A novel chromosomal translocation
t(6;14)(p22;q32) in a case of precursor B-cell acute
lymphoblastic leukemia

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Clinics
Age and sex: 25 years old male patient
Previous History: no preleukemia; no previous malignant disease; no inborn condition of note.
Organomegaly: no hepatomegaly (Negative to palpation; Ultrasound not done); no splenomegaly (Negative to palpation; Ultrasound not done).

Blood
WBC: 19.6 x 10^9/l; Hb: 12.3 g/dl; platelets: 15x 10^9/l; blasts: 68%; Bone marrow: The specimen was taken from the iliac crest and particle crush smears appeared cellular but dilute. The trephine imprints were cellular. No significant maturation of the myeloid series was present. The myeloid series were primarily composed of segmented neutrophils. No erythroid dyspoiesis was evident. Only a rare magakaryocyte was seen. Blasts were similar to those of the peripheral blood and appeared very delicate and easily crushed. No Auer rods were seen.

Cytopathology classification
Cytology: Precursor B-cell acute lymphoblastic Leukemia (WHO).
Immunophenotype: Flow cytometric analysis of the marrow was performed at the Methodist Hospital. The blasts had a precursor B-lymphoblast phenotype: CD19 positive, CD20 positive, CD10 positive, CD79a positive (cytoplasmic) and TdT positive. Myeloid markers (CD13, CD33, CD14, CD117 and myeloperoxidase) are negative. T-cell markers (CD3, CD5, CD7, CD4 and CD8) are also negative. CD34 is positive (partial).
Rearranged Ig or Tcr: Not done.
Electron microscopy: Not done.
Precise diagnosis: Precursor B-cell Acute Lymphoblastic Leukemia.

Survival
Date of diagnosis: 11-2006
Treatment: Asparaginase, Cyclophosphamide, Daunorubicin, Vinceristine.
Complete remission was obtained.
Comments: Bone marrow examination on 12-04-2006 is compatible with early remission.
Treatment related death: No; Discharged from hospital on 12-06-2006.
Relapse: -
Status: Alive
Survival: N/A

Karyotype
Sample: Peripheral Blood; Culture time: 24/48;
Banding: GTW.
Results: 46-47, XY,del(5)(q34),t(6;14)(p22;q32),i(9)(q10),del(17)(p10),-20,+mar[cp6]
Other molecular cytogenetic technics: Fluorescence In Situ Hybridization (FISH).
Other molecular cytogenetics results : FISH was performed using Vysis LSI IGH dual color, break apart rearrangement probe. The analysis revealed an IgH rearrangement with the green signal on der (6).
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Comments

There are few reports documenting t(6;14)(p21.1;q32.3), in cases of multiple myeloma/plasma cell leukemia and diffuse large B cell non-Hodgkin lymphoma. Our case report shows a karyotype with multiple abnormalities. One significant abnormality observed was the loss of 9p in the form of i(9)(q10), which is a common finding in precursor B-cell lymphoblastic leukemia. Our case also showed partial deletions of 5q and 17p. We observed a novel translocation t(6;14) (p22;q32) in a patient with Precursor B-cell Acute Lymphoblastic Leukemia. FISH studies performed on the metaphases of this specimen confirmed the translocation of IGH (located on 14q32.3). E2F3 is a transcription factor located on 6p22 that is reported to play a critical role in regulating normal cellular proliferation and differentiation. Though the exact gene in 6p22 translocation is not yet known, it is speculated that E2F3 might be clinically significant in leukemia/MDS. However, involvement of Geminin, DNA replication inhibitor (GMNN) located on 6p22.2 cannot be ruled out.

Representative metaphase of case number 06-1570.
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FISH results showing 14q32 translocation.

References


This article should be referenced as such: