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**Case Report**

# Parrot's pseudoparalysis: a case of congenital syphilis

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## Abstract

Congenital syphilis is a systemic disease caused by the transplacental transmission of Treponema pallidum, which can severely affect the skeletal system during infancy. Bone involvement is typically characterized by diffuse periostitis and osteochondritis, resulting in an acquired flaccid extremity secondary to severe bone pain, a condition known as "Parrot's pseudoparalysis." This article presents the diagnostic and therapeutic journey of a 2.5-month-old male patient who presented with left arm immobility and a clavicle fracture. Due to the complexity of his clinical and laboratory findings, he was initially misdiagnosed with mechanical trauma and later evaluated for macrophage activation syndrome (MAS). Following referral to our center due to persistent acute-phase reactant elevation and limb immobility, radiological evaluation revealed diffuse periosteal reactions, intramedullary lytic-sclerotic areas in the long bones, and a pathological fracture of the left clavicle. Guided by these specific skeletal findings, serological tests were performed, which returned positive for VDRL and Treponema pallidum-specific antibodies, confirming the diagnosis of early congenital syphilis. After a 14-day course of intravenous aqueous crystalline penicillin G, a dramatic improvement in clinical findings and inflammatory markers was observed, with complete resolution of the pseudoparalysis. Although relatively rare today, congenital syphilis must be retained in the differential diagnosis of infants presenting with unexplained localized edema, pathological fractures, and pseudoparalysis.

**Keywords:** Congenital syphilis, Parrot's pseudoparalysis, pathological fracture, bone diseases, syphilitic periostitis.

## Introduction

Congenital syphilis is a major public health concern resulting from the transmission of Treponema pallidum from an infected mother to the fetus, showing a global resurgence in recent years [1]. Syphilis is widely recognized as the "great mimicker" because of its capacity to affect multiple organ systems and present with a highly variable clinical spectrum.

Skeletal system involvement is notably prevalent among symptomatic infants [2]. Syphilitic osteochondritis and periostitis induce severe inflammation and tissue destruction, particularly in the metaphyseal and epiphyseal regions of long bones. The profound bone pain caused by this inflammation leads to a reflex avoidance of extremity movement by the infant. This clinical presentation, which develops independently of any true neurological pathology, is termed "Parrot's pseudoparalysis" in the literature [3].

In routine clinical practice, when physicians encounter focal bone swelling, lytic lesions, pathological fractures, and elevated acute-phase reactants, their primary differential diagnoses typically encompass trauma, osteomyelitis, or primary skeletal tumors [4-6]. This case report discusses the clinical management of an infant initially presumed to have suffered mechanical trauma, later referred to a tertiary center with a preliminary diagnosis of macrophage activation syndrome (MAS) due to a hyperinflammatory response, and ultimately diagnosed with congenital syphilis following the radiological discovery of a pathological clavicle fracture and diffuse periostitis.

## Case report

A 2.5-month-old male infant with no known prior medical history was admitted to our clinic after being referred from an outside center with a preliminary diagnosis of MAS. The medical history revealed that two weeks prior, the infant was taken to an emergency department for swelling at the proximal phalanx of the left third digit; trauma was suspected, and a splint was applied. One week later, the patient was readmitted with intense crying upon touch and a "paralysis-like" immobility of the left arm. Laboratory investigations revealed elevated inflammatory markers, and empirical antibiotic therapy was initiated. Further investigation with a cranial magnetic

