Clinical Article

Unusual Presentations of EBV Illness in Children

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Abstract

Manifestations of Epstein-Barr virus (EBV) illness are well-known. However, the presentation may be atypical resulting in a delay in diagnosis and confusion in treatment. This report reviews cases of Epstein-Barr virus infection in children with an unusual presentation. Because Epstein-Barr virus may involved multiple organ and organ systems. It may be worthwhile to screen for this virus when the etiology of a particular illness remains unknown in a child with persisting symptoms. *Int Pediatr. 2003;18(3):156-159.*

Key words: diagnosis, Epstein-Barr virus (EBV), treatment

Introduction

The Epstein-Barr Virus (EBV) is a common cause of illness in children with each individual at risk to develop EBV infection and its associated illnesses.[1,2] As a contagious illness it primarily occurs in early childhood with nearly 80% of all 5-year-old children and 40-50% of children in privileged areas being seropositive.[3] Primary infection may produce mild or unapparent illness in young children or typical infectious mononucleosis in teenagers and young adults.[3-6] The Epstein-Barr virus may be associated with apnea in infants[7,8] and failure to thrive in young children.[9] This report describes five cases of children with EBV illness with unusual presentations.

Case 1

A 4-year-old white male presented with acute abdominal pain with absence of stools. He was noted on examination to have redness to throat, swollen glands in neck, and felt hot to touch. The abdomen had absent bowel sounds with a distended abdomen. Abdominal x-rays were consistent with intussusception. He was admitted to the hospital and had an IV placed for hydration. He also had a Hypaque enema with repeat x-rays that showed reduction of the intussusception. Over the next 12 hours, he felt better. He was started on clear liquids which were advanced slowly. Screening laboratory studies including a white blood cell count of 3400 K/UL, hematocrit of 39.5%, and platelet count of 140,000 K/UL. Differential was remarkable for 20% neutrophils, 74% lymphocytes, and 3% atypical lymphocytes. Screening Epstein-Barr virus profile was collected and later had results of EBV-VCA IgM 38 (positive greater than or equal to 20 AU), EBV-VCA IgG 44 (positive equal to or greater than 20 AU), EBV-EA IgG negative, and EBV nuclear AG negative (positive greater than or equal to 20 AU). These results were consistent with the child having acute EBV illness. He has continued to do well at routine follow-up with no additional episodes or symptoms of intussusception.

Case 2

A 15-1/2-year-old white female presented with abrupt onset of swelling of her lips. She had no ongoing illness. She had been on no medications. Examination showed her to have swollen glands in neck, beefy redness to throat, and upper airway congestion. She had tense edema to her oral lips and labia, swelling of elbows/wrist/knees, and generalized urticaria. Her joints, however, were not red or hot but were uncomfortable with movement. Rapid agglutination test for group A streptococcus was negative. Screening CBC had a white blood cell count of 10,600 K/UL, hematocrit of 39%, and platelet count of 259,000 K/UL. Differential had 62% neutrophils, 13% bands, 13% lymphocytes, 3% atypical lymphocytes, 6% monocyte count, and 3% eosinophil count. Monospot test was negative. EBV VCA-IgM negative, EBV early antigen IgG positive, EBV-VCA IgG antibody 102 AU (positive ≥ 20 AU), and EBV nuclear antigen AB IgG 127 AU (positive ≥ 20 AU).

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These results were consistent with her having a reactivated Epstein-Barr virus illness. She was placed on valacyclovir 500 mg three times per day for 14 days plus prednisone 30 mg p.o. q.d. for five days. She has had no specific trigger nor has any history of allergic manifestations. In the previous six weeks prior to this illness, she had exposure to Epstein-Barr virus from her sister with whom she lives and a classmate that participates in cheerleading. The family reports that after three days of steroid and antiviral treatment she remarkably improved with no swelling of her lips and elimination of her joint discomfort. She continues to do well at routine follow-up.

Case 3

An 11-year-old white male had a three-week history of aches and not feeling well. He had pain in his ankles and knees preventing ambulating. His examination was remarkable for erythematous throat and tonsils with postnasal drip. He had palpable cervical adenopathy. His joints were sore, particularly his ankle and knee joints, but they were not hot. A rapid strep test was negative. He was placed on ceftirizime 10 mg qd. He returned in one week with continued symptoms. A CBC had a white blood cell count of 9500 K/UL, hematocrit 36%, platelet count 225,00 K/UL with 51% neutrophils, 46% lymphocytes, 2% monocytes, and 1% eosinophils. The Westergren sedimentation rate was 7 mm/hr (normal 0-15). An Epstein-Barr virus antibody profile had a VCA IgM of 26 AU (positive ≥ 20), positive early antigen antibody, VCA IgG of 99 AU (positive ≥20), and nuclear antigen IgG antibody of 145 AU (positive ≥ 20). He was placed on prednisolone 25 mg per day for five days and valacyclovir 500 mg three times a day for 14 days. Within three days, he was improved and continues to do well at routine follow-up.

