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Case Report

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CASE REPORT OF KIDNEY INVOLVEMENT AS A PRESENTATION OF ACUTE LYMPHOCYTIC LEUKEMIA

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ABSTRACT

Bilateral renal enlargement and infiltration at the time of diagnosing acute lymphocytic leukemia's are very rare. In this article, we report a patient of 11 year old boy who presented with pallor, fatigue; fever and abdominal pain .CT scan showed bilateral enlarged kidneys suggestive of leukemic infiltration. Bone marrow aspiration was performed and pre B ALL was diagnosed. Renal involvement of Acute Lymphocytic Leukemia should be taken into consideration in case of unexplained massively enlarged kidneys with or without renal dysfunction and bone marrow biopsy should be included in the workup.[1]

KEYWORDS: ALL: Acute Lymphoblastic Leukemia. AML: Acute Myelocytic Leukemia. CNS: Central Nervous System. CT scan: Computed Tomography Scan. CBC: Complete Blood Count. Hb: Hemoglobin. LDH: Lactate Dehydrogenase.

CASE REPORT APPROVAL

The case report was approved by the research and ethical committee of the Lebanese University-Faculty of Medical Sciences.

INTRODUCTION

Acute leukemia is the most common malignancy in children. It account for 30% of all cancer diagnosed in children younger than 15 years. Most patients presented with bleeding, infections, anemia, fever, neutropenia and lymphadenopathy.[2] However bilateral renal enlargement as primary presentation of ALL is rare. A few cases had been reported in literature. Bone marrow aspiration and biopsy can confirm the diagnosis of ALL and genetic testing can determine the leukemic phenotype. We report an unusual presentation of ALL with bilateral renal enlargement and kidneys infiltration.

CASE REPORT

An 11 y old boy, previously healthy, product of in-vitro fertilization presented with pallor, fatigue, undocumented weight loss. The fever was reaching 40 °C, poorly responsive to antipyretics of 2 weeks duration with productive cough. Amoxicilin-Clavulinic acid was prescribed as outpatient by attending physician for course of 7 days prior to presentation to our service for suspicion of pneumonia, but to no avail, the fever persisted and so other symptoms. No history of hematuria, oliguria, anorexia, or night sweats was noted. Upon presentation patient was found to be febrile (40 °C), tachycardic (150 bpm), BP: 110/60 mmHg. Also mild pallor was noted, and had on neck exam: 5 bilateral enlarged non tender cervical and submandibular lymph nodes, fixed, the largest is around 2×2 cm with 2 supraclavicular non tender lymph nodes, fixed of around 2×3 cm in size. No axillary, inguinal, popliteal lymph nodes were palpable. On lungs auscultation bilateral diffuse crackles were heard. Heart had regular S1 and S2 with no added sounds. Abdomen was distended, with positive bowel sounds, hepatomegaly 12 cm liver span and splenomegaly reaching 5 cm below the costal margin at the mid-clavicular line. There was no bony tenderness and no abnormalities in other systems. As for the paraclinical support: CBC revealed: Hb of 7.8g/dl, WBC 5.2×10^9/l with neutrophils 22% and lymphocytes 68%. The platelets count was 165× 10 9/l and the ESR 122mm/h, serum creatinine was 0.66 mg/dl, and serum sodium, potassium, calcium, phosphorus, and liver enzymes with urine analysis were within normal range. No blasts or abnormal cells on peripheral blood smear. Chest x- ray showed bilateral perihilar infiltrate. Abdominal ultrasound revealed hepatosplenomegaly, bilateral renal enlargement with hyper echogenic nodular

lesions in renal cortex: a number of 5 at right and 2 at left. The right kidney measured 13,8 ×5,6 cm and the left measured 14 ×6,5 cm. CT scan of abdomen and pelvis confirmed the important hepatosplenomegaly, with liver and spleen span are 12 cm and 13cm respectively, massively enlarged unobstructed bilateral kidneys (fig 1) and (fig 2). Pre B ALL cells were seen in the bone marrow.

