

Macrocephaly in Leukemic patients

Ankit verma*

*Department of Biotechnology, Shree Ramswaroop Memorial University, Uttar Pradesh, India

Description

T-cell ALL is the most prevalent cancer in childhood. Cranial nerve abnormalities and rising of the intracranial pressure had been known as a sign of nervous system involvement but reports of macrocephaly are extremely rare especially as an initial manifestation of the T-cell. For instance, an eight-month-old boy referred to our clinic with bicytopenia and macrocephaly that was diagnosed with T-cell ALL and was successfully treated. An eight month old boy was referred to our hospital presenting with Bicytopenia and Macrocephaly. He his weight was 9 kg and his height was 68 cm at the time of admission (his birth weight and height were 3 kg and 51 cm, respectively). He had no previous history of admission prior to his referral and had no underlying disease. In a month earlier to his referral he was admitted several times because of diarrhea, vomiting and flu like symptom (tachypnea, fever and shivering) which lasted for a month and was treated symptomatically.

In a period of a month, his head circumference (HC) showed noticeable growth of 4 cm (34.5 cm at the birth; 47 cm at his first visit in his hometown; 51 cm at his admission in Tehran) that was associated with Hydrocephaly, Brain Atrophy and ventricular enlargement without periventricular edema in the CT scan. He was able to hold his head steadily from 3 months old and was able to sit with support from 6 months old but has lost these abilities in the past two months. Lab testing recorded thrombocytopenia (Platelet (PLT) = 39000) and anemia (Hemoglobin (Hb)=7.4). He was referred to our hospital for further evaluation.

Vital signs were stable on admission (temperature=36.7°C, Pulse rate=100/min, Respiratory rate=50/min). He had bone tenderness and poor feeding and was so irritable. Anterior fontanelle had an area of 3*5 cm and was not bulged. No lymphadenopathy was palpable.

Borders of liver and spleen were detectable 5 cm and 2 cm below the costal margin respectively and Abdominal Ultrasonogram viewed liver and plenic span of 93 mm and 83 mm respectively. He has edema of lower extremities. In neurological examination he was hypotonic with decreased deep tendon reflexes.

ALL is the most prevalent cancer in childhood and it is considered as the leading cause of death due to cancer before age twenty. Here is an increment in the incidence rate of ALL between years 1975 and 2010 with annual percent changes equal to 0.7%. Accelerated fetal growth, high birth

weight, Down syndrome, certain genetic syndromes, congenital immunodeficiency diseases and few

Environmental factors such as parental smoking and maternal exposure to paint were found to be associated ALL and childhood leukemia. Surprisingly, early life exposure to infection showed to be protective against all which may rationalize why ALL is more common in industrialized countries .

Introduction of new therapeutic methods have led to improvement in the survival rate up to 90%. Mortality rate due to ALL has the greatest decline compared to other childhood cancers (average annual percent change was -3.1% during 1988 to 2010). But still ALL remains as a main cause of death due to cancer in young individuals especially in low income countries where survival rate for ALL is about 50%.

Symptoms are either related to decrease in blood components or leukemic infiltration of body organs such as liver and spleen. Central nervous system involvement is not a common manifestation of ALL (2-5%) and comparing to B-cell ALL, it is more frequently seen in T-cell ALL. It may manifest with increased intracranial pressure or rarely with cranial nerve abnormalities [3-5,11]. Rocha et al. Reviewed 28 cases of different subtypes of lymphoma presented with cranial and skull involvement which was older than 60 years. As far as we reviewed the literature, macrocephaly was rarely reported to be the presenting symptom of T-cell ALL. Jaing et al reported a 2 years old girl presenting with anemia and macrocephaly due to epidural mass, who eventually confirmed to be T-cell ALL. Mondal et al. described a 3 years old boy with macrocephaly and prolonged fever who was subsequently diagnosed with acute promyelocytic leukemia.

Our case was presented with prolonged nonspecific flu like symptoms and gradual rise in head circumference during the course of the disease. No sign of mass lesion was observed in the brain CT scan prior to the admission. After the diagnosis of T-cell ALL he responded dramatically to chemotherapeutic protocol.

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*Corresponding author: Akanksha Prakash, Department of Biotechnology, Shree Ramswaroop Memorial University, Uttar Pradesh, India, Tel: +91 8573899664; E-mail: ankiii2097@gmail.com

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