/mL	0–10 U/mL	Negative

As shown in table 1, RBC, Hb and platelets were within the normal range for the given time periods. WBC were extremely high in the beginning, however gradually decreased and within 5 days WBC had declined to the normal range. ESR too, was substantially higher than the normal range. Although it was decreasing, it didn't achieve normal range within tested days.

CRP was considerably elevated on the 10th February, but decreased to normal by the 21st February. Procalcitonin and Rheumatoid factor were both elevated.

On 10.02.2025, both APTT was decreased and fibrinogen was elevated, indicating a possible prothrombotic or inflammatory state, however by 18.02.2025 both were returned to normal ranges.

In Microbiology tests: wound culture - no growth, urethral flora - non-specific bacterial colonization.

In Infectious diagnostics:

- ELISA on HBsAg, anti HCV negative on 11.02.2025
- ELISA for HIV No 6168 dated 11.02.2025 negative.
- ELISA for syphilis from 02/11/2025 positive
- RPR negative 19.0

During hospitalization in the rheumatology department, a positive ELISA test for

syphilis was identified, so patient was taken ELISA for syphilis again, rapid plasma reagin test (RPR), Treponema pallidum particle agglutination assay (TPHA), fluorescent treponemal antibody absorption test (FTA-Abs) and fluorescent treponemal antibody test.

Patient's treatment included pentoxyphillini 100 mg 3 times a day, omeprazole 20 mg once a day, Nimesulide 100 mg twice a day, methylprednisolone 28 mg a day divided per two doses, and low fractionated heparins.

The patient had regular dressings in the purulent surgery department. Necrectomies and debridement were performed using ultrasound cavitation (Figure 3).

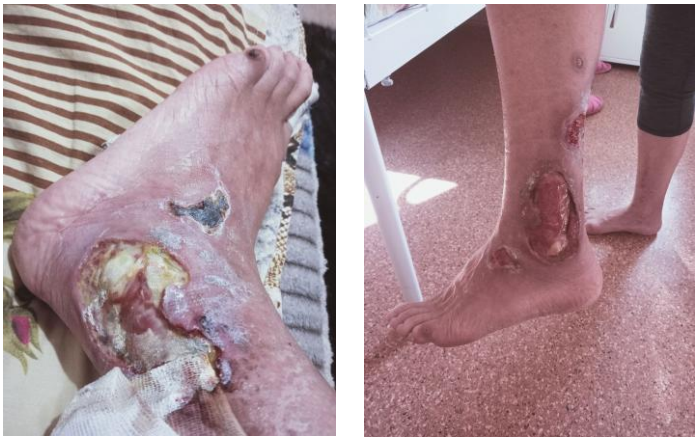

Figure 3. Steps of necrectomies and debridement.

On the 3rd of March patient was discharged with recommendations of taking methylprednisolone 16 mg in the morning with later decreasing the dose to 2 mg every 7-10 days, aspirin 75 mg a day. Continue observation and wound dressings under the supervision of a surgeon.

After hospitalisation patient continued dressing, but the process of clearing and healing of the ulcer was very slow.

Further serological testing on 03/17/2025 revealed a positive rapid RPR, weakly positive TPHA, FTA-Abs 2+, and FTA 200 2+, ELISA for syphilis positive 19.04.2025.

Thus, the patient was admitted to Grodno Regional Clinical Skin and Venereological Dispensary. Dermatology Department, on 03/27/2025 and discharged: 24.04.2025. Preliminary diagnosis: A52.8 Latent late syphilis/ (primary) was given.

Benzylpenicillin 1 mln ME 6 times a day i.m. was prescribed with continuation of prednisolone. After starting this treatment positive wound healing dynamics was observed (Figures 4, 5).

