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Case Report

Infectious Mononucleosis Caused by the Epstein Barr Virus, a Disease that we Must Remember. Case Report

Katterine Loriett Rojas Rodríguez[1]*, Paredes L María C[2], Bravo E Yessica A[3] and López Olga L[4]

[1]Pediatric Oncologist and Hematologist, University of Guadalajara, Pediatrics Free Sectional University of Cali and Medical and Surgeon, University of Cauca, Colombia

[2]Physician and Surgeon, University of Antioquia, Colombia

[3]Pediatric Intensivist, CES University and Pediatrics University of Cauca, Colombia

[4]University of Cauca Pediatrics and Medical and Surgeon, University of Cauca, Colombia

***Corresponding Author:** Katterine Loriett Rojas Rodríguez, Pediatric Oncologist and Hematologist, University of Guadalajara, Pediatrics Free Sectional University of Cali and Medical and Surgeon, University of Cauca, Colombia.

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Abstract

We present a clinical case of infectious mononucleosis (IM) due to Epstein barr virus (EBV) infection diagnosed by means of specific IgG and IgM studies, with negative heterophile studies in a previously healthy 5-year-old schoolboy. The patient presented typical signs produced by EBV, mainly due to the triad of fever, pharyngitis, and lymphadenopathy, in addition to paraclinical evidence consisting of lymphocytosis with 13% atypical lymphocytes in the blood smear. He required hospitalization in the Intensive Care Unit (ICU) due to multisystem involvement descended from the pulmonary, renal, metabolic, hepatic, and cardiovascular systems, and even upper airway involvement due to lymph node conglomerate. an exhaustive process of the etiological diagnosis was carried out in which commitment by another infectious agent was ruled out, support management was carried out with adequate evolution and response to management.

Keywords: *Infectious Mononucleosis; Epstein Barr; Weightlifting Tests; Complications; Specific Tests*

Introduction

We present a clinical case of infectious mononucleosis (IM) due to Epstein barr virus (EBV) infection diagnosed by means of specific IgG and IgM studies, with negative heterophile studies in a previously healthy 5-year-old schoolboy.

Case Presentation

A 5-year-old patient from a rural area of the department of Cauca, referred from a first-level complexity health center for management and study in our institution, consulted for a clinical picture of 3 days of evolution prior to admission, consisting of increases non-quantified intermittent thermal sensations, without improvement despite management with acetaminophen, associated with asthenia,

adynamia, hyporexia and generalized abdominal pain, with subsequent development of palpebral edema, painful bilateral retroauricular adenopathies and jaundiced skin and mucous membranes (Figure 1).

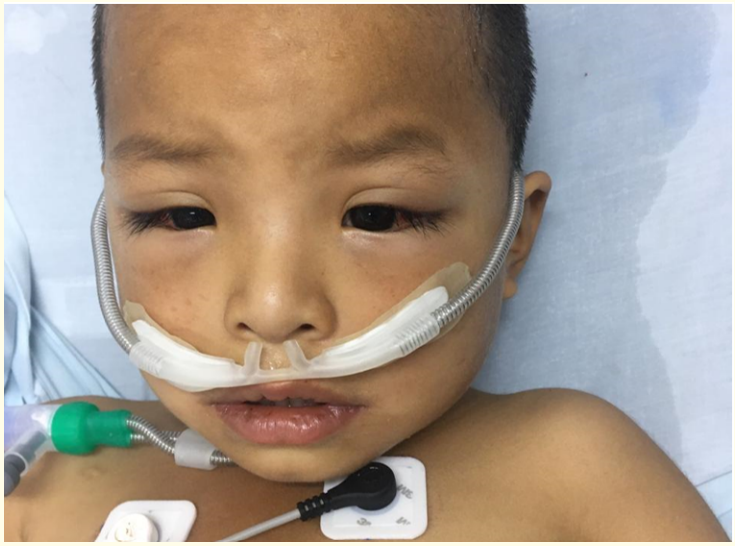

Figure 1: *Palpebral edema and bilateral chemosis.*

The minor's father denies weight loss, night diaphoresis, hyporexia or hypoactivity, in fact he has no significant pathological, allergic, surgical or pharmacological history, his vaccination schedule was complete and there was no notion of contagion for this condition.

The father also denied a family history of cancer or immunological diseases.

