Misleading presentation of acute Lyme neuroborreliosis

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To cite: Winter EM, Rothbarth PH, Delfos NM. *BMJ Case Reports* Published online: 6 December 2012 doi:10.1136/bcr-2012-006840

SUMMARY

A young man presented with recent-onset non-specific symptoms like headache, sleepiness and weight loss, interfering with normal daily life. Physical and biochemical irregularities were absent. Because extensive examination by neurologist and psychiatrist including brain imaging did not reveal any clues, the complaints were initially considered psychosomatic. As the symptoms deteriorated with ongoing weight loss, the patient was re-admitted to the hospital. Again, extensive additional investigation did not reveal any abnormalities. Because of previous exposition to the woods Lyme serology was determined. Surprisingly, it appeared to be a remarkable presentation of acute Lyme neuroborreliosis which was successfully treated with ceftriaxon. Clinicians must be aware of the fact that this severe illness can present without any typical symptoms.

BACKGROUND

Lyme borreliosis or Lyme disease is a serious illness with increasing incidence worldwide, requiring immediate treatment in order to prevent late complications.[1] We, herewith, describe a case of Lyme neuroborreliosis (LNB), in which diagnosis was delayed because of a highly unusual and atypical presentation without objective abnormalities, mimicking psychosomatic illness. A similar case has never been published before. For clinicians, it is important to keep in mind that LNB can present this way. Moreover, this case emphasises the importance of complete history taking, since the clue to correct diagnosis was hidden within the fact that the patient had been hiking in the forest.

CASE PRESENTATION

An otherwise healthy 30-year-old man was admitted to the neurology department because of symmetrical headache (temporally located), neck pain, dizziness, photosensitivity, tenderness behind the eyes and ears, nausea with incidental vomiting and weight loss of 11 kg. Illness had existed since 6 weeks. Strength and sensation were undisturbed. Paresthesias were absent. Vision was normal. Symptoms flared during night and morning, and had deteriorated over time leading to extreme tiredness and sleeping 16 h per day. His history was blank and medication included only paracetamol and ibuprofen. He worked with mentally ill people. Physical examination including neurological examination was normal besides disturbed gait with tendency to the left. Psychiatric assessment did not reveal any abnormalities. Depression was excluded. Standard biochemical analysis was normal. Radiographical investigation including a CT-scan of the brain and a contrast-enhanced MRI study of brain and neck did not demonstrate any irregularities. After a few days, his clinical condition partially improved spontaneously, and he was discharged from the hospital with a diagnosis of chronic tension headache and psychosomatic complaints. Medication by that time consisted of primperan, paracetamol, betahistin, omeprazol and diazepam.

Two weeks later he was presented at the internal medicine department because the symptoms mentioned before had deteriorated. By then, weight loss amounted to 17 kg. He had not been able to work for 1 month. Renewed history taking showed that he habitually walked within the woods, but had never suffered from erythema migrans. He had not visited any hotel, sauna or tropical countries. He never used drugs. His sexual life was safe and monogamous. Again, the gait was slightly aberrant but physical examination was otherwise normal. Biochemistry showed mild normocytic anaemia, normal infection parameters and intact kidney, liver and adrenal function. Additional testing during hospital admission exhibited a negative HIV test. Because of nausea and vomiting, abdominal ultrasound and gastroscopy were performed, which were negative. Regarding the absence of an explanatory other diagnosis and his regular exposition to the forest, Lyme disease was suspected. Immunoglobulin G (IgG) against VlsE C6 peptide of *Borrelia burgdorferi* appeared to be positive. Lumbar puncture, which should—in retrospect—have been performed at initial presentation, demonstrated an opening pressure of 50 cm H_2O, white blood cell count of 1221 cells/µl, protein of 354 mg/dl and glucose of 1.7 mmol/l, according to bacterial meningitis. With an antibody index of 14.3 regarding VlsE C6 peptide,[2–4] and an antibody IgG index of 72.6 and an IgM index of 4.6 regarding whole Borrelia among immunoblotting, intrathecal antibody synthesis was confirmed, and thereby the diagnosis of LNB.[2 3 5]

DIFFERENTIAL DIAGNOSIS

Differential diagnosis was extensive. It consisted of psychosomatic diseases (depression, migraine, stress related psychosomatic complaints, anorexia nervosa and conversion), medication abuse, neurological disorders (benign or malignant cerebral tumour, bleeding from cerebral vessel anomaly, cerebral oedema, meningitis and encephalitis), endocrine disorders (diabetic gastropathy and Addison's disease), gastrointestinal diseases (gastric ulcer, abdominal tumour, pancreatitis and celiac disease) and infections (HIV and Lyme disease). As discussed above, the symptoms were initially considered psychosomatic since physical examination,

standard laboratory testing and brain and abdominal imaging ruled out many of the possibilities, although lumbar puncture was not performed. Only at a later stage it appeared to be LNB, which should have been tested in an earlier phase.