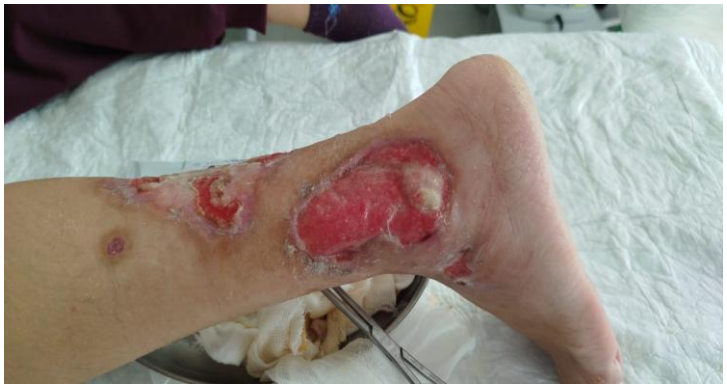

Figure 4. Wound after starting syphilis treatment

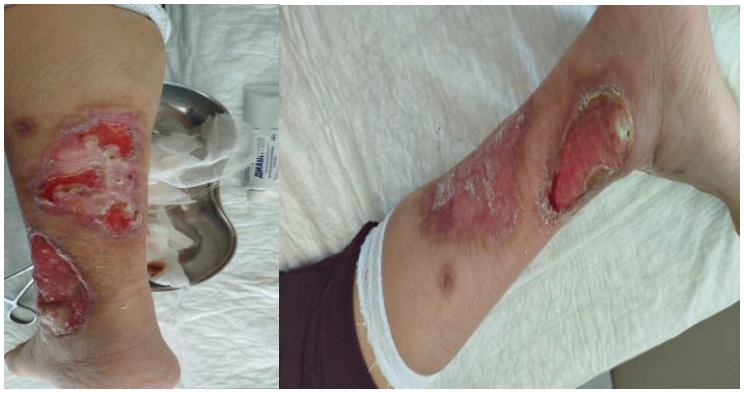

Figure 5. Wound with signs of epithelization (06.05.2025)

DISCUSSION

Treponema pallidum is the bacteria that causes syphilis, a curable STD that can have a serious morbidity and fatality rate. After clinical symptoms of acute or secondary syphilis subside, latent syphilis may develop if treatment is not received.[7] Although primary lesions typically go away on their own, primary syphilis can develop into secondary syphilis if treatment is not received.[8] After infection, secondary syphilis appears weeks to months later. Usually, mucocutaneous lesions manifest as a uniform papular rash that covers the palms and soles of the torso.[9] Secondary syphilis can cause a variety of unusual clinical symptoms similar to other skin conditions. Unusual cutaneous manifestations of secondary syphilis can include lues maligna, nodular, ulcerative, annular, pustular, corymbose, and granulomatous lesions.[10]

Up to 20% of untreated patients may develop tertiary syphilis after a period of latency, which can include the circulatory system, central nervous system, and luetic gums. While mucocutaneous recurrences are very uncommon in the late latent period, they might occur during the early latent period. [11]

In the case above we are discussing a 45-year-old woman with a significant past medical history. The patient's presenting complaints included the rashes on the skin of the neck and extremities, along with swelling in the ankle joints and feet, and the presence of ulcers on the left tibia. In the anamnesis, it was revealed that the patient's late husband was registered and treated for syphilis in 1995 or 1997.

Following the preliminary examination, the diagnosis was made as dermatitis or possible hemorrhagic vasculitis. The rheumatologist stated the diagnosis as hemorrhagic vasculitis with a cutaneous-articular manifestation.

Thereafter the patient was provided with extensive instrumental and laboratory investigations. Lower Extremity Artery Examination revealed the main blood flow with evidence of atherosclerotic masses causing a 35-40% stenosis in some arteries. The blood flow velocities were recorded, revealing alterations in some lower leg arteries. Also, the patient's serological examination for syphilis was revealed to be positive. Final clinical diagnosis was made as "Dermal angiitis of ulcerative-necrotic type with trophic ulcers on the left tibia" following a multidisciplinary council decision. As for the treatment, reconstructive or restorative surgery on the main arteries is not indicated at this stage. Therefore, continuous observation and wound dressings under the supervision of a surgeon was recommended. In our case we suspect latent/ primary syphilis to be the root cause for cutaneous necrotizing vasculitis leading to the trophic ulcers on left tibia even though there isn't much evidence to support our hypotheses apart from the antibodies positive for syphilis.

Damage to tiny vessels mediated by the immune complex is the main cause of necrotizing vasculitis. Reduced blood flow is also caused by various elements,

including cytokines, endothelial cell adhesion, angiogenesis, dermal dendritic cell immunological response, Langerhans cells, and specific T cells. However, it is sometimes difficult to pinpoint the exact pathophysiology of infection-related vasculitis. [12]

A similar case report of cutaneous vasculitis caused by syphilitic infection reports a considerable ulcer and small-vessel vasculitis that recovered promptly and entirely following antibiotic therapy. Screening for infection is crucial in cutaneous vasculitis, as the lesions tend to be highly contagious.[9]

However, in our case, the initial presentation of the symptoms did not favor the presence of syphilis infection due to the atypical nature of the cutaneous lesion making it more challenging to arrive at the final diagnosis.

CONCLUSION

Medical professionals should be aware of the unique manifestations of syphilis although the incidence of this infection has decreased over the past years. Atypical manifestations of syphilis could often get misdiagnosed, therefore it is of utmost importance to exclude syphilis if the patient presents with unusual skin manifestations and the root cause for the manifestation is unknown. Improving testing, treatment, and awareness is critical for reducing the worldwide syphilis burden and increasing sexual and reproductive health outcomes. In order to achieve this, collaboration among communities, public health agencies, and healthcare practitioners is crucial.

Declaration by Authors

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