

CASE REPORT

Parotid Abscess in A Case of Acute Lymphoblastic Leukemia

Sivarahini Ganesan², Anjali Rajagopal³, Manoj Prabhu², Muthuvel Ezakki¹, Rekha Arcot²

Abstract

Parotid gland enlargement as a presenting manifestation of acute lymphoblastic leukemia (ALL) is very rare, even though it has been reported in acute myeloid leukemia. Here we present a case of parotid abscess in a case of ALL in the presence of Dengue.

Key Words

Acute Lymphoblastic Leukemia, Parotitis, Dengue fever

Introduction

Acute Lymphoblastic Leukemia (ALL) is a hematological malignancy commonly occurring in the paediatric age group. In this article we report the case of a 15-year-old boy initially presenting with a parotid abscess in a background of an underlying acute lymphoblastic leukemia and concurrent dengue infection and examine a possible association between the three.

Case Report

A 15-year-old adolescent male presented to the casualty with complaints of a swelling over the right parotid region with associated pain for a duration of three weeks and restricted mobility of the right temporomandibular joint and a intermittent fever was present for a week with no gastrointestinal symptoms. The patient had no known comorbidities and no history of smoking, alcohol consumption or drug abuse with no significant family history.

Marked pallor was observed on general examination with no icterus, cyanosis or lymphadenopathy. Local examination showed presence of a unilateral, fluctuant,

erythematous, warm, tender swelling in the right parotid region measuring 10x8 cm in size with grade I Trismus. Examination of the abdomen revealed hepatosplenomegaly. Other Systemic examinations were unremarkable. A provisional diagnosis of a right parotid abscess was made and investigations for the pallor were undertaken.

Preliminary investigations included a blood panel, which revealed significant leukocytosis, anemia and thrombocytopenia. (Hb - 4.3 g/dL, TLC - 64,500 cells/cu mm, RBC count - 1.61 mill/cu mm, Platelet Count- 15,000 cells/cu mm). The peripheral smear study demonstrated- WBC blasts-56%, promyelocytes-1%, Myelocytes 9%, metamyelocytes 4%, band form 1%. A picture suggestive of Acute Lymphoblastic Leukemia was described. (*Fig 1A, 1B*) The coagulation profile showed PT - 17.1 secs, aPTT- 28.4 secs, INR- 1.51 and the serum ferritin were markedly elevated with a value of 737 ng/ml. Dengue specific IgM antibodies were found to be positive whereas both the IgG antibody and NS1

Department of ¹Pathology & ²Surgery & ³CRRF, Saveetha Medical College Hospital, Thandalam, Chennai, Tamil Nadu, India.

Correspondence to: Dr. G. Sivarahini, Postgraduate GSurgery, Saveetha Medical College Hospital, Thandalam, Chennai - 602105 Tamilnadu, India

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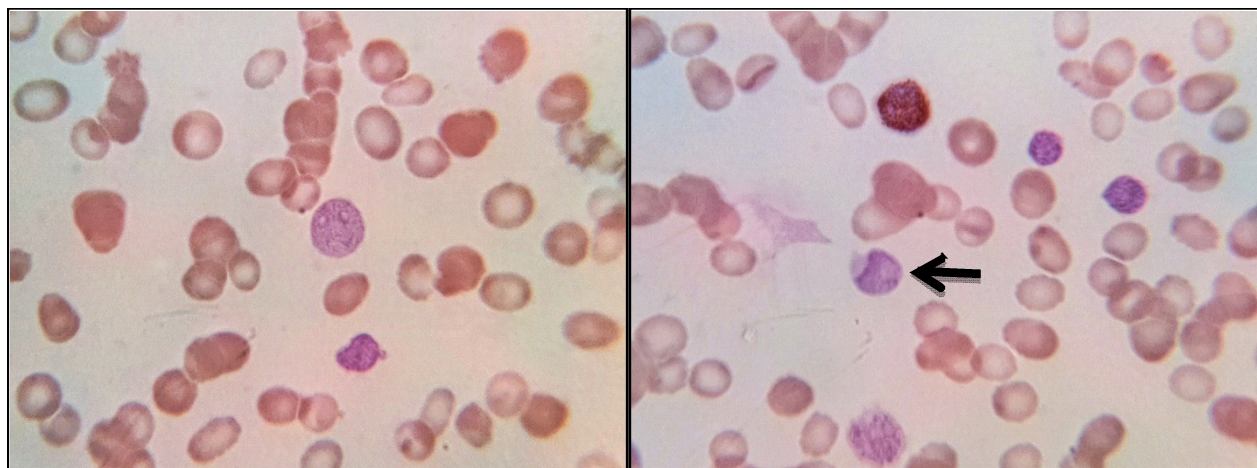


Fig. 1a and 1b Peripheral Smear Images under Oil Immersion Field Depicting Myeloperoxidase (MPO) Negative Blast Cells in a Background of Normochromic Normocytic Red Blood Cells and Thrombocytopenia. (Black Arrowheads) Calcification Foci in Lesion of Right Temporal Lobe along with Cortical Thinning & Pressure Erosion of Right Greater Wing of Sphenoid Bone. [Green arrow] Right Proptosis is also Evident in this Image

antigen were negative. The patient tested negative for COVID19. Liver function tests, renal function tests and urinalysis were found to be within normal limits.

