Case Reports

Acute T-lymphoid and Megakaryoblastic Bi-lineal Leukemia in a Child

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A 1½-year-old boy presented with fever, anemia, petechial rash and hepatosplenomegaly. Bone marrow examination showed two morphologically distinct blasts (small and large) which were confirmed on immunophenotyping to be of T-lymphoid and megakaryocytic lineages respectively. Patient was refractory to therapy. This is a rare combination of bilineal leukemia in a child.

Acute bilineal leukemias are rare and heterogenous group of disorders with varied pathogenesis, immunophenotype and clinical behavior. They pose significant diagnostic and management related problems because of varied immunophenotypic patterns. They are also difficult to treat as majority of them are refractory to conventional treatment protocols(1). Majority of bilineal leukemias reported so far in the literature were a combination of myeloid and lymphoid lineage(2). We report a case of unusual acute bilineal leukemia where in blasts of T-lymphoid and megakaryocytic lineage were in combination.

Case Report

A 1½-year-old boy presented with complaints of high grade fever, petechial rash and abdominal distention of two weeks duration. There was no past history of bleeding manifestations. He was the first child of a non-consanguinous marriage, and his immunization status was appropriate for age. On examination he had severe pallor, petechiae over abdomen and upper limbs, hepatosplenomegaly of 2 cm each below costal margin. There was no significant lymphadenopathy and rest of the systemic examination was normal. Biochemical investigations revealed normal liver and renal function tests. Serological investigations for hepatitis B, hepatitis C and human immunodeficiency virus were negative. Chest radiograph was normal and ultrasound abdomen showed hepatosplenomegaly.

Hemoglobin was 54 g/L; total leukocyte count was 29 × 10^9/L and platelet count 37 × 10^9/L. Peripheral smear examination showed 36% immature cells. Bone marrow smears showed 86% blasts composed of a mixture of two morphologically distinct cells (small and large blasts). The smaller blasts comprised 60% of immature cells; they were 1½-2 times the size of mature lymphocyte and had high nuclear/cytoplasmic ratio with scant rim of agranular cytoplasm, and coarse condensed chromatin; few of them showed prominence of nucleoli (*Fig.1*). The larger blasts composed 40% of the immature cells; they were 2½ to 3 times the size of mature lymphocyte with moderate to abundant amount of finely granular cytoplasm and coarse opened up chromatin with fairly conspicuous nucleoli in few of these cells (*Fig.1*). Cytochemical stains revealed positivity with Periodic-acid Schiff in smaller blasts and negativity with myeloperoxidase (MPO), Sudan black, non-specific esterase and acid phosphatase. With a provisional morphological diagnosis of acute bilineal leukemia an immunophenotyping by alkaline phosphatase-anti alkaline phosphatase (APAAP) was performed with anti-MPO, CDI3, CD33, CD2, CD7, CDI9, CD20 and CD 41. The smaller blasts showed CD2 positivity and the larger blasts showed CD41 positivity. Bone marrow cytogenetics was normal. A diagnosis of acute bilineal leukemia (T-lymphoid and megakaryocytic lineages) therefore was considered.

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The patient was started on 4-drug induction using prednisone, vincristine, L-asparaginase and daunorubicin. On day 4 of induction he developed neutropenic fever with mucositis which was treated with antibiotics and antifungals. However, pancytopenia was persistent and the patient succumbed to his disease on day 35 of induction chemotherapy. Bone marrow examination at day 30 showed 70% blasts predominantly comprising larger blasts with similar morphology as described earlier along with mature lymphocytes; cellularity was 40% along with focal grade 3 reticulin fibrosis (*Fig.1b*). The smaller blasts as seen in the pre-treatment marrow were no longer seen suggesting that the lymphoid component had responded to chemotherapy.

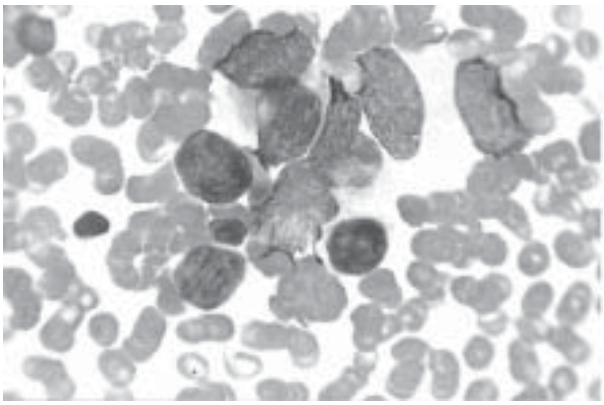

Fig. la. Small (lymphoid) and large (megakaryocytic) blasts under oil immersion × l000 magnification. (Jenner's Giemsa).

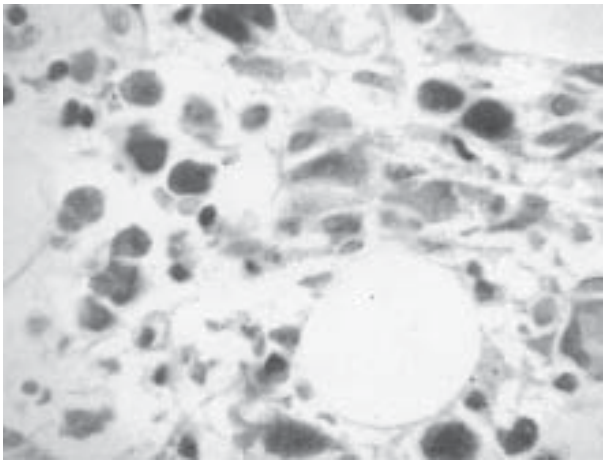

Fig. 1b. Large blasts (megakaryocytic) with fibrosis in bone marrow biopsy (H & E); × 1000 magnification.

Discussion

Bilineal leukemias have two leukemic clonal populations of cells each expressing antigens of different lineages. They arise either denovo or following antileukemic chemotherapy and have poor prognosis. They can be suspected on morphology when two distinct populations of blast cells are present.

The present case is unusual and unique on two aspects. Firstly, the lymphoid component is of T cell type and secondly it is in combination with a very rare megakaryocytic component. Such an unusual combination is difficult to diagnose without the aid of ancilliary techniques like imrnunophenotyping. According to the European group for immunological classification of leukemias criteria(3) for diagnosing acute biphenotypic leukemias, CD2 carries a score of one and megakaryocytic markers are not represented in the scoring system. Although the lymphoid score in our case was <2, the fact that they were morphologically lymphoid blasts with PAS positivity which disappeared in post chemotherapy repeat bone marrow smears suggests that they were lymphoblasts unequivocally. Further, CD41 positivity in larger blasts and accompanying fibrosis points strongly in favor of megakaryocytic lineage. CD2 has been reported to be coexpressed by megakaryocytic blasts in about 23% of cases(4); however, in our case the CD2 expression was demonstrated on morphologically distinct lymphoid blasts. In view of the large megakaryoblasts, morphologically it may sometimes be difficult to differentiate it from other round cell tumors like neuroblastoma, rhabdomyosarcoma which are of common occurrence in this age group; this underlines the importance of immunophenotyping.

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Congenital Perisylvian Syndrome Presenting with Intractable Seizures

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We report a case of Congenital perisylvian syndrome with intractable seizures, hypotonia and feeding problems since birth. MRI brain helped in making an early diagnosis and counselling parents.

Key words: *Congenital perisylvian syndrome, epilepsy, pseudobulbar*

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Congenital perisylvian syndrome (CBPS) is an extremely rare, late migration disorder of the brain characterized by psedobulbar palsy, mental retardation, epilepsy, and bilateral perisylvian polymicrogyria.

Case Report

A 9-month-old female infant presented with intractable seizures, hypotonia and feeding difficulties since birth. She was born following an unremarkable pregnancy at term by emergency caesarean section for foetal tachycardia and poor progress in labour. The blood gases of cord blood were normal. She weighed 4.2 kg (99th centile) and had an occipitofrontal head circumference of 35 cms (50th centile). She cried at birth but at around 3 minutes of age went apnoeic with stiffening of limbs. She was intubated and ventilated for 24 hrs for increasing respiratory distress and apnoeic episodes. She developed seizures on day one of life. Many types of seizures were noted, which included facial twitching, eye twitching, jerking of limbs, cycling, abnormal eye movement, eye rolling, limb stiffening, hiccupping and abnormal tonic-clonic movements. They were associated with increased heart rate and blood pressure and reduced saturation.

Physical examination showed generalised hypotonia, absent gag reflexes and poor sucking. She had feeding and swallowing difficulties with protrusion and movement of the tongue moderately impaired. She required nasogastric tube feeds. Her ictal EEG was abnormal with generalised epileptiform discharges. Neurometabolic screen, which included amino acids, organic acids. lactate, ammonia, biotidinase, acylcarnitines, very long chain fatty acids, and white cell enzymes, was normal. TORCH screen was negative. Chromosome analysis was normal, 46 XX. Finally, at 4 month of age MRI brain was done, which showed thickening of the peri-sylvian cortex bilaterally with simplified sylvian fissures. The cortical surface was irregular and nodular. Appearances were of polymicrogyria and the distribution was consistent with bilateral peri-sylvian syndrome.

She has been tried on various antiepileptic drugs to control the seizures. She is currently on a poly therapy of antiepileptic medications (phenobarbi-

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