

# EBV Associated Lymphoid Proliferation Masquerading as Acute Leukaemia: A Case Report

Harsh Bhalodiya<sup>1</sup>, Arambam Gautam<sup>2</sup>, Jyotsna Huidrom<sup>3</sup>, Ronal RK<sup>4</sup>, Sushila L<sup>5</sup>

<sup>1</sup>PGT, Department of Pathology, JNIMS, Imphal

<sup>2</sup> MD, DM, Haematopathologist, Department of Pathology, JNIMS, Imphal  
Corresponding Author Email: [gautamarambam\[at\]gmail.com](mailto:gautamarambam[at]gmail.com)

<sup>3</sup>Senior Resident, Department of Pathology, JNIMS, Imphal

<sup>4</sup>Senior resident, Department of Pathology, JNIMS, Imphal

<sup>5</sup>Professor of Pathology, JNIMS, Imphal

**Abstract:** Epstein Barr Virus (EBV) is the DNA virus which is implicated in the causation of benign as well as malignant lymphoid proliferation. The lymphoid proliferation caused by EBV may mimic acute leukaemia morphologically in the peripheral blood smear and in bone marrow aspirate findings. EBV is involved in the development of specific types of benign lymphoproliferation and malignant lymphomas. The virus mainly target the lymphoid cells, liver, spleen and lymph nodes of the body. The various manifestations of EBV infection may be mistaken as leukaemic malignancies. EBV infection may present asymptotically or it may present as a fulminant form. It can also present as persistent EBV infection lifelong. Here, we present a case of pancytopenia presenting with fever, icterus, lymphadenopathy which was mimicking acute leukaemia clinically. Peripheral blood smear show some atypical cells and after bone marrow examination it turns out to be positive for EBV associated lymphoid proliferation. EBV infection may present as pancytopenia with clinical features suggestive of acute leukaemia.

**Keywords:** EBV, lymphoid, proliferation, lymphoma, pancytopenia, acute leukaemia

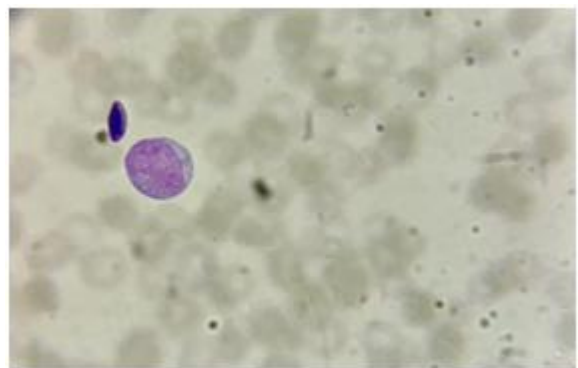
## 1. Introduction

Epstein Barr Virus (EBV) is a double stranded human herpes virus type -4. EBV infection can occur in all age groups. It can cause benign as well as malignant lymphoid proliferation which may mimic acute leukaemia(1). EBV infection may present as maculopapular rash, jaundice and constitutional symptoms(2). It has been reported that EBV infection is associated with a high incidence of childhood leukemia and poorer overall survival rate(3). EBV infection may present with fever, lymphadenopathy, hepatosplenomegaly with pancytopenia which may clinically resemble acute leukaemia presentation(4). Here, we present a case of a 13 years old female with EBV infection.

