Congenital Leukaemia presenting as Bilateral Renal Masses

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Introduction

Congenital leukemia is a rare and poorly defined disease. Many authors define it as leukemia occurring from birth to four week[1,2]. Others recognize it as being synonymous with leukemia of the neonatal period and infancy[3]. It is commonly acute myeloblastic[2,4] but may be acute lymphoblastic or juvenile myeloid in type[5]. It is associated with several trisomies, especially trisomy 21[3,6,7]. Trisomy 13, trisomy 153 and several translocations such as translocation x:6[8], translocation 4:11[9] and monosomy 7[10].

Other associations include ElIis-Van-Creveld syndrome[11], absence of radii[12], patent ductus arteriosus, Klippel-fiel syndrome, atrial and ventricular septal defects[12]. Non-immune hydrops caused by congenital leukemia has also been reportede[13].

One recognized peculiarity is the frequency of skin infiltration which is associated with poor prognosis[14,15]. Organ involvement is common and leads to hepatomegaly, splenomegaly and nephromegaly. Renal involvement can occur with or without dysfunction and is due to infiltration with leukemic cells or hypertrophy due to metabolic burden imposed by the malignancy. We are reporting an unusual case of congenital acute lymphoblastic leukemia presenting with bilateral renal masses.

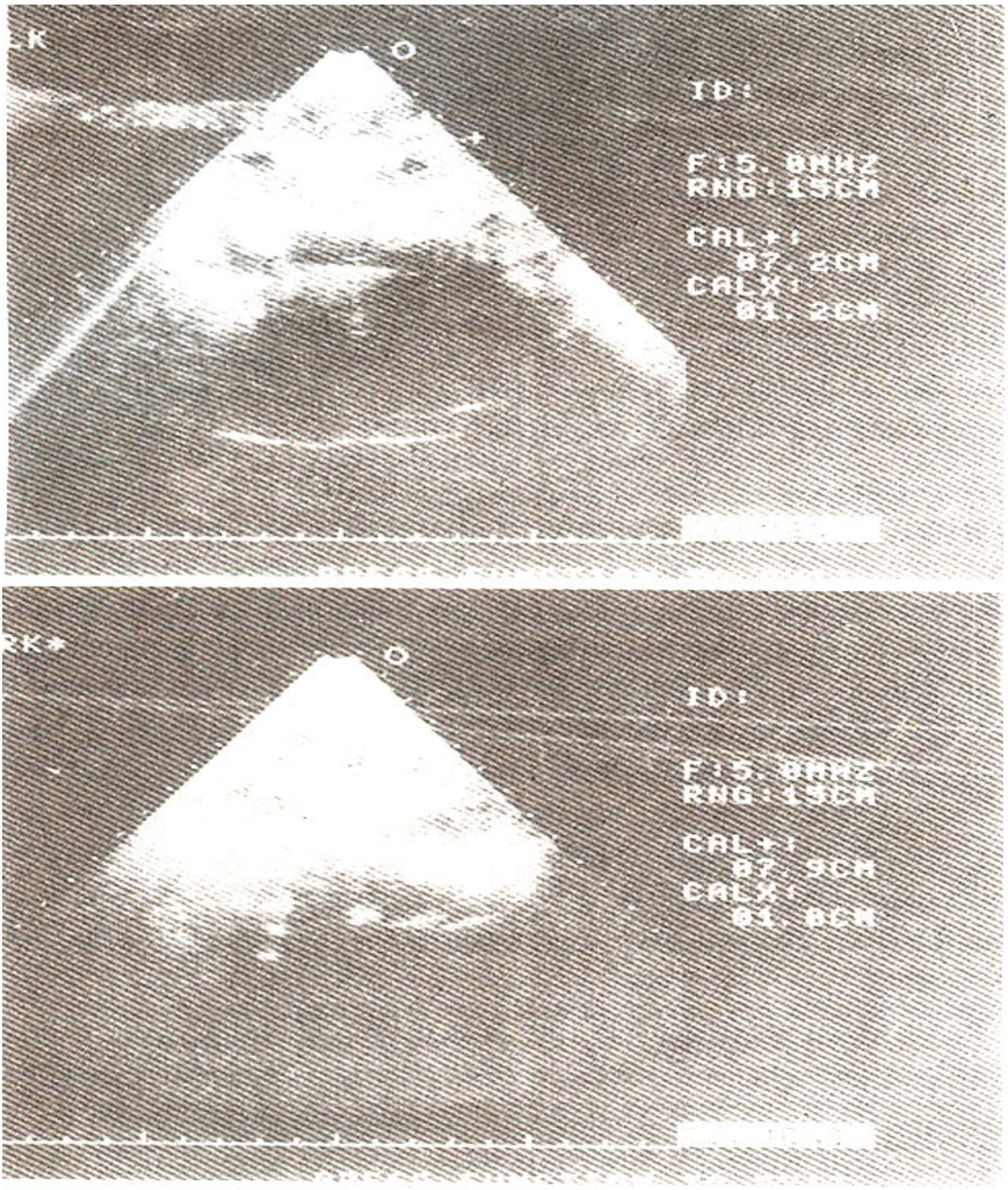
Case Report

A live month old male infant was admitted to Children's Hospital, Islamabad. on February 5, 1996 with history of diarrhea for three weeks, fever, difficulty in breathing and vomiting for four days. Abdominal distention was noticed three days before admission. Past history revealed recurrent chest infection, the first one at three and a half months of age which was treated with inject able Kananiycin. At four months of age he again developed cough and breathing difficulty, which was treated with injetable cefazolin. Blood transfusion was given for anemia twelve days before admission. He later developed diarrhea which was treated with metronidazole suspension and injectable ceftixone. As there was no improvement he was referred to Children's Hospital.

