

## Epstein-Barr Virus Myocarditis Presenting as Acute Abdomen in a Child: a Case Report

\*Roshni Chakraborty<sup>1</sup>, Nilay Ranjan Bagchi<sup>1</sup>, Jasodhara Chaudhuri<sup>2</sup>, Sonali Mitra<sup>1</sup>

<sup>1</sup>Medical College, Kolkata, India.

<sup>2</sup>Resident of Pediatrics, Medical College, Kolkata, India.

### **Abstract**

#### **Introduction**

Epstein-Barr virus (EBV) infection can present with a variety of manifestation.

#### **Case Report**

Here we present a case of a 7 year- old immunocompetent girl who came with acute abdominal pain , had echocardiographic evidence of myocardial dysfunction and finally was diagnosed as a case of serologically proven acute EBV infection.

#### **Conclusion**

Isolated gastrointestinal symptoms can be a presentation of Epstein-Barr virus myocarditis.

**Key Words:** Epstein-Barr virus (EBV), Infectious mononucleosis, Myocarditis.

---

#### **\*Corresponding Author:**

Roshni Chakraborty, MD, Medical College, Kolkata, India.

Email: [chakrabortyroshni6@gmail.com](mailto:chakrabortyroshni6@gmail.com)

Received date: Aug 22, 2015 Accepted date: Sep 12, 2015

## Introduction

EBV infection is quite common in adolescents and young adults. Most of the cases present with a clinical triad of sore throat, fever & lymphadenopathy (1). Clinically significant myocarditis is rare (2). Literature showed very few cases where myocarditis was the first symptom of infectious mononucleosis (3). Here we present acute myocarditis as the first symptom of infectious mononucleosis in a child.

## Case Report

A previously healthy 7-year-old girl presented with pain abdomen for last 3 days. She had high grade fever from the day of admission and she was also having respiratory distress. Physical examination revealed heart rate 160/min, respiratory rate 42/min and tender soft hepatomegaly and mild splenomegaly. However there was no lymphadenopathy. There was diffuse tenderness over abdomen. ECG showed normal sinus rhythm whereas Echocardiography revealed gross diastolic dysfunction with chink of pericardial effusion.

Complete blood count showed hemoglobin 10.2 g/dl, total leucocyte count 8300, 64% neutrophils, 32% lymphocytes. Abnormal value was obtained for C-reactive protein 36 mg/dl (normal 0-6 mg/dl), liver enzymes were elevated, SGOT 123 IU/L, SGPT 131 IU/L, creatinine phosphokinase was 289 IU/L (normal 55-170 IU/L). Her fever persisted for next 5 days and repeat blood count showed 56% lymphocytes with presence of atypical lymphocytes in peripheral blood smear. Chest X-ray was normal.

In this study Antinuclear antibodies (ANA) and results of serologic tests for Hepatitis A, B and C, HIV, toxoplasma

and cytomegalovirus were negative. Also, abdominal ultrasound was normal.

Immunoglobulin M (Ig M) Epstein-Barr virus viral capsid antigen was positive 128 U/ml (normal <8 U/ml) and Ig G viral capsid antigen and EBV nuclear antigen antibodies were negative.

She was treated with intravenous furosemide, dobutamine and restricted intravenous fluid. She recovered successfully and 7 days after admission myocardial enzymes and C-reactive protein were normal.

However her liver enzymes were persistently elevated in the range of SGOT 117 IU/L and SGPT 121 IU/L. Alkaline phosphatase (ALP) was normal. These biochemical abnormalities gradually came to normal level at 2 months follow-up.

## Discussion

EBV, a virus belonging to Herpes virus family causes mostly a self-limiting viral illness known as infectious mononucleosis in adolescents and young adults. But it may affect multiple organ system causing hepatitis, pericarditis, myocarditis, transient erythropenia and aplastic anaemia.

Acute myocarditis is inflammation of myocardium often caused by cardiotropic viruses. It may present as ventricular arrhythmia or dilatation of myocardium leading to heart failure or as chest pain mimicking myocardial infarction (4).

With advancement of molecular biology a number of viruses has been identified as causative agent of myocarditis, most common among them are coxsackie, adeno, parvo and Epstein-Barr virus (5).

Cardiac complications are not very common in EBV infection. The first

association between EBV infection and pericarditis was shown by Miller, et al. (6). There are few reported cases of pericardial effusion, far less in children (7). Myocarditis associated with EBV is mostly seen in immunosuppressed patients (8) or those suffering from chronic active EBV infection but rare in immunocompetent children (9). Many studies in adults have characterized cellular immune responses both among CD8+ and to a lesser extent CD4+ T cells (10).