Paraclinical tests on admission: Leukocytes (LEU) 10.4 X 109/L, Hemoglobin (HEM) 13.2 mg/dl, Hematocrit (HTO) 39.5%, Neutrophils (NEU) 6,271, Lymphocytes (LYNF) 3,296, Monocytes (MON) 956.8, platelets (PLT) 189 109/L, C-reactive protein (CRP) 24 mg/dl, creatinine (CR) 0.53 mg/dl, blood urea nitrogen (BUN) 4.7 mg/dl, total bilirubin (BT) 2.79 mg/ dl, direct bilirubin (BD) 2.36 mg/dl, indirect bilirubin (BI) 0.43 mg/dl, D-dimer 3425 ng/ml, quantitative Troponin I 16.3 ng/ml.

The patient was admitted to our institution hydrated, hemodynamically stable, febrile 38.2°C, weighing 16.6 kg and height of 106 cm appropriate for age, with bilateral palpebral edema and bilateral retroauricular adenopathies of 3 x 3 cm, painful on palpation, mucosal with pharyngeal erythema, icteric skin color, with slight pain on palpation in the right hemiabdomen. No other abnormal findings found on initial physical exam.

Subsequently, it evolved unsatisfactorily, presenting bilateral chemosis, growth of cervical ganglion conglomerates, appearance of punctate lesions on the palate with whitish exudate on the tonsils, hepatomegaly and splenomegaly that were painful on palpation (Figure 2).

Figure 2: *Mobile lymph node conglomerates, tender on palpation, without local inflammatory signs.*

As a sign of severity, he presented signs of upper airway obstruction due to lymph node conglomerate, producing functional limitation and inspiratory snoring.

Multisystemic compromise was evidenced due to: elevation of liver enzymes, cholestasis and prolongation of coagulation times, metabolic disorders with mild hydroelectrolytic imbalance and hypoalbuminemia. He presented serositis due to a scant right pleural effusion and pericardial effusion. Finally, he had renal compromise due to proteinuria in the non-nephrotic range without alterations in diuresis or alterations in the glomerular filtration rate.

Leukocytosis was evidenced at the expense of lymphocytes, being found in the peripheral blood smear with a maximum value of 13% of atypical lymphocytes in the in-hospital paraclinical follow-up. Associated, the presence of multiple lymph node conglomerates was evidenced, not only in the neck but also in the axillae, retroperitoneal mediastinum and in the splenic hilum.

Control paraclinicals: (WBC) 20.1 X 109/L, (HEM) 11.7 mg/dl, (HTO) 35%, (NEU) 6432, (LYMPH) 7437, (MON) 2814, (PLT) 119 X 109/L. Peripheral blood smear: 13% atypical lymphocytes, without morphological changes in other cell lines (Figure 3).

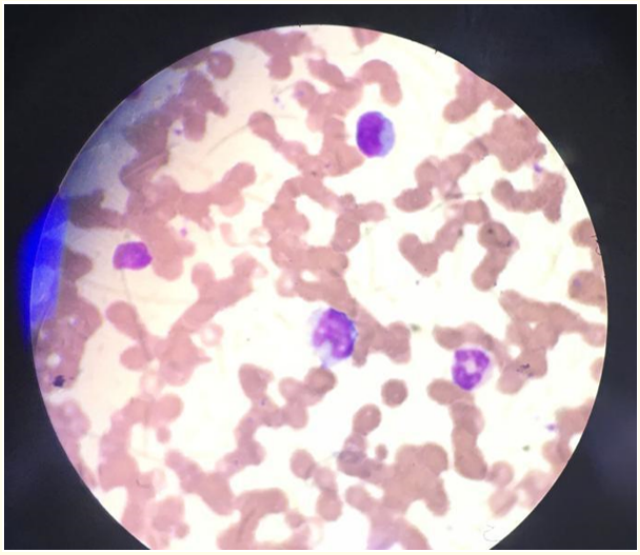

Figure 3: *Atypical lymphocytosis, without morphological changes in other cell lines.*

