

Neurosyphilis with psychotic symptoms and Parkinsonism in a young girl

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Abstract: A 15-year-old girl with neurosyphilis was misdiagnosed as having viral encephalitis with psychotic symptoms and Parkinsonism. We found that she was experiencing visual hallucinations, persecutory delusions, flattening of affect, poorness of thought, tremors, four-limb rigidity, and restlessness, and she was unable to communicate with others. The Venereal Disease Research Laboratory serum test and further lumbar puncture enabled us to diagnose her with neurosyphilis. After antibiotic treatment, her psychotic symptoms and Parkinsonism were relieved. From this case, we believe that it is important to keep organic psychosis in mind during the diagnostic workup, and we argue that routine syphilis screening is necessary in psychiatry clinical practice.

Keywords: syphilis, encephalitis, organic psychosis

Case report

Syphilis is a type of sexually transmitted disease where the patient is infected by the spirochetal bacterium *Treponema pallidum*.¹ In last several decades, the occurrence of syphilis has declined; however, a trend of syphilis resurgence in the 21st century has been documented.² The World Health Organization reported that 36 million individuals were probably infected with syphilis in 2008.³ A previous study has estimated that a third of untreated syphilis patients will develop neurosyphilis (the tertiary stage of syphilis), and that the central nervous system would be affected.⁴ However, the ability to diagnose neurosyphilis in the clinic is challenging, because the condition can imitate many neuropsychiatric diseases. The present study discusses a case of neurosyphilis in a young girl who was misdiagnosed as having viral encephalitis.

A 15-year-old girl was admitted to our department in January 2012 because she was becoming increasingly more nervous and had been talking less since October 2011. The patient's mother complained that the young girl did not communicate with others; the patient showed restlessness, and she presented with tremors throughout her body. The patient could not take care of herself and she did not bathe. The patient had a temperature for several days in October 2011, but she had a normal chest X-ray and abdominal ultrasonography. At the time, she was diagnosed as having viral encephalitis at the local hospital, and she was subsequently treated for a short time (the details of the treatment are unknown). She was then transferred to the local mental hospital, where a magnetic resonance image (MRI) of the head was taken (the scan showed mild brain atrophy), and she was subsequently prescribed sulpiride (maximum dose 1.2 g/day) and benzhexol (maximum dose 8 mg/day). However, it was found that the patient's condition did not improve, and her tremors became increasingly more severe. As such, the patient was admitted to our hospital.

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After admission, we found that the patient had visual hallucinations, persecutory delusions, flattening of affect, poorness of thought, and four-limb rigidity. We consulted a neurologist because of the patient's tremors and four-limb rigidity; we also stopped all antipsychotic treatments. The neurologist suggested we should arrange MRI scanning and lumbar puncture again, and the Venereal Disease Research Laboratory (VDRL) serum test under the suspicion of some rare diseases, such as human immunodeficiency virus infection. The VDRL serum test yielded positive results with respect to the *T. pallidum* antibody (TPA); we then found a titer of 1:4 with respect to the toluidine red unheated serum test (TRUST), and we obtained positive results on the *T. pallidum* particle-agglutination test. The patient's mother finally confessed that the patient had been raped in 2009. A lumbar puncture was then performed under the suspicion that the patient had neurosyphilis, and the results showed that the cerebral spinal fluid VDRL was 1:2 (reactive), the karyocyte level was $10 \times 10^6/L \uparrow$, the IgG synthetic rate was 153.275 mg/day \uparrow , the IgG level was 0.3790 g/L \uparrow , the albumin level was 0.6870 g/L \uparrow , and the microalbumin level was 1.26 g/L \uparrow . After consulting an infection specialist, we prescribed penicillin (3 MU) every 4 hours for 14 days, and a penicillin benzathine (2.4 million IU) intramuscular injection once a week for 3 weeks. The patient was then discharged for outpatient department follow-up. After 3 months, the patient's tremors and limb rigidity were relieved, and her hallucinations and delusions disappeared. Her total score on the Positive and Negative Syndrome Scale decreased from 115 (baseline) to 39 (3 months), and her Unified Parkinson's Disease Rating Scale (UPDRS) score decreased from 129 (baseline) to 32 (3 months). The patient became relaxed; she no longer nervously paced around, and she sometimes spoke with her family members.

Discussion

Symptoms of hallucinations, delusions, flattening of affect, poorness of thought, and other psychotic symptoms can be found in many diseases. This particular case provided an important perspective so that clinicians can properly diagnose a disease that presents with psychotic symptoms as the first sign of disease onset. In this case, we accidentally discovered this patient's neurosyphilis via a VDRL serum test. This indicated that we should pay attention to complicated psychotic symptoms and treatment-resistant psychosis. Some patients might conceal their sexual history, as had occurred with this young girl, who had been raped 2 years prior to

symptom onset. Such nondisclosure is a huge obstacle when diagnosing neurosyphilis, especially in younger patients.

Some case reports have described psychosis in neurosyphilis.^{5,6} In the present case, the patient's psychotic symptoms disappeared following antibiotic treatment; however, whether an antipsychotic should be used, and what kinds of antipsychotics should be used, are unknown. As such, we discontinued all antipsychotic treatments in this case. At the same time, we wanted to exclude the extrapyramidal side effects associated with antipsychotics, which might have caused the patient's tremors and rigidity. To our knowledge, no consensus or guidelines as to how to treat psychotic symptoms associated with neurosyphilis have been established to date.⁷ Studies in this area are also limited. Therefore, it is crucial that further research be conducted in this field in the future.

Parkinsonism, which includes such symptoms as tremors and rigidity, has also been reported in another study on neurosyphilis.⁸ One possible reason for the development of Parkinsonism is that the basal ganglia is impaired in these patients. Brain atrophy, as shown on MRI, also provides clues regarding impaired cerebral function. However, there is a lack of consistent pathological radiographic findings that can be considered characteristic of neurosyphilis.⁹

As a psychiatrist, it is important to keep organic psychosis in mind when facing complicated or treatment-resistant psychotic symptoms, such as those associated with neurosyphilis. On the other hand, routine syphilis screening is necessary in the psychiatry department. Given that a patient's sexual history is deemed highly confidential in some countries, including in the People's Republic of China, it is very difficult to obtain a patient's complete sexual history. As such, clinicians may misdiagnose neurosyphilis as other neuropsychiatric diseases.

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Disclosure

The authors report no conflicts of interest in this work.

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