Mechanism of myocarditis caused by EBV is suspected to be due to direct invasion of virus to cardiac myocyte. In a study systematic intramyocardial viral genome quantification was done in 624 patients with acute myocarditis where adenovirus was identified as most common aetiological agent in both adults and children. In this report EBV was positive in 1% cases (3 of 293 positive PCR samples) (11).

The sensitivity of endomyocardial biopsy to detect acute myocarditis and viral antigen is low because of its invasive nature, higher chance of sampling error, transient nature of inflammatory infiltrates and variability in interpretation. Our case lacked typical symptoms of infectious mononucleosis. Moreover presentation of acute viral myocarditis with acute abdomen is quite rare.

Echocardiographic finding with elevation of cardiac enzymes reflect myocyte damage in our patient which was later resolved within following days of hospital stay but liver enzymes remained elevated and took 2 months to come to normal level. Diagnosis of acute EBV infection in this patient was made by serologic evidence of Ig M

antibody to Viral capsid antigen (VCA) and exclusion of other diagnosis.

There is no gold standard test for diagnosing myocarditis. Cardiac Magnetic Resonance Imaging (MRI) shows increase in focal and global signal intensity and presence of late gadolinium enhancement (12).

### Conclusion

A child with acute myocarditis can present with acute abdomen. EBV should be kept in mind in such cases.

**Conflict of Interest:** None.

### References

1. Ventura KC, Hudnall SD. Hematologic differences in heterophile-positive and heterophile-negative infectious mononucleosis. *Am J Hematol* 2004; 76(4):315-18.
2. Johansenn E, Schooley R, Kaye K. Epstein Barr virus (infectious mononucleosis). In: Principles and Practice of Infectious diseases. 6<sup>th</sup> Ed. Mandell GL; Bennett JE; Dolin R, Eds. Churchill Livingstone 2005: 1801-17.
3. Bang DW, Kim TH, Noh HJ, Hyon MS, Kim SK, Kwon YJ. Epstein-Barr virus induced acute myocarditis diagnosed using cardiac magnetic resonance imaging. *Int J Cardiol* 2009; 134: e32-e34.
4. Xu B, Michael Jelinek V, Hare JL, Russell PA, Prior DL. Recurrent myocarditis - an important mimic of ischaemic myocardial infarction. *Heart Lung Circ* 2013; 22 (7): 517-22.
5. Ikeda T, Saito T, Takagi G, Sato S, Takano H, Hosokawa Y, et al. Acute myocarditis associated with coxsackievirus B4 mimicking influenza myocarditis electron microscopy detection of causal virus of myocarditis. *Circulation* 2013; 128(25) 2011-2012

6. Miller H, Uricchio JF, Phillips RW. Acute pericarditis associated with infectious mononucleosis. *N Engl J Med* 1953; 249(4):136-40.
7. Zafrir B, Aviv A, Reichman N, Flatau E. Epstein-Barr virus-associated pericarditis and pericardial effusion: Case reports and diagnostic aspects. *Eur J Intern Med* 2005;16(7):528-30.
8. Fujiwara M, Shimozono H, Ono H, Fujita N, Ueda K, Kaneko M, et al. Polyclonal activation of lymphocytes containing the Epstein-Barr virus genome in a patient dying of myocarditis in chronic active Epstein-Barr virus infection. *J PaediatrHematolOncol* 2003;25(5):85-8.
9. Ishikawa T, Zhu BL, Li DR, Jhao D, Maeda H. Epstein-Barr virus myocarditis as a cause of sudden death: two autopsy cases. *Int J Legal Med* 2005;119(4):231-35.
10. Long HM, Chagoury OL, Leese AM, Ryan GB, James E, Morton LT, et al. MHC II tetramers visualize human CD4+ T cell responses to Epstein-Barr virus infection and demonstrate atypical kinetics of the nuclear antigen EBNA1 response. *J Exp Med* 2013; 210(5): 933–49.
11. Bowles NE, Ni J, Kearney DL, Pauschinger M, Schultheiss HP, McCarthy R, et al. Detection of virus in myocardial tissues by polymerase chain reaction: Evidence of adenovirus as cause of myocarditis in children and adults. *J Am CollCardiol* 2003; 42(3): 466-72.
12. Roubilli F, Gahide G, Moore-Morris T, Granier M, Davy JM, Vernhet H et al. Epstein-Barr virus and acute myopericarditis in immunocompetent patient. First demonstrated case and discussion. *Int Med* 2008; 47(7): 627-29.