Sodium (NA) 133 meq/L, potassium (K) 4.4 meq/L, calcium (CA) 8.3 mg/dl, magnesium (MG) 1.8 mg/dl, phosphorus (P) 5.2 mg/dl, chlorine 99 mmol/L, (PCR) 1.53 mg/dl, (CR) 0.48 mg/dl, (BUN) 10 mg/dl, aspartate aminotransferase (TGO) 195 U/L, alanine aminotransferase (TGP) 412 U/L, (BT) 4.1 (BD) 2.79 mg/dl, (BI) 1.31 mg/dl, alkaline phosphatase (AP) 346 U/L, lactate dehydrogenase (LDH) 491 U/L, Prothrombin Time (PT) 11 seconds, Partial Thromboplastin Time (PTT) 24.9 seconds, albumin 2.8 g/dl, C3 complement 51.7 mg/dl, C4 complement 16.9 mg/dl, creatinine in spontaneous urine 164.39 mg/fL; protein in spontaneous urine 115 mg/dl, partial urine: pH 6 density 1031, protein 50 mg/dl, glucose negative, bilirubin 4 mg/dl, urobilinogen 6 mg/dl, nitrite negative without cylinders. Leukocyte urinary sediment 2 x high power field, without hematuria. Urine Gram: no microorganisms observed.

Infectiology test results

Antibodies against HIV 1 and 2 negative, IgG and IgM antibodies against Leptospira, toxoplasma, cytomegalovirus and SARS COV 2 negative. Hepatitis A IgM antibodies negative. Nonreactive hepatitis B surface antigen, serial smears of gastric juice sample: no acid-fast bacilli observed. Blood cultures: no growth of microorganisms. IgG and IgM antibodies against antigens of the viral capsid of the Epstein barr virus positive, negative heterophile antibodies.

Diagnostic imaging results

- Abdominal ultrasound: Retroperitoneal adenomegaly and in the splenic hilum, adequately distended gallbladder, with thin walls (2.7 mm), with peri-gallbladder edema, without echogenic images inside, without dilatation of intra- or extra-hepatic bile ducts.
- Echocardiogram: Mild pulmonary hypertension of 28.7 mmHg, pericardial effusion of 6 mm, without signs of cardiac tamponade.
- Chest CT scan: Non-specific mediastinal and left axillary lymph nodes, few lamellar atelectasis in both posterior bases and reticulonodular opacities of random distribution in both lungs, scant right pleural effusion; the other structures are normal in appearance.

- Neck CT: With hypertrophy of the pharyngeal tonsils and multiple cervical adenopathies of different sizes, most of them behind the sternocleidomastoid muscle.

He required hospitalization in an intensive care unit (ICU) with oxygen supplementation by high-flow cannula and systemic glucocorticoids, management with furosemide and empirical antibiotic coverage with clindamycin and ceftriaxone for 5 days until bacterial infection could be ruled out. Supplement was made intravenously with magnesium sulfate, calcium carbonate to correct fluid and electrolyte imbalance and intravenous albumin was administered, in addition 2 units of cryoprecipitate were transfused. He did not require orotracheal intubation or management with vasopressors.

After the days of support management in the ICU, the patient evolved adequately, with an improvement in the clinical picture: without new temperature rises, he tolerated a diet, FiO_2 was removed, he remained hemodynamically stable and without neurological deficit.

The last paraclinical controls were documented: (LEU) 15.3 109/L, (HEM) 9.9 mg/dl, (HTO) 29%, (NEU) 5049, (LYNF) 1530, (MON) 1836, (PLT) 809 X 109/L, (PCR) 0.53 mg/dl, (CR) 0.34 mg/dl, (BUN) 24 mg/dl, (TGO) 77 mg/dl, (TGP) 133 mg/dl, (BT) 1.01 mg/ dl, (BD) 0.34 mg/dl, (BI) 0.67 mg/dl, (FA) 521 mg/dl, (LDH) 268 mg/dl, (TP) 12 seconds, (TPT) 39.3 seconds.

As a diagnosis, it was determined that the patient had an acute MI due to EBV with multisystem involvement; After 10 days of in-hospital support management and adequate evolution, the patient is discharged with outpatient management and follow-up by outpatient consultation.

Discussion

IM is one of the most common syndromes that occur in childhood and adolescence, produced in approximately 80% of cases by EBV, 10% of cases by Cytomegalovirus (CMV) [1] and infrequently by other agents such as *Toxoplasma gondii*, human herpes virus 6, primary infection by the Human Immunodeficiency Virus (HIV) [2] Infection by adenovirus, rubella, influenza, parainfluenza, rhinovirus and coronavirus [3].

Although primary EBV infection in children is asymptomatic in many cases [1], it could present with an acute viral infection in approximately 30% to 70% of cases [4].

Most of the time, the disease has a benign course lasting approximately 2 to 3 weeks, presenting general and nonspecific symptoms such as weakness, anorexia, fatigue, headache, and generalized myalgia.

