Introduction

Neurological involvement has been recognized as a significant complication of pediatric AIDS that added significantly to the morbidity of the illness, and is often associated with devastating consequences [1,2]. The altered motor and cognitive parameters, such as language, memory and behavior in HIV-infected infants and children have also been recently reviewed [3]. A toddler with limping that progressed to refusal to walk is presented. The detection of bilateral ankle clonus, which was indicative of a neurological disorder, necessitated admission. The child was diagnosed HIV-1 positive and the viral load was 4,092,383 copies/ml. The syndrome was acquired from an asymptomatic, unidentified mother. The value of testing for clonus and of including pediatric neuro-AIDS in the differential diagnosis of limping or refusing to walk in toddlers is emphasized.

Case Report

A 2-year-old boy presented to the emergency department by his grandmother, due to his mother pregnancy. She reported that the child was walking with a limp for a week, and then he refused to ambulate. The child was walking normally before that time. There was no history or signs of trauma. He had a medical history of 3-month recurrent respiratory tract infections, an ear infection a month ago, chronic diarrhea and poor growth. A month’s period of dysarthric language was also given. The child was born by caesarian section, without complications, after a full-term gestation. There was no significant family history reported. At birth, he weighted 2950 gram and measured 51 cm with an Apgar score of 10 (5min). He received all vaccines included in the national vaccination program with no complications. On physical examination, his vital signs were normal and no abnormality was mentioned on the head and chest examination, but abdominal examination revealed hepatomegaly. His temperature was 36.6 degrees Celsius, height 88 cm (P50) and weight 11 Kg (P10). The child had normal mental status and was in no apparent distress. There was no report of pain since the origin of limping. A complete musculoskeletal examination revealed no effusion or joint abnormality. The range of motion of the hips and...
knees was normal and painless. A bilateral ankle stiffness and ankle clonus were detected. Deep tendon reflexes in the lower extremities were increased. The spine and the sacroiliac joints revealed no abnormality. The child was admitted to the pediatric department for refusal to walk, bilateral ankle clonus and dysarthria. During his 2 weeks stay in the hospital a thorough examination was performed. Chest radiograph showed multiple confluent infiltrates with air- bronchograms, bronchial wall thickening and a normal heart size. The findings were consistent with interstitial pneumonitis (Fig. 1). Laboratory tests showed a white blood cell count of 7,800/ mm$^3$ (Neutrophils: 18.2%, Lymphocytes: 67.5%, Monocytes: 13.3%, Eosinophils: 0.7%), normal C-reactive protein level and increased Erythrocyte Sedimentation Rate (74mm/h). Hemoglobin, platelets, serum electrolyte, plasma glucose levels, and creatine phosphokinase levels were all normal. The only abnormal liver function test was hypergammaglobulinemia. Urinalysis revealed neither bacteriuria nor pyuria. A lumbar puncture was also performed. His cerebrospinal fluid (CSF) was clear and colorless. The CSF showed pleocytosis (WBCs 210/mm$^3$) with lymphocyte type (Neutrophils 11%, Lymphocytes 79%), increased protein (71.7 mg/dl) and low glucose (39 mg/dl). The CSF cultures were negative for bacteria and fungi, while virological testing by polymerase chain reaction (PCR) was positive for infection with Epstein-Barr virus. Retinoscopy revealed no abnormality. Ultrasound imaging of the abdomen was indicative of hepatomegaly. A computed tomography of the head revealed no abnormality. The electroencephalogram was also within normal limits. The serological testing with ARCHITECT HIV Ag/Ab Combo assay, a chemiluminescent microparticle immunoassay for the simultaneous qualitative detection of human immunodeficiency virus (HIV) p24 antigen and antibodies to HIV type 1 (HIV-1) and/or type 2 (HIV-2) was found positive. An in vitro nucleic acid amplification test was used to confirm the results, with the quantitative detection of HIV serotype 1 RNA in the plasma using the Cobas TaqMan HIV-1 Tset V 2.0 test (high viral load of 4.092.383 copies/ml). The HIV serology of his mother during pregnancy was not performed. After the diagnosis of HIV infection in the child, his mother was tested positive for HIV-1. The child was referred to an HIV/AIDS clinic for treatment and follow-up.

Discussion

A toddler who refused to walk after limping for a week is presented in this report. The detection of dysarthria from the history and of bilateral ankle clones from the physical examination necessitated admission and investigation for a neurological disorder.

Figure 1: Posteroanterior chest radiograph in a 2-year old boy showed findings consistent with interstitial pneumonitis.

