

# Neurosyphilis in the practice of clinicians: difficulties of diagnosis

## Abstract

Neurosyphilis presents a complicated diagnostic task for physician's worldwide, considering its confusing clinical presentations and long-term course, especially its latent and late forms. We present a clinical case of diagnosis of neurosyphilis, meningovascular form, with typical MRI finding and VDRL confirmation. Treatment with penicillin led to clinical improvement of psychopathological changes, whereas complete recovery was not achieved in this case. Neurosyphilis should be included into differential diagnosis of complicated cases of CNS disorder.

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## Introduction

Sexually transmitted diseases (STDs) are a serious social threat due to their high prevalence and the possibility of severe consequences that contribute to disability.<sup>1-3</sup> Syphilis ("French disease"), as in the middle Ages, is one of the most common venereal diseases on all continents of the world. In Ukraine, about 12 thousand people of newly diagnosed syphilis are registered annually in spite of the tendency to decreased incidence. The decreased morbidity was accompanied by change in its structure towards the growth of latent forms, both early and late, and hidden unspecified forms of infection. Occult and late syphilis is difficult to diagnose and has very serious consequences in terms of the formation of various forms of neurosyphilis. Clinically apparent neurosyphilis is manifested by any neurological or mental disorders that have acute or sub acute development and progress during several months' or years. Most often, from early forms of neurosyphilis, meningovascular syphilis occurs, in the clinical picture of which the symptoms of the damage to the meninges and vessels of the brain predominate: syphilitic meningitis. In many cases, the clinical symptomatology is nonspecific and difficult for differential diagnosis.

## Case report

Patient, 40years old male, was hospitalized to Dnipro infectious diseases hospital with complains of psycho-motor agitation, disorientation, blurred speech, visual and auditory hallucinations. At admission, diagnosis of meningoencephalitis and allergic dermatitis was made. Epidemiological anamnesis revealed that about 5years ago (as relatives stated) the patient was treated for syphilis. Later he was escaping both specific therapy and follow-up by dermatologist, was not evaluated for disease progression. Previous medical history showed that one year before the current admission the patient was diagnosed with a disorder of cerebral circulation, was prescribed courses of vascular and no tropic drugs. In spite of performed therapy, the condition progressively worsened: the patient showed more frequent attacks of psycho-motor agitation, non-motivated aggression, rage and irritability, bulimia with further retrograde amnesia. During the last episode, which led to the current patient's hospitalization with the diagnosis of meningoencephalitis, disorientation and hallucinations joined. Physical examination revealed abundant small macular pink

rash predominantly on the trunk. No other somatic abnormalities were found. Psychopathological symptoms at admission included severe intellectual and memory disturbances, psychomotor agitation, affective instability, hallucinations and delirium with true verbal hallucinations and separated persecutor delirium ideas. No focal neurological deficits or meningeal signs were revealed. The patient hardly followed instructions did not perform coordination probes. Episodes of decreased consciousness at the level of torpor were observed, when he was impossible to contact with. The patient behaved very aggressively, agitated, disoriented, periodically was screaming, running along the corridor, trying to leave the hospital, took away food from other patients and are it greedily. Neurological examination revealed horizontal nystagmus, weakness of convergence, tongue deviation, agitated tendon reflexes, widening of reflex genic zones.