The classic triad of the syndrome characterized by fever, pharyngitis, and lymphadenopathy has been identified. In mild cases, patients generally require supportive care [5] and tend to evolve towards clinical improvement without sequelae, with fatigue and cervical lymphadenomegaly being the longest-lasting signs/symptoms, which may even persist for months [1,5].

Manifestations such as airway obstruction by lymph node conglomerate, abdominal pain, hepatomegaly, jaundice, and edema are considered palpebral swelling are infrequent [6] however, in our case, the patient presented all these manifestations in the initial and critical phase of the evolution of his clinical picture.

Although airway compromise in IM occurs in only 5% of cases, this is the most frequent reason for hospital admission [4].

In approximately 20% of cases, other complications can be found.

In the different systems: hematological (hemolytic anemia, thrombocytopenia and neutropenia), neurological (meningoencephalitis) and reticuloendothelial, with the liver being the most frequently affected organ in 80% to 90% of cases with transient elevation of liver enzymes and cholestasis [4].

In some cases of MI, renal complications have been evidenced, such as, in order of greater to lesser frequency: interstitial nephritis; acute kidney injury (associated with myosotis or hyperbilirubinemia) and hemolytic uremic syndrome [7]. In the case of our patient, fluid overload and mild proteinuria were evidenced, however, no other findings were found such as hematuria, arterial hypertension or alterations in the glomerular filtration rate or decrease in diuresis that would lead to a specific diagnosis of any renal alteration.

Another complication that occurs in the short-medium term is splenic bursting, so it is recommended not to engage in contact sports or vigorous physical exercise for approximately 1 month after the acute phase of the disease [4]. They may also present medium-long-term complications such as the development of lymphomas, however, the patients most susceptible to developing it are those who are immunosuppressed and older [8].

Regarding the diagnostic process, one of the highly suggestive findings of IM due to EBV is the presence of lymphocytosis greater than or equal to 50%, with atypical lymphocytosis greater than or equal to 10%. Previously, it was considered that this finding associated with positive heterophile antibodies helped to determine the diagnosis of MI due to EBV infallibly [6] which has now been modified given that it has been found that heterophile antibodies can be negative in 35% of cases. patients with IM due to EBV in the first week of infection and positive results are obtained in only 25 to 50% of patients with IM due to EBV in children under 12 years of age, which gives it low sensitivity, especially in the pediatric population [5].

What is recommended in cases with a high suspicion of EBV infection is to rule out infection by other aetiological agents, such as CMV, mainly, and perform the diagnosis with EBV-specific antibodies. IgG antibodies against viral capsid antigens (VCA) and against nuclear antigens (AN) have a sensitivity and specificity of 97% (95% - 99%) and a specificity of 94% (86% - 100%) respectively [4]. If IgG and IgM against ACV AND AN are used concomitantly, a sensitivity of 95 - 100% and a specificity of 86 - 90% [3] are achieved. IgM antibodies against ACV appear in early phases of infection and their levels decrease in approximately 4 to 6 weeks, IgG antibodies against ACV appear early in the first infection while IgG antibodies against AN are not.

Detectable up to 6 to 12 weeks after the primary infection, so their presence excludes an acute infection [4].

In our case report, a maximum lymphocytosis of 71% was presented and the maximum percentage of atypical lymphocytes was 13% in the recovery phase; heterophile antibodies were negative and IgG antibodies against nuclear antigens were not requested, but IgG and IgM positive for viral capsid were found.

An important limitation to take into account in medical practice is the limited availability of the test and its cost, since EBV-specific antibodies are more expensive to perform than heterophile antibodies [3].

Conclusion

EBV MI syndrome occurs mainly in adolescents and in some cases in children, most of the time it has a benign evolution; in which a resolution of the frame without sequels is achieved quickly. Due to the great variety of signs and symptoms, the correct diagnosis of the etiology becomes a challenge, mainly in care centers with a low level of complexity, due to the price and limited availability of the tests to be requested, since although the antibodies heterophils are more frequently available, their sensitivity is low, mainly in the pediatric population, so in many cases it will be necessary to request specific antibodies against EBV antigens, whether they are against the viral

capsid or nuclear antigens. From the present case, as points of good practice, other infectious etiologies were ruled out in order to seek specific treatment and thus prevent complications; In addition, follow-up and timely management of complications were carried out, with which the patient evolved adequately until the resolution of the acute phase of the disease without any sequelae.

Conflict of Interests

Neither.

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