He was a full term baby delivered by normal vaginal delivery. He was breast fed, supplementary foods were started at four months of age. Immunization was up to date. Development was normal. Family history was insignificant, three year old sister was healthy. There was no history of exposure to radiation or drugs in the mother.

General physical examination revealed a pale, irritable and sick looking infant weighing 6.9 kg and measuring 64 cms. Temperature was 11030F and blood pressure 100/70 mmHg. Systemic examination revealed a distended abdomen, liver palpable 6 ems below the right costal margin, spleen was not palpable. Both kidneys were palpable in the lumbar regions and were firm and non-tender. Chest, cardiovascular and central nervous systems were normal. There was no lymphadenopathy. There were no congenital malformations, petechiae or skin infiltrations.

Laboratory investigations showed a hemoglobin of 10.3 Gm/dl, white blood cell count was 5700/mm, No abnormal cells were seen in the peripheral smear. Blood urea nitrogen was 23 mg/d and creatinine 0.3 mg/dl. Platelet count was 13,000. Electrolytes blood sugar and arterial blood gases were normal. Urine showed traces of albumin, numerous red blood cells and granular casts. Ultrasound abdomen showed bilaterally enlarged kidneys. Right kidney was 9.8 cms in length and left kidney 9.5 cms. IVP showed hydronephrosis on right side.



igure 1. Ultrasound of the abdomen before therapy showing bilateral enlargement with increased echogenecity of renal parenchyma.

Urine and blood cultures were negative. Liver function tests were normal. Hepatitis B surface antigen were negative. During hospitalization the hemoglobin dropped and he developed thrombocytopenia. Bone marrow aspiration after one week showed acute lymphoblastic leukemia, LI type.
Treatment was started on February 19,1996 according to CCSG protocol 105 for high risk ALL with

vincristine, L-asparginase, daunomycin and oral prednisolon. The child achieved complete remission in twenty eight days.

