

Painful Hallucinations and Somatic Delusions in a Patient With the Possible Diagnosis of Neuroborreliosis

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Abstract: Neuroborreliosis has become the most frequently recognized tick-borne infection of the nervous system in Europe and the United States. In addition to dermatological, cardiac, articular, and neurologic manifestations, psychiatric disorders such as depression, panic attacks, and schizophrenia-like psychosis can also arise. We report on a 61-year-old woman who developed a severe pain syndrome following several tick bites. She was diagnosed with neuroborreliosis; she received various courses of antibiotics over several years, but without any clinical improvement in her condition. Her eventual admission to a psychiatric ward due to mental symptoms and neuroleptic treatment led to a dramatic improvement of her pain symptoms. However, increasing delusions disclosed a psychotic episode, which ceased over time. We discuss therapeutic difficulties and psychiatric complications in the absence of a clear-cut diagnosis of neuroborreliosis. Although this patient might have suffered from late-onset schizophrenia with painful hallucinations right from the start of her disease, the case highlights psychiatric complications that might be associated with neuroborreliosis.

Key Words: diagnosis, neuroborreliosis, pain, psychosis, schizophrenia

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Neuroborreliosis, a manifestation of infection with the spirochete *Borrelia burgdorferi*, has become the most frequent recognized tick-borne infection of the nervous system in Europe and the United States.¹ Although dermatological, cardiac, articular, and neurologic manifestations are well recognized in Lyme disease, psychiatric complications such as depression, panic attacks, and schizophrenia-like psychosis may also arise.² Neuroborreliosis is often associated with pain syndromes. Thus, psychiatric consultation might be necessary to evaluate mental problems or disorders, either arising through the infection per se, or in secondary course, particularly for depression. The aim of this report is to describe difficulties in diagnosing and managing a case with an

uncertain neuroborreliosis and severe pain syndrome. In particular, psychiatric aspects of clinical management in such patients shall be addressed.

CASE REPORT

We report the case of a 61-year-old woman with a diagnosis of borreliosis, who was referred to the liaison psychiatrist for consultation. At the time, she was seen at our interdisciplinary pain clinic complaining of severe pains on both arms, shoulders, back, and both legs, which had lasted for 2 years. On psychiatric interview, she was severely depressed and reluctant to talk. Her thoughts were exclusively engaged with her numerous sensations of pain. The patient was convinced that she suffered from neuroborreliosis and that previous treatments had failed to eradicate bacteria completely. Moreover, she was sure that the bacteria would now ruin her nervous system in the gastrointestinal tract. She scored maximum pain ratings on several scales, including the visual analogue scale.

Review of her history showed that the patient had sustained a severe pain syndrome for 2 years following several tick bites. Although no erythema migrans or other skin manifestations had been observed, she increasingly suffered from diffuse, persistent pains in various parts of her body. A Western blot for specific proteins such as IgG 41 kDa had been positive, as well as for IgM 60 kDa. In contrast, common antigen for *Borrelia burgdorferi* and serology for *Treponema pallidum*, as well as antibodies for herpes zoster virus (HZV), varicella zoster virus (VZV), Epstein-Barr virus (EBV), and cytomegalovirus (CMV), and tests for antinuclear antibody (ANA) had been negative. She had been diagnosed with neuroborreliosis and received various courses of antibiotics, including doxycycline and ceftriaxone.

The patient had sought help at several institutions, including specialist practices and clinics. However, none of the therapeutic attempts significantly improved her clinical status. There was no other relevant psychiatric or medical history.

Due to clinical presentation, a reported suicide attempt, and persisting suicidal ideation, she was admitted to a psychiatric ward. Several blood investigations were repeated. On this occasion, tests did not reveal abnormalities such as antibodies against *Borrelia burgdorferi* and *Treponema pallidum*. However, in Western blot analysis, IgG was reactive to 41 kDa flagellin and IgM was incomplete reactive to the 60 kDa common antigen. Electroencephalogram (EEG), cerebrospinal fluid (CSF), and cranial magnetic resonance imaging (MRI) were unremarkable. Electroneurographic investigations showed entirely normal somatosensory evoked potentials and no signs of peripheral neuropathy.