TREATMENT

In accordance with the current guidelines, treatment with ceftriaxon 2 g per day was started and continued for 14 days.[2]

OUTCOME AND FOLLOW-UP

All the symptoms diminished within a few days, with normalisation of body weight within 1 month. The patient could resume work almost immediately. During 6-month follow-up, the patient remained healthy without recurrence of any complaints.

DISCUSSION

This case demonstrates a very unusual presentation of acute LNB,[2] exhibiting only non-specific symptoms like headache, nausea, excessive weight loss and extreme tiredness in the absence of unambiguous physical or biochemical irregularities (only slightly disturbed gait). Common presentation of LNB in Europe, mainly caused by *Borrelia garinii* subspecies, includes Garin-Bujadoux-Bannwarth or Bannwarth's syndrome, consisting of painful radiculitis with or without associated paresis, that may be accompanied by meningitis with minimal headache and/or cranial neuropathy.[6–8] Preceding erythema migrans rash is scarce. American LNB,[7] however, mainly originates in systemic infection with *Borrelia burgdorferi* sensu stricto. Painful radiculitis is rare. The majority of cases present with subacute meningitis within a few weeks to months after erythema migrans rash. Facial palsy, unilateral or bilateral, is common in both continents, as is mild axonal peripheral neuropathy. Bilateral facial palsy is highly predictive of LNB. Diverse ocular manifestations are described.[9 10] Encephalopathy has been reported but is uncommon, and is generally seen in patients in whom infection has proceeded for several months to years. Since chronic LNB is usually accompanied by fatigue and arthralgias, overlap with fibromyalgia exists. Described neuropsychiatric disorders secondary to LNB include depressive state (relatively frequent), mania, psychosis, dementia and obsessive-compulsive disorder.[11 12] To our knowledge, the array of complaints of our patient without any neurological deficits has never been described before.

Pathogenesis of LNB remains unclear. Since spirochetes are scarcely found within the cerebrospinal fluid (CSF), direct damage by infection with spirochetes itself is not likely to cause neurological symptoms. Induction of inflammatory mediators with recruitment of leucocytes to the subarachnoidal space and perineural tissue seems to be responsible, however, as investigated within animals and humans.[7 12]

Diagnosis of LNB is based on a combination of (i) positive history of erythema migrans or suspect exposition to infected ticks, (ii) typical clinical symptoms, (iii) pleocytosis in CSF, and (iv) intrathecal synthesis of specific anti-Borrelia antibodies (Europe) or positive ELISA and western blot on serum (USA).[2 7 13 14] The great genetic heterogeneity among European strains dictates the more complicated method of intrathecal antibody testing, expressed compared with antibody titre in serum.[2–4 14] The sensitivity of culture or PCR is poor. Brain imaging is usually negative, which means imaging studies are merely indicated to rule out other neurological processes. Ophthalmic examination is indicated in case of any ocular complaints.[10]

Generally, LNB is treated with oral doxycycline or intravenous antibiotics during 2 weeks (cephalosporin or penicillin) to hasten clearance of infection and to prevent late manifestation of diseases such as arthritis and acrodermatitic chronica atrophicans.[2 7 14 15] Non-steroidal anti-inflammatory drugs may help reduce symptoms by minimisation of inflammation in extreme cases.[16] Usually, symptoms almost promptly diminish after starting medication, with complete recovery within several weeks. Within some patients, however, symptoms like fatigue, arthralgias and cognitive deficits do not recuperate despite adequate medication. Whether this complex of symptoms, sometimes called the post-Lyme syndrome, is due to the previous infection, is highly controversial.[15] It is postulated that it might be caused by prolonged inflammation as a reaction to small-fragment remnants of spirochetes.[7]

In conclusion, we describe a case of acute LNB which demonstrates that it can present with only non-specific symptoms like fatigue, headache and weight loss without any typical objective abnormalities among examination. We would like to emphasise the importance of complete history taking. Every physician should consider LNB if the patients might be exposed to ticks in endemic areas, especially in the absence of another explanatory diagnosis.

Learning points

- Lyme neuroborreliosis can present without any typical symptoms or objective abnormalities among physical examination and standard blood analysis.
- Consider Lyme disease in every patient with expedition to the forest, especially if there is no other probable diagnosis.
- Complete history taking is mandatory in each patient.

Competing interests None.

Patient consent Obtained.

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