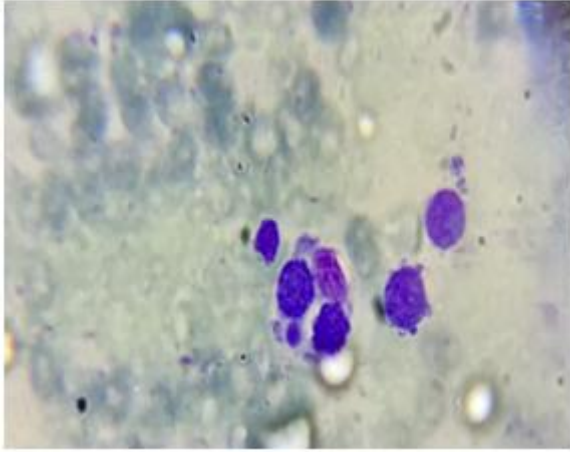
## 2. Case Report

A 13 yr old female with the chief complaints of fever and jaundice was admitted in JNIMS female ward. On examination, patient was icteric with hepatosplenomegaly. CBC was sent with bone marrow examination request to Pathology department, JNIMS, Imphal. CBC examination revealed Pancytopenia with the Hb% of 8.3 g/dl, WBC of 1420/cu.mm and Platelet count of 36000/cumm. Corrected reticulocyte count-1.26%. Occasional atypical cells (Fig: 1;100x) were seen in the peripheral smear with no evidence of haemoparasites on blood smears. Bone marrow examination shows hyper cellular bone marrow with NE:E ratio of 4.9:1 with the differential comprising of Promyelocytes 02%, Lymphoid cells 80%, erythroid 17%, Plasma cells 01%. Megakaryocytes were adequate in number and normoblastic erythropoiesis. Bone marrow shows increased in lymphoid cells and features of

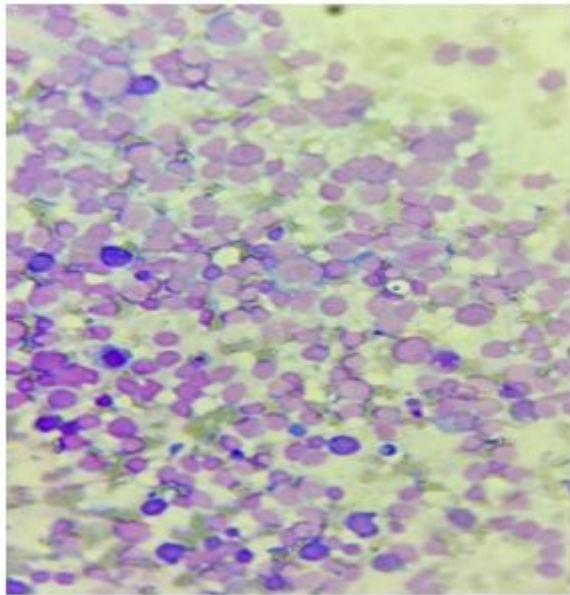
haemophagocytosis were seen(Fig2; 100 x). The lymphoid cells were 1.5 to 2 times the size of mature lymphocytes with partially opened up chromatin with inconspicuous nucleoli which were mimicking lymphoblasts. (Fig 3. 100x). Flow cytometry revealed no increase in blasts or abnormal lymphoid cells. No aberrancy were observed. In view of pancytopenia with fever, RT-PCR for EBV DNA viral load were sent which revealed 1,11,650 IU/ml viral load.



**Figure 1:** Atypical cell in peripheral blood; Leishman's stain (100X)



**Figure 2:** Haemophagocytosis in bone marrow; Leishman's stain (100X)



**Figure 3:** Lymphoid cells in bone marrow imprint smear; Leishman's stain (100X)

### 3. Discussion

Epstein-Barr virus (EBV) is a member of the herpes virus family and is one of the most common viruses in humans. In most cases, EBV infection is asymptomatic or causes mild symptoms, such as infectious mononucleosis (commonly known as mono or glandular fever) (5). However, in some individuals, especially those with weakened immune systems, EBV infection can lead to more severe complications, including lymphoproliferative diseases (6). EBV-associated lymphoproliferative diseases are a group of conditions characterized by the abnormal proliferation of lymphocytes (white blood cells) due to EBV infection (7). These diseases can range from benign lymphoproliferative disorders to more aggressive and potentially life-threatening lymphomas. EBV infection may present clinically mimicking acute leukaemia. Measurement of EBV load by quantitative polymerase chain reaction amplification assays can be a sensitive aid to diagnosis. When peripheral blood mononuclear cells are assayed, an elevated EBV DNA may reflect both EBV in normal B cells and EBV in transformed cells (8). EBV infection may present clinically resembling

acute leukaemia in the peripheral blood smear as well as in the bone marrow finding.

### 4. Conclusion

EBV infection should be suspected whenever there is increase in lymphoid cells in bone marrow with the presence of atypical cells in the peripheral blood which may mimic acute leukaemia. The lymphoid cells may resemble blasts but careful observation of the nuclear chromatin and nucleoli is a must warranted observation for the lymphoid cells in the bone marrow. Flow cytometry though can be done to rule out acute leukaemia but because of high cost, it may not be affordable to all. EBV serology including EBV DNA viral load should be sent for confirming the infection.

**Conflict of interest:** None

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