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Neurosyphilis : About Four Cases Hospitalized at the Ibn Rochd University Hospital in Casablanca

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Abstract : Neurosyphilis remains a complex diagnostic entity due to the wide variability of its clinical manifestations and the frequency of normal brain imaging, particularly in the early stages of the disease. Despite therapeutic and diagnostic advances, it remains a public health problem in the context of a global resurgence of syphilis. We report a series of four cases of neurosyphilis hospitalized at the Ibn Rochd University Hospital in Casablanca between 2024 and 2025. The patients were between 34 and 48 years old, including one patient recently diagnosed with HIV and three immunocompetent patients. All presented with neurological manifestations dominated by persistent headaches, with a completely normal brain CT scan. Serological tests showed positivity for TPHA and VDRL in serum and cerebrospinal fluid, confirming the diagnosis. The outcome under treatment with intravenous penicillin G was favorable in all patients. This case series highlights the importance of considering neurosyphilis in any case of unexplained neurological symptoms, including in immunocompetent patients and in the absence of radiological abnormalities.

Keywords*: Neurosyphilis, TPHA, VDRL, HIV, Cerebrospinal Fluid, Case Series.*

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I. INTRODUCTION

Syphilis is a sexually transmitted infection caused by Treponema pallidum, characterized by a chronic course and a polymorphic clinical presentation. After a period of decline linked to the introduction of penicillin, the incidence of syphilis has been increasing significantly worldwide for several years, affecting both developed and developing countries. This resurgence is accompanied by an increase in complicated forms, particularly neurosyphilis.

Neurosyphilis refers to the infection of the central nervous system by Treponema pallidum. Contrary to conventional wisdom, neurosyphilis can occur at any stage of infection, including the early phases. It is often described as a "great imitator" due to the diversity of its clinical manifestations, which can mimic a variety of neurological, psychiatric, or vascular conditions. Clinical presentations range from asymptomatic to symptoms resembling meningitis, meningoencephalitis, vascular involvement, or cognitive impairment.

Coinfection with the human immunodeficiency virus (HIV) is a contributing factor to the development and progression of neurosyphilis. However, this condition is frequently observed in immunocompetent patients, sometimes leading to delayed diagnosis. Diagnosis relies on a combination of clinical and laboratory findings, with cerebrospinal fluid analysis playing a central role. Brain imaging, while essential for ruling out other causes, can be normal, complicating the diagnostic process.

In this context, we report a series of four cases of neurosyphilis hospitalized at the Ibn Rochd University Hospital in Casablanca in order to describe their clinical and paraclinical characteristics and to highlight the diagnostic difficulties encountered in daily practice.

➢ *Study Objectives*

The primary objective of this study was to describe the clinical, biological, and paraclinical characteristics of four cases of confirmed neurosyphilis. Secondary objectives were to analyze the role of syphilis serology and cerebrospinal fluid analysis in diagnosis, to compare our results with recent data from the international literature, and to emphasize the importance of early diagnosis, including in immunocompetent patients.

II. MATERIALS AND METHODS

This was a retrospective descriptive study conducted at the Ibn Rochd University Hospital in Casablanca. The records of patients hospitalized between January 2024 and December 2025 with suggestive neurological symptoms were analyzed.

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Patients with neurological manifestations consistent with neurosyphilis, positive syphilis serology, TPHA and VDRL positivity in serum and cerebrospinal fluid, and normal brain imaging on admission were included.

Data collected included demographic characteristics, immune status with systematic HIV testing, neurological and extra-neurological clinical manifestations, brain imaging results, and blood and cerebrospinal fluid biological and serological data.

III. RESULTS

The included patients were 34, 37, 41, and 48 years old. Three patients were immunocompetent, and one patient had a newly diagnosed HIV infection. All patients presented with persistent headaches that had been present for several weeks. Two patients experienced altered mental status of varying severity, while two others reported knee pain without obvious local inflammatory signs. No focal neurological deficits were observed during the initial clinical examination.

The brain CT scan performed on all patients was entirely normal. Blood serology revealed TPHA and VDRL positivity in all patients. Cerebrospinal fluid analysis also showed TPHA and VDRL positivity, confirming neurological involvement. The HIV-positive patient did not present with signs of severe immunosuppression at the time of diagnosis.

IV. DISCUSSION

Neurosyphilis remains an underdiagnosed condition due to its clinical polymorphism and the frequent absence of radiological abnormalities. The current resurgence of syphilis explains the increase in neurological forms observed in recent years. Headaches and altered consciousness are frequent but nonspecific presenting symptoms, which can delay diagnosis.

The association with joint manifestations, such as knee pain observed in two of our patients, is less frequently reported but underscores the systemic nature of syphilis. Brain imaging may be normal, particularly in early meningeal or meningoencephalitic forms, which means that the diagnosis should not be ruled out based on this criterion alone.

VDRL positivity in cerebrospinal fluid remains highly specific, although its sensitivity is limited. The combination of TPHA and VDRL in serum and cerebrospinal fluid remains the most widely used diagnostic strategy in clinical practice. HIV co-infection is a recognized risk factor for neurosyphilis, but the clinical presentation can be similar to that observed in immunocompetent patients, as illustrated in our series.

- *Management and Outcome*

All patients received intravenous penicillin G treatment in accordance with international guidelines. Clinical progress was favorable in all patients, with a progressive regression of neurological symptoms.

- *Study Limitations*

The small sample size and retrospective nature of this study are the main limitations. The lack of long-term follow-up prevents the assessment of late neurological prognosis. Nevertheless, this series illustrates frequent and relevant clinical situations encountered in daily practice.

V. CONCLUSION

Neurosyphilis should be systematically considered in any case of unexplained neurological symptoms, even in immunocompetent patients and in the presence of normal brain imaging. Cerebrospinal fluid analysis remains an essential diagnostic tool enabling early and effective management.

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