A CT scan of the neck revealed an ill-defined heterogeneously hypo-dense soft tissue swelling in the right parotid region with perifocal inflammatory changes extending to the root of the neck. (Fig 2) The presence of hepatosplenomegaly was confirmed on CT imaging. The parotid abscess was drained and pus sent for culture and sensitivity. The histopathological examination of the wall revealed a typical inflammatory process consistent with that of an abscess. The medical oncologist suggested a bone marrow examination. The intensivist monitored the patient for dengue (no hemorrhagic manifestation). Once the abscess wound resolved, the patient was referred to GGH for logistics reasons.

He was then started on a chemotherapy regimen consisting of Inj. Vincristine 2mg, Inj. Adriamycin 20 mg, Inj. Dexamethasone 8 mg IV BD and intrathecal methotrexate as part of the induction phase of the treatment. Subsequent blood counts taken 10 days later showed a decrease in the total leukocyte count. (TLC- 30,900 cells/ cu mm, Hb- 14 g/dl, PCV- 43%, Platelet 11000 cells/cu mm).

Discussion

Acute Lymphocytic/Lymphoblastic Leukemia (ALL) is a malignancy of the blood and bone marrow characterized by an abnormal clonal proliferation of the lymphoid progenitor cells which accumulate and disrupt

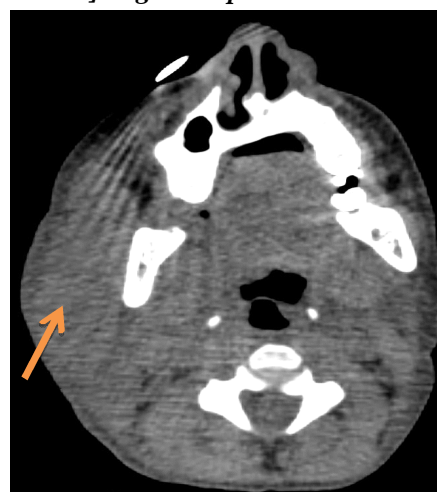


Fig 2. Plain CT Imaging of the Neck Depicting an ill-defined Heterogeneously Hypo-dense Soft Tissue Swelling in the Right Parotid Region with Perifocal Inflammatory Changes Extending to the Root of the Neck. (Orange arrowhead)

normal haematopoiesis. [1] It is the most common type of cancer occurring in the paediatric age group with a projected incidence of 1-4.5 cases per 100,00 people worldwide. [2] In India, leukemia is reportedly the most common childhood cancer of which Acute lymphoblastic leukemia accounts for 60-85% of cases. [3]

Acute lymphoblastic leukemia presents with fever, pallor, bruising/purpura due to thrombocytopenia, abdominal pain, hepatosplenomegaly and recurrent infections due to neutropenia and has predilection for CNS

involvement causing neurological symptoms such as headache, seizures and altered sensorium. A study conducted in India demonstrated that hepatosplenomegaly was present in 80% of the study population in contrast to the 1.3% of the patients showing CNS disease.^[4]

Dengue is a vector-borne systemic viral infection which is transmitted by the bite of the mosquito species *Aedes aegypti*. It is endemic primarily in tropical countries and usually has a self-limiting course.^[5] The dengue manifest in three clinical phases namely the febrile phase, critical phase and recovery phase. Of the three, the classical hemorrhagic features of dengue usually occur during the critical phase.^[5] Leukemias often mimic viral infections and has several overlapping clinical features with dengue including that of fever, arthralgia, malaise and hemorrhagic features such as bruising, epistaxis, bleeding gums and haematuria due to thrombocytopenia.^[6] Another interesting association that has been observed is that of acute bilateral parotitis with dengue fever, an atypical manifestation published in a Venezuelan study.^[7,8]

Bone marrow biopsy and Flow cytometry are an indispensable tool which remains the gold standard in the diagnosis of Acute lymphoblastic leukemia.^[9] Acute lymphoblastic leukemia can be subsequently be immunophenotypically categorized as precursor B or T cell Acute lymphoblastic leukemia. Age ≥ 10 years, initial white blood cell count $\geq 50,000/\text{cu mm}$ has been documented to be features of the high-risk group and are often associated with a worse prognosis.^[1]

The treatment for this malignancy is primarily chemotherapy which is traditionally given in four components, namely the induction, consolidation, maintenance therapy and CNS prophylaxis. Common regimens used are Hyper - CVAD, CALGB 8811, GRAALL-2005, Linker 4 drug, MRC UKALLXII/ECOG2993 and ALL-216. Induction therapy involves a 4-drug regimen which includes vincristine, prednisone, anthracycline and cyclophosphamide or a 5-drug regimen which additionally includes L- Asparaginase or a hyper CVAD regimen. Following Induction therapy, consolidation therapy with Ara-C in combination with anthracycline or epipodophyllotoxin or methotrexate is given. After consolidation therapy, maintenance therapy is given and in cases receiving Hyper-CVAD induction therapy, POMP is given as maintenance therapy. For Patients having meningeal leukemia at the time of relapse, CNS prophylaxis is given by intrathecal chemotherapy.^[10] Allo-Stem cell transplantation if planned is usually done after first remission.

Conclusion

The occurrence of a parotid abscess with dengue in a patient with acute lymphoblastic leukemia has not been previously reported. The clinician must detect atypical signs (in this patient - extreme pallor) that might point to an underlying pathology.

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Conflicts of Interest

There are no conflicts of interest.

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