Research Article

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DIRECT HYPERBILIRUBINEMIA AS AN INITIAL PRESENTATION OF PRECURSOR B-CELL ACUTE LYMPHOBLASTIC LEUKEMIA IN A SAUDI CHILD

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ABSTRACT

Introduction: Acute lymphoblastic leukemia (ALL) is the most common malignancy in Saudi children according to the Saudi cancer registry 2011. It involves excessive proliferation and impaired differentiation of leukemic blasts cells that lead to inadequate normal hematopoiesis.

Case Report: 4 year-old Saudi boy presented to the emergency department at Aseer Central Hospital with obstructive jaundice. Bone marrow aspiration done and confirms the diagnosis of pre B-cell acute lymphoblastic leukemia.

Conclusion: ALL is a rare cause of obstructive jaundice due to hepatic involvement. However, it should be considered in the differential diagnosis of any child presenting with obstructive jaundice and hence considering the subsequent investigation

Key Words: Acute Lymphoblastic Leukemia, Direct Hyperbilirubinemia

INTRODUCTION

Acute lymphoblastic leukemia (ALL) is the most common malignancy in Saudi children according to the Saudi cancer registry 2011 [1]. It involves excessive proliferation and impaired differentiation of leukemic blasts cells that lead to inadequate normal hematopoiesis. Thus patients usually present with symptoms due to bone marrow failure commonly bleeding tendency, anemia and recurrent infections. The extra-medullary form of this disease is rarely reported in children. However, when exist; it most commonly involves the bones, followed by soft tissue, skin and lymph nodes. It is extremely rare for patients with ALL to present with hepatic manifestations as the initial presentation of the disease. In this present case report we had a child who has precursor B-cell (pre-B-cell) Acute Lymphoblastic Leukemia (ALL) who presented in September 2013 as obstructive jaundice and otherwise quite healthy. This case presented with this unique presentation and that infiltrative involvement of leukemia should be considered when the initial work-up for obstructive jaundice is inconclusive. Moreover, it highlights the challenges in planning chemotherapeutic treatment in the presence of an already compromised hepatic function [2], of which most of the reported cases from adult patients and few pediatric cases [3]. The rationale of the report is to alert health workers generally and pediatrician in particular about the possibility of an unexpected presentation of ALL which is a treatable condition and to share the challenges regarding plan of chemotherapy in patients who is already have compromised hepatic function.

CASE REPORT

A 4 year-old Saudi boy presented to emergency department at Aseer Central Hospital (a tertiary care Hospital at southern-west province of Saudi Arabia) with history of yellowish discoloration of sclera and skin for two weeks. He was well till two weeks prior to admission when he started to have yellowish discoloration of sclera and skin , noticed by his family, then gradually started to develop generalized body itching. His illness

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was preceded by vomiting and diarrhea for one week. He has history of fever, documented 38.5C° responding well to antipyretics for one day prior to admission. No change in urine or stool color was observed. There was no bleeding tendency, contact with jaundiced patient or drug ingestion. Past medical and surgical history was unremarkable. There was no previous hospitalization or blood transfusion. His developmental history was appropriate for his age and vaccinated to his date. Her parents are non-consaguionus with no family history of hematological disease or liver disease. On examination he was conscious, good body built, alert looks jaundiced, mild dehydrated, no pallor. Vital sign T: 38.5^{0}C other signs were within normal range. his liver was enlarged with span of 11cm and spleen palpable 3cm below costal margin. There was no lymphadenopathy and other systemic examination was unrevealing. Laboratory investigations showed a complete blood count was significant for pancytopenia, with hemoglobin 10.4g/dL, platelet count 47000/ mm3, WBC count 2880/mm3 (Neutrophils 23%, lymphocytes 70%, myelocytes 4.9%, ANC 662), erythrocyte sedimentation rate was 90 mm/hr, and Peripheral blood smear examination showed pancytopenia with absolute neutropenia, thrombocytopenia and no abnormal cells. Liver function test showed serum bilirubin 9.1mg/dL (conjugated bilirubin 6.4 mg/dL), SGOT 1788 IU/L, SGPT 228 IU/L, gamma glutamyl transferase 358 U/L, alkaline phosphatase 395 and LDH 758 uL (120-300) serum ferritin was 2290. Serology for HIV, CMV, EBV, leishmania and HBsAg were negative. Anti HCV titers were negative. Ultrasonography showed hepatosplenomegally [fig-2], no intrahepatic biliary ducts dilatation and normal gallbladder. The patient was initially admitted under care of pediatric gastroenterology then, later referred to oncology department.