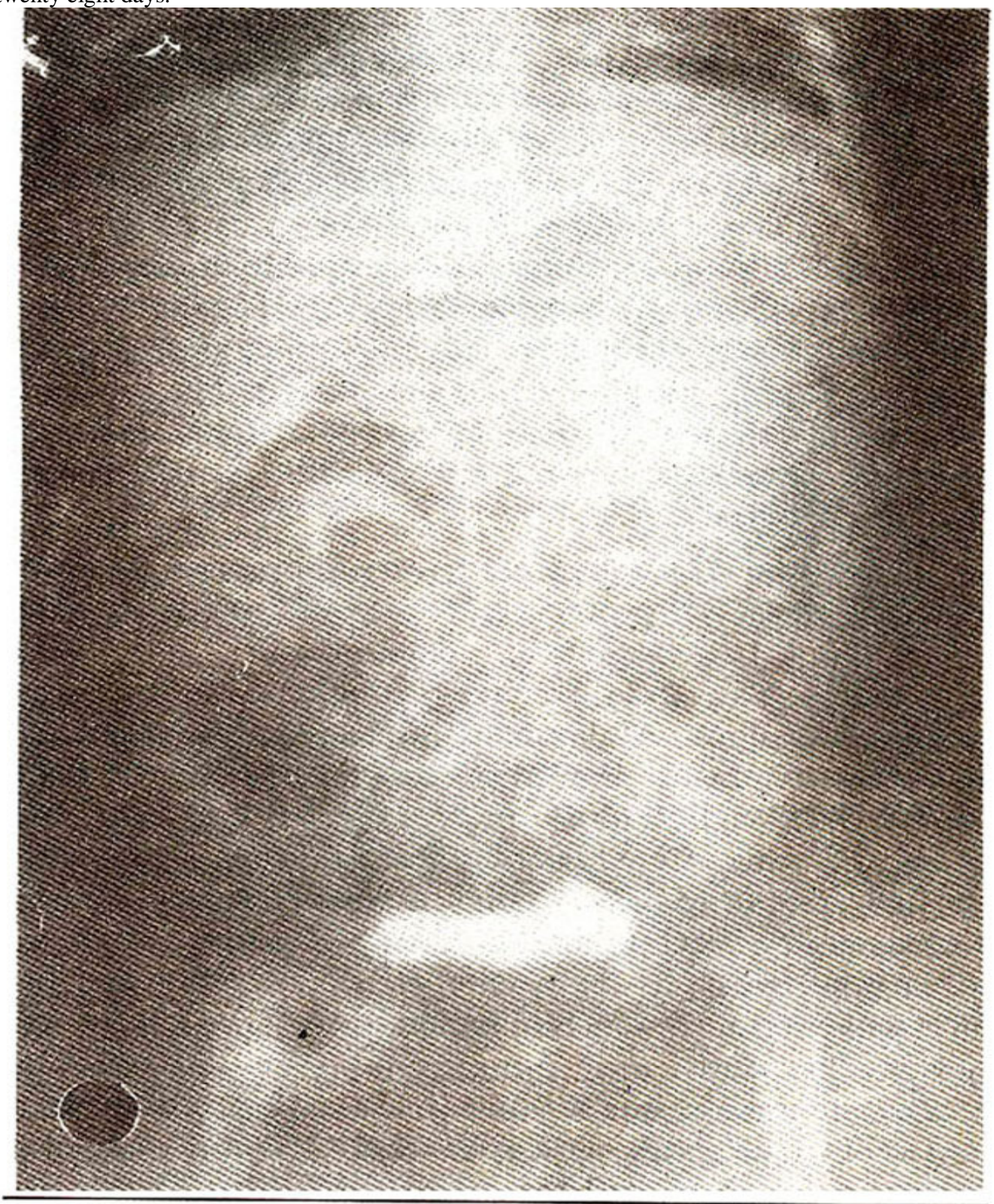


Figure 2. IVP demonstrating hydronephrosis of right kidney.

Abdominal ultrasound done fourteen days after treatment showed a reduction in size of both kidneys with right kidney measuring 7.9 cms and left kidney 7.2 ems, Consolidation therapy was given with

cytosine arabinoside, four times a week for four weeks, intravenous cyclophosphamide on day I and 15, oral 6-mercaptopurine daily for twenty eight days, followed by interim maintenance with oral methotrexate once a week for four weeks, daily oral 6-mercaptopurine and weekly intrathecal methotrexate for four weeks. Intensification was done with vincristine once a week for three weeks, adriamycin once a week for three weeks, L-asparginase three times a week for two weeks and oral dexamethasone daily for twenty eight days. Maintenance therapy with oral 6-mercaptopurine daily, weekly oral methotrexate, vincristine and prednisolone every 28 days was started. He relapsed seven months after diagnosis and died due to pneumonia.