Case 4

A 10-year-old female was in her usual state of good health and had an abrupt onset of blurred vision and visual impairment. She was on no medications. Evaluation by an ophthalmologist showed normal funduscopic examination and intraocular pressure. She was examined the following day which showed an erythematous throat with palpable cervical adenopathy. She had upper airway congestion. The rest of her exam was normal. Rapid strep test was negative. A complete blood count had a white blood cell count of 8500 K/UL, hematocrit 38%, platelet count 260,000 K/UL with 58% neutrophils, 1% bands, 32% lymphocytes, 7% eosinophils, and 2% atypical lymphocytes. The Epstein Barr Virus antibody profile had a VCA IgM of 31 AU (positive ≥ 20), positive early antigen, VCA IgG of 51 AU (positive ≥ 20), and nuclear antigen IgG antibody of 164 AU (positive ≥ 20). She was placed on valacyclovir 750 mg (20 mg/kg/dose) orally three times a day for 14 days and prednisolone 25 mg (0.75 mg/kg/day) a day. She was reassessed one week later and found to be feeling well with resolution of all symptoms. She continues to do well at routine follow-up.

Case 5

A 12-year-old male in good health presented with right neck swelling and headache. Examination showed him to have impressive right tonsillar adenopathy with a node 3.5 x 5 cm in size. It was not hot or red and only mildly uncomfortable. The pharynx and tonsils were erythematous with postnasal drip. He had a foul aroma to his breath. He was afebrile. A rapid strep test was negative. An intradermal TB skin test was applied. Screening laboratory studies included a complete blood count with a white blood cell count of 11,800 K/UL, hematocrit of 40%, and platelet count of 279,000 K/UL with 17% neutrophils, 7% bands, 49% lymphocytes, 5% monocytes, 1% eosinophil, and 21% atypical lymphocytes. He was started on valacyclovir 500 mg three times a day for 14 days and prednisolone 25 mg a day for five days. He was reassessed 48 hours later. He felt better. Clinically, he appeared improved and had a negative TB skin test. The tonsillar node size was unchanged but not tender. The throat was mildly erythematous. The Epstein-Barr virus antibody profile showed a VCA IgM of 21 AU (positive ≥ 20), positive early antigen but negative VCA IgG and negative IgG nuclear antigen antibody. He continues to improve at follow-up, and the node has returned to normal.

Case 6

A 4-month-old female presented with poor weight gain and disinterest in food. The mother reported this had been going on now for approximately two weeks.

She had been feeding well with breast milk and receiving some supplemental Lipil. She had no recent illnesses and was up-to-date on her vaccinations. She had a benign prenatal course, being 7 pounds 10.5 ounces at birth and a term product of unremarkable pregnancy. She was delivered by vaginal delivery and had no complications during childbirth. Her intercurrent history was normal. Examination showed a child with some redness to her throat and swollen glands in her neck. It was remarkable that her weight was 10 pounds 2 ounces at the current examination. Most recent weight at 2 months of age was 10 pounds 3 ounces. She lost 1 ounce in the previous two months.

Laboratory studies which were collected included a white blood cell count of 11,200 (normal 5200 - 12400 K/uL), hematocrit 30.8%, platelet count 483,000 uL (normal 130, 000 - 400,000 uL) with a manual differential of 12% neutrophils, 1% bands, 81% lymphocytes, 5% monocytes, 1% basophils. AIDS serologic testing was collected and found to be nonreactive. CMV IgM antibody 0.01 KL (negative less than 0.9 KL), CMV IgG antibody 5.3 KL (negative less than 0.9 KL), EBV profile was collected with EBV VCA IgM of 24 (positive greater than or equal to 20 AU), positive early antigen antibody IgG, EBV VCA IgG greater than 170 AU (positive greater than or equal to 20 AU), and EBV nuclear antigen antibody IgG 1 AU (positive greater than or equal to 20 AU). The child was started on valacyclovir 20 mg/kg t.i.d. for 14 days and prednisolone 0.5 mg/kg/day for five days. Reevaluation one week later showed that she had gained 7 ounces and was alert and aggressive. Repeat examinations have shown her to be normal and in good health.

Discussion

EBV may produce a broad spectrum of illnesses. The cases presented in this report represent unusual manifestations of EBV illness. The involvement of organs or organ systems that are not typical of Epstein-Barr virus illness may delay its diagnosis. This is especially true if they precede the more common manifestations of EBV disease. For the child with intussusception, it is presumptively the result of mesenteric adenopathy. Abdominal pain may be a significant manifestation of EBV disease. The author has seen children with severe abdominal pain but not acute surgical abdomen with EBV as its etiology. Additionally, EBV may produce angioedema. [10-12] This is a result of immune system activation[13,14] and responds well to antiviral therapy. [11-12]

In Case 3, the child had severe arthralgia. This was presumptively the result a viral inflammatory arthritis. No joint fluid was collected for assay. Viruses, namely Rubella, Mumps, Varicella and Coxsackie B, may produce a synovitis. For Rubella it is the hands, wrists, and knees that are mostly commonly involved.[5] In Case 4, ocular symptoms were the presenting complaint. EBV may produce an optic neuritis.[15] Neurologic complications occur in less than 1% of cases of EBV illness. It is well known that EBV illness may produce a distortion of sizes, shapes, and spatial relations, a metamorphopsia called Alice-in-Wonderland syndrome.[16] Massive adenopathy occurred in Case 5. EBV has been shown to produce adenopathy with lymph nodes increasing in size over several weeks. However, this degree of cervical adenitis is unusual.

Every child that received treatment improved with antiviral and steroid therapy. It has been reported that this combination therapy remarkably reduces the symptoms of EBV illness and promotes recovery. [17, 18] This was observed with rapid clinical response for each child. In this report, EBV may affect a variety of organ systems. It may be worthwhile to screen children for Epstein-Barr virus when their workup is unremarkable or symptoms persist with the diagnosis unclear.

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