The presence of pancytopenia make bone marrow studies a real indication to help this child which confirmed the diagnosis of pre B-ALL acute lymphoblastic leukemia [fig-1]. The patient was started on chemotherapy according to the appropriate protocol and he finished the induction therapy during hospitalization. His hospitalization was complicated by febrile neutropenia which was treated with an appropriate antibiotic therapy. in addition the patient developed an episode of seizure, radiological investigation with MRI of the brain showed ischemic changes in the areas of the anterior and middle cerebral artery on the right side. Then, the patient was seen by the pediatric neurology team and he was started on antiepileptic drugs with keppra (levetiracetam) which he needs to continue for several months. Now the patient is following at the pediatric hemato-oncology clinic and he is on the maintenance chemotherapy.

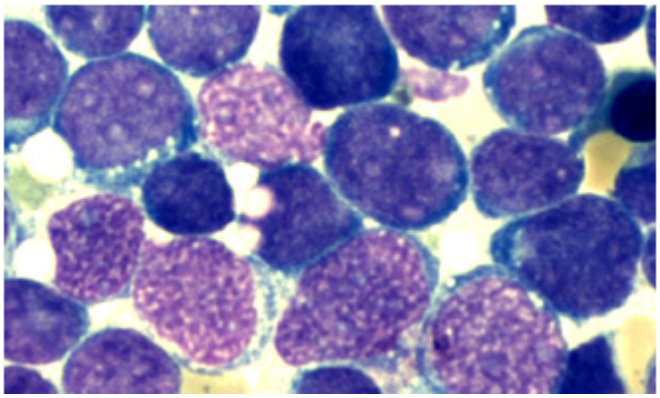

Figure 1: Bone Marrow Aspiration showing Lymphoblast infiltration.

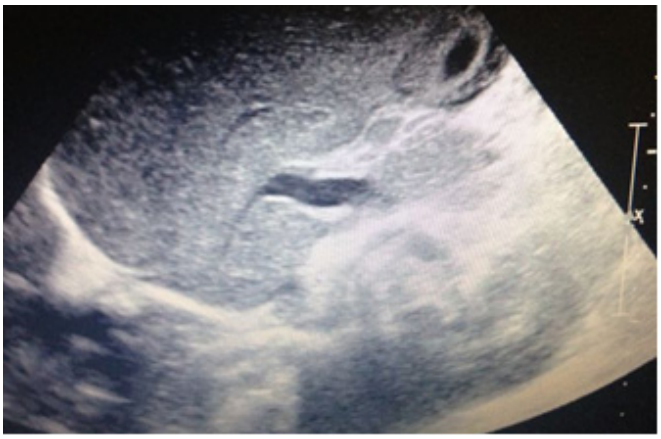

Figure 2: Ultrasound abdomen showed mild hepatosplenomegally.

LITERATURE REVIEW

Although ALL is primarily a disease of bone marrow and peripheral blood, any organ or tissue may be infiltrated by the abnormal cells. Such infiltration may be clinically apparent by physical examination or it may be occult and detectable only by histological sampling [4]. Cholestatic jaundice as an initial presentation of acute lymphoblastic leukemia (ALL) is extremely rare [5], Several patterns of hepatic involvement in hematologic malignancies have been described in the literature. It varies from an asymptomatic hepatic lesion or hepatomegaly to liver failure. Four adult cases of fulminant hepatic failure were reported by Zafrani et al. [6]. Some cases of T-cell ALL [7] and B-cell ALL [8] have been reported to have presented in association with jaundice. Only a few of these cases had no evidence of biliary obstruction on imaging. The pathophysiology of jaundice in these cases of ALL was leukemic infiltration of hepatic sinusoids. There are few pediatric cases of ALL were reported with obstructive

jaundice as the first presentation [9]. In our case report the patient presented with fever, vomiting and jaundice, and initially he was admitted under care of hepatology service as case of obstructive jaundice. Later on, he was referred to oncology after the result of bone marrow study which confirmed the diagnosis of pre-B ALL. To my knowledge this is the first case to be reported in our region, however Abdurrahman from neighboring country Iraq published a rare case of ALL presented with obstructive jaundice secondary to pancreatic mass [10].

CONCLUSION

ALL is a rare cause of obstructive jaundice due to hepatic involvement. It should be considered in the differential diagnosis of any child presenting with obstructive jaundice and who has evidence of bone marrow infiltrate, since such extramedullary involvement by the leukemic process is highly responsive to systemic antileukemic therapy, which may be critical for subsequent management.

CONFLICTS OF INTEREST

There are no conflicts of interest.

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