Discussion

Congenital leukemia and pseudoleukemia constitute a rare and poorly defined group of diseases[3]. The difficulty arises from the variation in criteria for recognition as congenital leukemia. Strictly speaking congenital leukemia should exist at birth. If diagnosed later, one should be reasonably certain that it was present at birth and would have been demonstrable if the appropriate diagnostic steps had been taken[3].

There is a special and understandable tendency for clinicians to be more liberal in diagnosing congenital leukemia in patients with a family history of leukemia or associated congenital abnormalities. The best recognized of the latter is trisomy21[3,7,16] .

Leukemia that is strictly congenital is mostly acute myeloid, but may have a mixed picture with myeloid, lymphoid or erythroid progenitors[17]. Myeloid preponderance was seen in earlier reviews, where only four out of thirty-two patients were described as lymphocytic[15] and two of twenty-one in another series were lymphocytic[2]. Excess of acute lymphoblastic leukemia has been recently reported in one series where, twenty-three out of thirty-two had acute lymphoblastic leukemia[18]. Juvenile chronic myelogenous leukemia is also relatively frequent during infancy[19] and needs to be differentiated from a leukemoid reaction. Besides ALL and CML erythroleukemia has also been observed during this period[17,20].

The clinical picture of leukemia in the neonate is different from that in older children[4]. Neonates usually present with purpura, hepatosplenomegaly and skin infiltrates in over half of the reported cases[4]. Many infants die due to respiratory distress secondary to pulmonary leukostasis and bronchopneumonia[4]. There is marked leukostasis and anaemia develops during the neonatal period. Platelets are usually reduced. The disease is not apparent at birth and signs may be evident after days or weeks. There may be an antecedent period of failure to thrive, diarrhea and low grade fever. Etiology of congenital leukemia is obscure4. Fetal X-ray exposure has not consistently been associated with an increased incidence of leukemia[4].

Organ infiltration is common in leukemias and lymphomas[21]. Renal involvement is seen more frequently than in other non-renal malignancies, such as carinomas[21]. It is usually bilateral and confined to the cortex[22]. Renal function may be altered and is due to direct invasion of the kidneys, their vasculature or the collecting system by the tumours[23]. In 30% of the cases, renal enlargement is not due to malignant infiltration[21]. The cause is unknown, though tumor cells are seen on renal biopsy[21]. Rarely, a patient with renal failure of unknown origin and a normal peripheral blood count, has been found to have parenchymal infiltration due to ALL, on renal biopsy[24]. Despite the frequency of leukemic or lymphornatous infiltration of the kidney it may be recognized only on post mortem examination as reported in 60% of adults dying of leukemia[25]. The correlation of biopsy findings with the clinical picture is poor[23]. Azotemia, palpable flank mass, hypertension, albuminuria, hematuria and nephrotic syndrome may be present[26]. Excretory urography shows renal enlargement in 66% of cases,

confirmed by tiltrasonography and computerized tomography[26].
Renal involvement is also seen in congenital leukemia but there is a paucity of data on this subject. In one series, six cases were reported at autopsy over a period of seven years[27]. All cases were diagnosed as acute myeloid leukemia. Histological abnormalities were detected in the liver, lungs, spleen, pancreas, heart, intestine and kidneys. Although the response to chemotherapy in infants with congenital leukemia is poor[28], spontaneous and permanent remissions may occur and are seen in infants with Downs syndrome[4,6,16,21,29] They have also been reported with translocation 5:629. The course of the disease in infants who do not have Downs syndrome is most often short[27], many patients dying within days or weeks of infection or haemmorhage[2]. Infants with congenital leukemia should be treated with chemotherapy like older children[4]. As renal invasion is also a. manifestation of disseminated neoplasia, chemotherapy is indicated. Radiotherapy to one kidney along with chemotherapy may help improve renal function[24]. Although prognosis is poor, with proper treatment complete remission can be achieved.

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