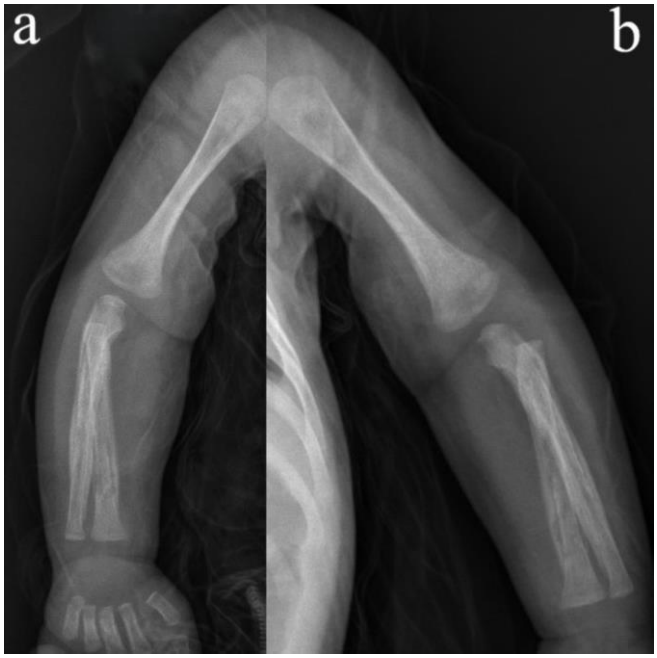


**Figure 1.** Anteroposterior radiographs of the bilateral upper extremities. Diffuse periosteal reaction and cortical hyperostosis are observed in **(a)** the right humerus and forearm bones, and **(b)** the left humerus and forearm bones.

resonance imaging (MRI) prompted by elevated D-dimer levels and suspected sinus venous thrombosis showed no acute pathology. However, an old left clavicle fracture was noted, leading to a suspicion of brachial plexus injury. The patient was subsequently transferred to our center due to rapidly rising ferritin levels and fluctuating fibrinogen, raising the clinical suspicion of a systemic hyperinflammatory condition (MAS).

Upon initial evaluation at our center, the patient's vital signs were stable. He exhibited significant hypotonia and loss of motor strength (pseudoparalysis) in the left upper extremity, accompanied by tenderness upon palpation of bilateral shoulder joints. Laboratory tests demonstrated a white blood cell (WBC) count of 16.61 x $10^3$/µL, hemoglobin of 10.6 g/dL, and a platelet count of 484 x $10^3$/µL. Acute-phase reactants were markedly elevated, with a CRP of 82.1 mg/L and an erythrocyte sedimentation rate (ESR) of 51 mm/h. Systemic inflammation was strongly supported by a ferritin level of 791 µg/L, D-dimer of 5230 µg/L, fibrinogen of 6268 mg/L, and triglycerides of 335 mg/dL.

Radiographs obtained revealed diffuse periosteal reactions, cortical hyperostosis, and intramedullary lytic-sclerotic areas across the long bones of the bilateral upper extremities (Figure 1) and lower extremities (Figure 2) as well as the phalanges. A clear pathological fracture with callus formation was observed in the left clavicle (Figure 3). Prompted by these specific skeletal findings, serological testing was conducted. The patient's serum VDRL returned reactive at 1/32, and maternal VDRL was positive at 1/4. The diagnosis was definitively confirmed by a positive Treponema pallidum ELISA Total Antibody test (152 COI). CSF VDRL testing was negative, and a craniospinal MRI was reported as normal.

Following pediatric infectious disease consultation, the patient received a 14-day course of intravenous aqueous crystalline penicillin G. A

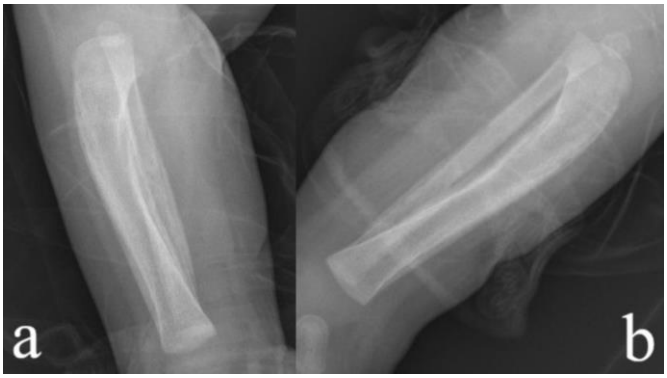


**Figure 2.** Anteroposterior radiographs of the bilateral lower extremities. Symmetric and diffuse periosteal reactions are present in the **(a)** left and **(b)** right tibial and fibular shafts.