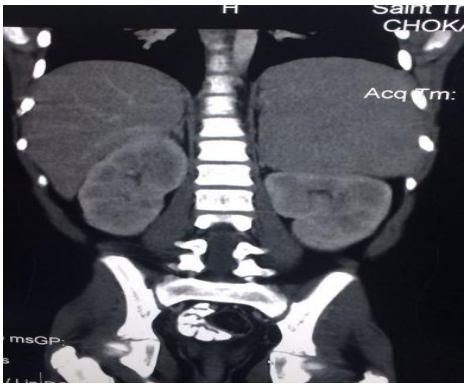

Fig 1: CT scan of the abdomen and pelvis showed bilateral diffuse renal enlargement and thickened renal capsule.

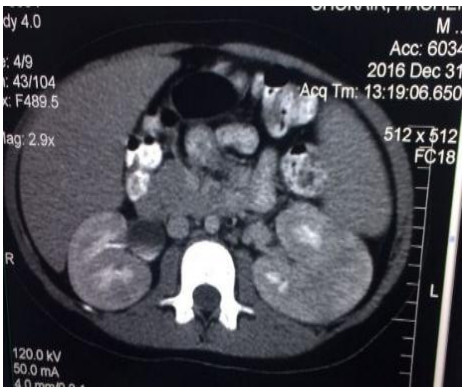

Fig 2: CT scan of abdomen showed homogenous hepatosplenomegaly and renal hypertrophy with multiple hypo dense lesions in bilateral kidneys indicating leukemic infiltration.

DISCUSSION

Acute leukemia comprises 30% of all children with malignancies, with ALL being 5 times more common than AML.[2] It affects certain cells in immune system called B and T cells. ALL usually affects more B cells in children. Bilateral symmetrical renal enlargement at the time of diagnosis of ALL is an infrequent finding being present in 3 to 5 % of cases.[3] A potential mechanism in the tracking of leukemia cells is the interaction of the chemokine receptor CXCR4, which is expressed on ALL cells and its ligand stromal cell-derived factor 1 (SDF-1), produced by stromal cells, in bone marrow and extra medullary organs (kidney, liver, etc...).[4] Tumor infiltration disseminated into the kidneys via the blood stream. The presence of renal leukemic involvement doesn't commonly cause renal dysfunction although few cases of renal failure secondary to diffuse bilateral infiltration have been reported.[5] Fortunately, our patient had no evidence of acute renal failure at the time of diagnosis or after the initiation of chemotherapy. Ultrasound and CT scan abdomen and pelvis are the main imaging modalities for any cellular infiltration within the renal parenchyma. The ultrasound findings in leukemia include renal enlargement and diffuse or focal areas of homogenous hypo echogenicity.[6] Renal biopsy is not indicated in cases which are suspected the hematopoietic malignancies presenting with renal infiltration.[7] Based on physical examination, radiological studies, peripheral smear and bone marrow aspiration, the etiology may be explained; if these procedures didn't helped the diagnosis, than renal biopsy is indicated. Our patient had fever and lymphadenopathy; elevated LDH with normal blood smear; ultrasound and CT scan of abdomen and pelvis showed peripheral bilateral symmetrical enlarged kidneys, which exceeded the age reference normal values, with infiltration. Bone marrow confirmed the diagnosis of pre-B ALL. The differential diagnosis of low attenuation kidney masses in children is seen in: infection, nephroblastoma, simple cysts, angiolipomas, and lymphomas.[8] Renal lymphomatosis involvement can appear similar to leukemic involvement; the only differentiating picture is the involvement of peripheral space in lymphoma, which is not seen in leukemia. Concerning the treatment, systemic chemotherapy remains the basic treatment even with renal leukemic infiltration. The prognosis is different for children with leukemic infiltration. Some authors demonstrated no prognostic significance for the outcome; in other studies, shorter survival is associated with renal involvement.[9]

CONCLUSION

Rare cases of ALL with bilateral renal enlargement as primary manifestation were reported in literature. When massively enlarged kidneys are seen during radiological examination, leukemic infiltration should be taken in consideration and bone marrow aspiration is a valuable method for diagnosis.

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