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Case Report *Medical research*

A case report on Pre-B Acute Lymphoblastic Leukemia

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ABSTRACT

Lymphoid leukemias are a group of leukemias affecting circulating lymphocytes. Acute lymphoblastic leukemia (ALL) is a malignant disease of the bone marrow in which early lymphoid precursors proliferate and replace the normal hematopoietic cells of the marrow. ALL is the most common type of leukemia in children and little is known of its origin. It presents with either symptoms relating to direct infiltration of the marrow or symptoms relating to the decreased production of normal marrow elements. Fever is one of the most common symptoms of ALL. Precursor B-cell lymphoblastic leukemia is a form of lymphoid leukemia in which too many B-cell lymphoblasts (immature white blood cells) are found in the blood and bone marrow. Diagnosis of ALL generally requires Demonstration of ≥20% bone marrow lymphoblasts, Morphologic assessment of Wright/Giemsa–stained bone marrow aspirate smears, Hematoxylin and eosin stained bone marrow core biopsy and clot sections. Bone marrow aspiration and biopsy are the definitive diagnostic tests to confirm the diagnosis of leukemia. We report a case of, 32 years old female suffering from Pre-B ALL since 5 years. She received Dr. Appa Rao's treatment and was completely free of any pains and symptoms.

Keywords: Leukemia, Pre-B Lymphoblasts, Transplantation.

INTRODUCTION

Acute Lymphoblastic leukemia is a heterogeneous disease at the genetic level, and presents spectrum of somatic aberrations ranging from chromosomal abnormalities to sub microscopic copy number alterations (CNAs). Precursor B-cell lymphoblastic leukemia has 85% of incidence rate amongst acute leukemias commonly seen in childhood and less common in adults. Histopathophysiological findings suggest Lymphoblasts with irregular nuclear contours, condensed chromatin, small nucleoli and scant cytoplasm without granules. TdT, CD19 are the cell markers known to be associated predominantly with Pre-B lymphoblastic leukemia. According to molecular mechanism, an interesting model of precursor B ALL shows aberrant function of a single gene, named Pax5, as capable to change phenotype of B cells toward precursor cells. The WHO classification for hematopoietic and lymphoid tissues neoplasm divides B-cell malignancies into (a) precursor B-cell neoplasms and (b) mature B-cell neoplasms. A modified classification for ALL was given by

WHO which divides Precursor lymphoid neoplasms as B lymphoblastic leukaemia/lymphoma, B lymphoblastic leukaemia/lymphoma, Not otherwise specified (NOS), B lymphoblastic leukaemia/lymphoma with recurrent genetic abnormalities,B lymphoblastic leukaemia/lymphoma with t [9, 22]

(q34; q11.2); BCR-ABL1, B lymphoblastic leukaemia/lymphoma with hyperdiploidy B lymphoblastic leukaemia/lymphoma with hypodiploidy (hypodiploid ALL).

CASE REPORT

A 32 years old female hospital came to the OP department with complaints of severe pain in left hip and leg pain while walking with since 20 days. Laboratory studies revealed WBC 1.2 $x10^3$ with 23% blast cell; TLC count was 4400 cells/cc. A bone marrow biopsy was performed to determine the cause of the cytopenia and also to establish a probable correlation. She was a known case of Acute lymphoblastic leukemia and received BFM chemotherapy till re-induction phase for 5 months. Her Total leukocyte count was too low and thus no further chemotherapy was suggested. She has no chemotherapy for at least 4 months. Her TLC was 6900 cell/cc during this time interval and her re-induction phase-I with 4 cycles was started and completed.

She was then put on Re-induction phase II and kept on maintenance therapy. 9 months post maintenance therapy she reported again with complaints of pain and discomfort of body. TLC count was evaluated again which was 14300 cell/cc with 46% blast. Bilateral MRI of hip joints were done which revealed diffuse marrow infileration and early avascular necrosis of hips.MRI lumbar spine revealed large intradural mass in lumbar spine with severe compression of lonus, cauda and infilteration of nerve roots – thus leukemic metastasis. Poor prognosis was explained to the patient was suggested for exploring ALLO bone marrow transplantation (ALL0-BMI) with 1 twin brother.

At this juncture due to strong financial constraints patient visited Dr. Appa Rao. She reported of recurrent pain and paraplegia-secondary to spinal cord mass. At the time of admission her TLC was 8600 cells/cc with 85% blast. BCR-ABL was negative.

She also suffered many complications like febrile neutropenia, diffuse edema of lower limb, sub-acute subdural hematoma and probable fungal pneumonia. She started taking Dr. Appa Rao immunotherapy and She was started with Hyper CVAD regimen – I cycle-Methotrexate arm. There was dramatic improvement in her pains. Her MRI hips and spine reports showed improvement compared to previous one.

DISCUSSION

The word "acute" in B-cell acute lymphoblastic leukemia means the disease spreads quickly, so it's important to get early treatment. Chemotherapy with stem cell transplant is found to be effective. Some people with B-cell ALL may need large doses of chemotherapy. But doctors hesitate to give large amounts, because it can damage your bone marrow. That's where a stem cell transplant can help. After your high-dose chemo, you'll get a transplant of **stem cells** that can help get your bone marrow working right again. Evidence based studies indicate Consolidation, Intensification, and Maintenance Therapy can help in managing ALL in adults. The components of consolidation therapy, its optimal number and intensity, are all uncertain. High-dose methotrexate as CNS-directed therapy and asparaginase, are presented in many protocols.

The value of maintenance therapy has been shown by a recent randomized comparison of auto graft and is shown to be of less value.

Supportive Care should be initiated as to prevent and effectively manage infections. Complications like Coagulation abnormalities, avascular necrosis, and Hepatotoxicity should be Adequate Managed. Treatment recommendations commonly used for acute lymphoblastic leukemia include Philadelphia chromosome–negative ALL in the older adult (age ≥40 y) and Philadelphia chromosome–positive ALL in the older adult (age ≥40 y).

CONCLUSION

Without treatment, most people with acute leukemia would live only a few months. Some types of acute leukemia respond well to treatment and many patients can be cured. Other types of acute leukemia have a less favorable outlook. In this Patient, Dr. Appa Rao’s approach for treating

pre B ALL provided all palliative, supportive care to the patient. His plan in overcoming this rare condition of Pre B ALL and managing the complications is unique and successful.

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