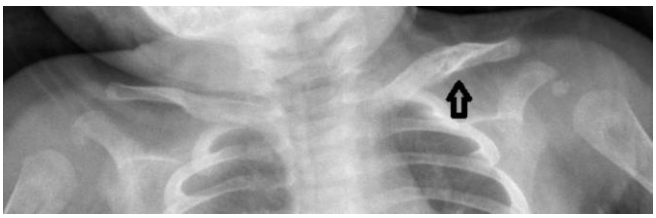

**Figure 3.** Radiographic image of the patient's left shoulder and clavicle. Significant callus formation and healing are observed in the shaft region of the left clavicle due to a pathological fracture (arrow).

topical fusidic acid cream was applied to a papular lesion on the dorsal left ankle, which regressed rapidly. Orthopedic consultation deemed the callus formation at the left clavicle fracture site sufficient, requiring no further surgical intervention. By the end of the 14-day treatment, a dramatic clinical improvement was noted; spontaneous movements of the left arm returned to normal, and muscle strength was graded at 3-4/5. Follow-up laboratory parameters showed significant regression, with CRP dropping to 13.5 mg/L, WBC to 9.92 x $10^3$/µL, and D-dimer to 1420 µg/L. The patient was discharged with scheduled outpatient follow-ups.

## Discussion

Congenital syphilis presents with highly variable clinical findings, and a significant proportion of cases are asymptomatic at birth, with signs emerging only in the early months of life [1]. In the case presented, the manifestation of isolated focal bone swelling followed by limb immobility (Parrot's pseudoparalysis) misled the initial physicians at the peripheral center toward a diagnosis of mechanical trauma [3].

One of the most striking clinical aspects of this case is how the severe acute-phase response, hyperferritinemia, and elevated D-dimer triggered by the infection were misinterpreted as "Macrophage Activation Syndrome" or an autoinflammatory disease. In infants, systemic treponemal infection can affect hepatic function, induce diffuse periosteal inflammation, and trigger vasculitis-like endothelial reactions, resulting in excessive elevations of markers such as ferritin

and D-dimer. This presentation can reach an intensity that mimics rare hemophagocytic syndromes like MAS [5].

From an orthopedic perspective, pathological fractures accompanying lytic and sclerotic metaphyseal lesions primarily suggest oncological or metabolic processes, such as osteomyelitis, scurvy, non- accidental trauma, or Langerhans cell histiocytosis [4-6]. The granulation tissue formed by the spirochetes in the growth plates and periosteum disrupts normal osteogenesis, compromising bone strength and predisposing the infant to microfractures even under physiological loads [2]. In this case, the accurate analysis of the radiological pattern spared the patient from unnecessary bone biopsies or extensive malignancy screenings.

The skeletal manifestations of early congenital syphilis exhibit an excellent and rapid response to the standard 10 to 14-day intravenous penicillin treatment [6]. Similarly, in our case, the prompt establishment of the correct diagnosis and initiation of targeted antimicrobial therapy resolved the pseudoparalysis within days, and the clavicle fracture healed without complications.

## Conclusions

This case report serves as a crucial reminder that in the presence of unexplained limb immobility, pathological fractures, and diffuse periosteal reactions in infants, congenital syphilis must be actively excluded alongside trauma and osteomyelitis. Even when extreme deviations in biochemical parameters point toward complex systemic syndromes like MAS, the careful interpretation of pathognomonic radiographic findings in the skeletal system will guide physicians to the true diagnosis of the "great mimicker" and to the simple, life-saving administration of penicillin.

## Author contributions

The author confirms sole responsibility for the following: study conception and design, material preparation, data collection, analysis, and manuscript preparation.

## Statements and declarations

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### Conflict of Interest

The authors declare that they have no conflict of interest.

## Ethical statement

The author confirms that this retrospective study was conducted in accordance with the ethical standards outlined in the 1964 Declaration of Helsinki and its later amendments. Informed consent was obtained from patient.

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