Routine laboratory evaluation revealed mild increase of neutrophils in CBC, biochemical analysis was normal. CSF analysis showed 213 cells/10<sup>6</sup>, 98% of them lymphocytes, protein was 1.1g/l. Preliminary diagnosis: "Organic brain damage of unclear etiology" was made after MRI brain investigation, which showed foci of increased signal, 2-3mm, in subcortical and periventricular white matter of frontal and temporal lobes, moderate widening of perivascular space in subcortical area and in projection of basal ganglia. Moderate widening of convexital area in frontal lobes, both lateral ventricles and 4<sup>th</sup> ventricle. MRI allowed objective the diagnosis: revealed changes are typical for late syphilis of CNS, as parenchymal and meningeal-vessel changes predominated. Neurosyphilis was suspected, the diagnosis was further verified by standart serological methods: Wasserman reaction with specific treponema antigen: ++++; VDRL reaction with cardio lipid antigen: ++++(qualificative method-titer 1:80); immunofluorescence reaction of absorbance: +; immunofluorescence reaction in dilution 200+1:10; reaction of micro precipitation ++++ (1:8); IgG antibodies: positive; IgM antibodies: negative. Also, investigation of CSF by reaction of Wasserman with specific treponema and cardio lipid antigens was three times higher than reference level. Additional serological and PCR diagnosis allowed to exclude other possible infections: HIV, HSV1 and 2 and CMV. All these pathogens were revealed to be negative by examination. Based on the verification of the clinical course of the disease, the most common form of neurosyphilis, meningovascular, was suggested in

this patient. Thus, on the basis of clinical and laboratory-instrumental investigations, the final diagnosis was established: Syphilis, latent, late, syphilitic meningoencephalitis, meningovascular form, lacunar dementia. Therapy of patients with neurosyphilis is traditionally considered the most difficult task. According to the researchers,<sup>1</sup> the therapeutic effect and long-term prognosis for neurosyphilis depend, first of all, on the timing of diagnosis and the quality of specific therapy. The outcome of therapy can be from complete mental and neurological recovery till profound non-correctable disability. After the clinical diagnosis (neurosyphilis) was established, antibiotic therapy in the form of penicillin G, 12million IU twice a day was given IV for 20days. After 2weeks the second course of penicillin G in a similar dose for 20days was administered. To prevent the reaction of exacerbation (Jarish-Geisheimer's), prednisolone 60mg (once in the morning) was prescribed in the first 3days of penicillin therapy. Positive changes with regression of psychopathological symptoms were noted during the first 10days of specific therapy: hallucinations and delirium disappeared, allo and auto psychic orientation was restored with more clear consciousness, and repression was subjected to internal tension and aggressiveness. Household skills, self-service skills have been restored. It should be noted that, despite the complex therapy, which resulted in acute psychopathological symptoms, the patient retained residual personality changes in the form of mild lacunar dementia: the viscosity of thinking, memory loss, and cognitive functions were noted; agitation and aggressiveness were decreased, everyday skills were restored. On the other hand, in spite of the performed complex therapy, which resulted into disappearance of acute psychopathological symptoms, the patient retained residual personality changes in the form of mild lacunar dementia: retardation of thinking, memory loss, cognitive functions was noted. A catamnesis for six months after specific therapy showed the absence of any improvement in the mental state and neurological status. Unfortunately, the prognosis of the disease in this patient will lead to disability in the future.

## Discussion

It is likely that the unfavorable outcome of neurosyphilis in this patient is associated with the total lesion of the brain parenchyma due

to necrotic, toxic and vascular factors (inflammatory changes in small vessels). This case showed that in a situation where brain damage has already occurred, specific therapy is ineffective and is accompanied by persistent residual personality changes. The peculiarities of this clinical case are the absence of a classical presentation of the nervous system lesion, typical for neurosyphilis (prominent forms of tabes dorsalis, progressive spinal paralysis, brain and spinal cord gumma, syphilitic cervical pachymeningitis). The patient was dominated by the symptoms of cerebral vascular lesions (according to MRI of the brain), which caused cognitive impairment and symptoms of progressive dementia. The disease had a torpid, slowly progressive nature. Perhaps the patient received inadequate specific treatment for other forms of syphilis. Perhaps, a diagnostic error was made in favor of an early one instead of late or non-confirmed syphilis. Modification of the clinical picture of neurosyphilis in this patient could also be due to the use of anti syphilitic antibiotics in the chemotherapy of other inter current diseases.

The described clinical case is of professional interest due to the difficulties of differential diagnosis. At the same time, this example of an unfavorable course of syphilis raises many questions before specialists regarding the diagnostic, therapeutic management and further follow-up of these patients.

## Acknowledgements

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## Conflict of interest

Author declares that there is no conflict of interest.

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