Acute limping and refusal to walk in toddlers is a common reason for consultation, and sometimes as an emergency. A distinction should be made between a protective limp, to avoid painful weight bearing, and an equilibration limp, which corresponds to an adaptation to a disturbance of muscular activity with a neuromuscular or osteoarticular origin. Examination should begin with a thorough history, focusing on the presence of pain, any history of trauma, and any associated systemic symptoms. Physical examination should focus on identifying the type of limp and localizing the site of pathology by...
direct palpation and by examining the range of motion of individual joints. Transient synovitis of the hip, although it is a likely diagnosis in older children, should also be considered [4, 5]. The condition may be a self-limiting process in a well-appearing child with a normal physical examination result [6]. The spectrum of diagnoses includes more likely traumatic injuries and infectious etiologies [7-10]. Limping or refusal to walk in the febrile toddler is usually associated with a serious underlying disease [11, 12]. The evaluation should also be extended to include other etiologies such as hematologic, rheumatologic and endocrine disorders [13, 14], neurological diseases [15, 16], psychiatric syndromes [17] and tumors [18, 19].

Acquired immunodeficiency syndrome (AIDS) is caused by infection by the human immunodeficiency virus (HIV). The majority of children diagnosed with human immunodeficiency virus (HIV) are infected via mother-to-child transmission, during pregnancy, delivery or postnatally through breast-feeding. The HIV diagnosis is not difficult in children born from a previously HIV-positive diagnosed mother, but may be no easy at all when it is associated with an unsuspected and asymptomatic mother. The infection may only be suspected by various indicators on routine hematological/biochemical analysis. [2, 3, 20].

The disease has become one of the leading causes of childhood morbidity and mortality worldwide. In developing countries the children usually present with nonspecific signs and symptoms, such as failure to thrive, chronic diarrhea, cough and recurrent bacterial infections. Other common presentations of HIV-infected children include persistent generalized lymphadenopathy, hepatosplenomegaly, chronic/recurrent diarrhea, dermatitis, ear infections, sinus disease (inc. mastoiditis), tonsillitis, orbital/peri-orbital cellulitis, dental infections, parotid enlargement, thrombocytopenia and chronic lung disease. In addition, progressive neurological disease, anaemia, severe bacterial infections, persistent oral candidiasis, poor growth, hepatitis, cardiopathy and fever are associated with a significantly shorter survival. Fifteen to twenty percent of untreated children will present with an AIDS-defining illness by 12 months, typically with pneumonia at approximately 3-4 months of age. Seventy percent of perinatally infected children will exhibit some signs or symptoms by 12 months. Without treatment, the median age to progression to AIDS is approximately 6 years, and 25-30% will have died by this age. The mean age of death is 9 years [21-23].

Neurological and neuropsychological disorders have been recognized as a significant complication in children, since they include a variety of motor and cognitive deficits. HIV-associated progressive encephalopathy (HIVE) is the main neurological condition related to HIV infection in childhood. It may be the initial presenting disorder for AIDS in 18% of cases, affecting 30-60% of seropositive infants, children and adolescents at any time point of their disease [24]. Prostration or asthenia may be related to central nervous system involvement. In addition, language impairments may be a prominent cognitive feature of HIV infection in children, with ataxic dysarthria being described as one of these disorders [25-27]. The clinical manifestations of spastic diplegia secondary to HIVE are similar to cerebral palsy [28]. In addition, the diagnosis of bilateral ankle clonus and diparetic gait has once been presented as the initial manifestation of progressive multifocal encephalopathy in a newly diagnosed AIDS patient [29].

The case presented in this report is very rare because the initial referral was due to limping and refusal to walk. Parameters that may be strongly indicative of a neurologic disorder should be carefully estimated in the toddler presenting...
with limping or refusal to walk. Testing for ankle clonus by rapidly flexing the foot into dorsiflexion should always be included in the initial physical examination performed either by pediatrician or the orthopaedic surgeon. Clonus is a neurological sign associated with upper motor neuron lesions, subsequently the detection of ankle clonus is of outmost importance in the diagnosis of a neurological disorder in the limping or refusing to walk toddler. When clonus testing is positive, the history should be carefully checked for other signs of a neurologic deficit and a more detailed neurological evaluation may be asked. The detection of bilateral ankle clonus in the presented case necessitated admission to the pediatric department for a most likely diagnosis of a central nervous system lesion. The clinical characteristics of pediatric neuro-AIDS in the reported case included an asymptomatic, unidentified mother, no major pathologies or severe infections and no adverse reactions to vaccination. The diarrhea was thought to be the chronic nonspecific variant of toddler’s, while only the detected history of dysarthric language was also indicative of a neurological impairment. The final diagnosis was based on the serological testing.

References


