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Neuroborreliosis manifested as persistent vomiting in three children

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Abstract
Neuroborreliosis usually presents with facial palsy and meningitis, but unspecific symptoms may also occur and can result in delayed diagnosis. We report on 3 children in whom persistent vomiting was the key clinical finding of neuroborreliosis.

Introduction

Lyme disease is a tick-borne infectious disease caused by Borrelia burgdorferi. The most common clinical presentation is the erythema chronicum migrans in 70–80% of cases [1,2]. In 10%, neurological signs are observed, of which acute facial palsy (55% of the cases with neuroborreliosis) and meningitis (25%) are the most frequent clinical findings in childhood [3]. We report on 3 children where persistent vomiting was the key feature of neuroborreliosis.

Case reports

Case 1

A 4-y-old boy was admitted with a 2-week history of headache, persistent vomiting and aggressiveness. The primary diagnostic work-up showed no pathological findings. He was discharged with the diagnosis of gastroenteritis. One week later he was readmitted in a poor general condition and with recurrent vomiting. A magnetic resonance imaging (MRI) of the brain showed no pathology. Cerebrospinal fluid (CSF) examinations revealed no bacteria, but protein levels were elevated (238 mg/dl) (interpreted as caused by blood contamination), and glucose was normal. Cell count was not possible due to blood contamination. CSF immunoassay test showed positive immunoglobulin (IgG) but negative IgM antibodies to Borrelia burgdorferi. The antibody index was negative. A serum IgG Western blot revealed antibodies to 83, 41, 39, 31, 25 kilo Dalton (kD) polypeptides, and IgM antibodies to 41, 25 kD polypeptides. A diagnosis of acute neuroborreliosis was made, and he received intravenous (i.v.) therapy with ceftriaxone, which resulted in rapid resolution of the symptoms.

Case 2

A 8-y-old girl was admitted with a 2-week history of vomiting, nausea, abdominal pain and diarrhoea, and treated for gastroenteritis. Three weeks after discharge she still suffered from vomiting, loss of appetite, and had to be readmitted for 4 d. Four weeks later she presented again with strong headache, diplopia, and vomiting. On examination she showed anisocoria (left >right), slight ptosis, palsy of the left abducens nerve as well as a palsy of the hypoglossus nerve. A MRI of the brain was normal. On lumbar puncture pleocytosis (267/μl, 96% lymphocytes) and elevated protein levels (133 mg/dl) were found. Detection of IgM and IgG antibodies against Borrelia burgdorferi in CSF (enzyme-linked immunosorbent assay (ELISA)) and serum (ELISA; Western blot IgG 41, 39 kD; IgM 41 kD) led to the diagnosis of neuroborreliosis, and i.v. therapy with

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penicillin was initiated. The therapy was continued for 14 d and led to complete resolution of nausea and vomiting, whereas slight palsy of the hypoglossus nerve persisted for 4 weeks.

Case 3

A 12-y-old girl presented with a 3-week history of vomiting and weight loss of 5 kg. On admission she presented as a slim girl in reduced general condition, weak and anxious. Cranial computer tomography scan and abdominal ultrasound were normal. Since the patient was very anxious, a somatization disorder was suspected, but an extensive psychological work-up showed no signs for either post-traumatic stress disorder or anorexia nervosa. On further work-up, Borrelia burgdorferi serum antibodies (ELISA: IgM, IgG positive; Western blot: IgG 41 kD, IgM 41, 25 kD) as well as CSF antibodies were detected, but the antibody index was negative. CSF cell count was normal, but protein was elevated at 118 mg/dl. She was started on i.v. therapy with ceftriaxone, which was continued over 14 d. Her symptoms completely resolved after 2 d.

Discussion

Neuroborreliosis can result in a diversity of clinical features. Symptoms such as facial palsy are strongly suggestive and lead to the correct diagnosis more or less straightforwardly [3]. However, signs and symptoms of neuroborreliosis can be unspecific and result in delayed or mistaken diagnosis. Moses et al. [4] described 2 cases of neuroborreliosis in childhood that presented with persistent headache. It is believed that especially in Europe fever occurs rarely, and nausea and vomiting are usually mild or absent [2]. Conversely, vomiting in childhood and adolescence is a frequent and unspecific symptom, and is commonly caused by acute gastroenteritis, as indeed had been initially diagnosed in all of our 3 patients. The long history of vomiting and the subsequent appearance of neurological symptoms (case 1: excruciating headache, aggressiveness; case 2: headache, cranial nerve palsy; case 3: depressive anxiety) led to a further diagnostic work-up. The combination of clinical signs, even though unspecific, the serological findings and the rapid resolution of symptoms under i.v. antibiotic treatment confirmed the diagnosis of neuroborreliosis [5–7]. We concluded that diagnostic work-up of persistent vomiting in childhood should consider neuroborreliosis.

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