The preliminary diagnosis of a depressive episode with delusion and somatization of unknown origin (infectious or primarily psychotic) was established and antidepressive treatment with clomipramine (100 mg daily) and neuroleptic medication (olanzapine 15 mg daily) was started.

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To our surprise, her pain state and depressive symptoms were in full remission within few days, whereas the delusions of a paralyzed gastrointestinal tract became the predominant symptom. In her delusion, she was entirely engaged with the belief that she “had no digestion anymore” due to the bacteria and consequently assumed to be completely obstipated. After another 3 weeks, she recovered entirely from her illness and was released from hospital continuing on 15 mg of olanzapine daily. Six months later, however, a psychotic relapse with ideas of reference and delusions of persecution evolved, which were successfully treated by adjusting the neuroleptic dose.

DISCUSSION

This case adds 2 aspects of clinical significance to the understanding of Lyme disease: differential diagnosis and optimal treatment of patients with persistent symptoms. As currently available serological tests are not always reliable, Lyme disease is mainly a clinical diagnosis.³ Diagnostic difficulties arise when patients present with atypical symptoms.⁴

Our patient had been treated for neuroborreliosis for 2 years without any significant clinical improvement. Although the complete failure of treatment has no diagnostic value per se, it is still noteworthy that the progression of neuropsychiatric symptoms had been completely ignored at the time. Several reports have discussed the significance of psychiatric complications in Lyme disease,^{5,6} particularly in late stages (see Table 1 for overview). These include major depression as well as panic disorder or manic psychosis.⁵ Pathology reports reveal parenchymatous and vascular lesions in the central nervous system (CNS) of patients with the meningovascular form of Lyme borreliosis, comparable to the lesion seen in tertiary neurosyphilis.⁵ Fallon et al have even suggested that Lyme borreliosis may be the first infectious disease in which a panic disorder is part of the clinical picture.⁵ Roelcke et al reported a case of untreated meningopolyradiculitis (Bannwarth syndrome) evolving into acute schizophrenia-like psychosis due to persistent *Borrelia* infection.⁷

According to the literature, neuropsychiatric symptoms in neuroborreliosis respond to adequate antibiotic therapy.² This was not the case in our patient. It is interesting and unusual that a relatively short psychiatric intervention could significantly alter the clinical presentation and the diagnostic view. It remains unclear whether this case was indeed Lyme disease with equivocal laboratory tests and neuropsychiatric complications of delusion and painful hallucinations, or whether the patient suffered from a hallucinatory delusional disorder, a primarily psychiatric disorder. More specifically, the diagnosis of a somatic delusional disorder with tactile hallucinations is justified by the presence of somatic delusions (delusion of borreliosis) and tactile hallucinations (pain).

TABLE 1. Neuropsychiatric Manifestations of Borreliosis

Disorders of mood (depressed or elevated mood, change of appetite and weight, suicidal ideation, labile affect)
Disorder of formal thoughts (perseveration, loosening of associations)
Different types of delusions and obsessions
Disorders of perception (hallucination (acoustic, visual, or olfactory))
Disorders of memory (difficulties of concentration)
Disorders of eating (anorexia)
Anxiety and panic disorder

Tactile hallucinations, which have been shown to correlate with activation of somatosensory brain areas,⁸ are known to occur also in coenesthesia, a subsyndrome of schizophrenia.⁹ Furthermore, hypochondriacal paraphrenia might be discussed as a third psychiatric differential diagnosis in this case. However, this disorder (classified by the German psychiatrist Leonhard¹⁰) usually includes tactile as well as acoustic hallucinations (phonemes).

It is important to consider coenesthesia, somatic, and hypochondriacal delusions in patients presenting with atypical or bizarre pain complaints, when unusual symptoms persist or when a psychiatric history is known. The different diagnostic perspective might change the therapeutic approach. We suggest, therefore, being very much aware of psychiatric complications in chronic pain patients. In any case, one should consider using conventional neuroleptic or antidepressive treatment early, when symptoms fail to respond to adequate treatment and psychiatric symptoms persist.

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