Extended Abstract | Transplant Reports: Open Access | 2018 | Vol.4 Issue.3

A Sole Cytogenetic Abnormality r (2) in Acute Lymphocytic Leukemia Patient: An Indian

Dr. Prabhudas S. Patel

Department of Cancer Biology the Gujarat Cancer & Research Institute, Asarwa, Ahmedabad-380016, India

Abstract

Cytogenetic abnormalities are established as important prognostic factor for Leukemia. After the first report of a ring chromosome in a case of human leukemia ring chromosomes have been infrequently.

Keywords

Acute Lymphocytic Leukemia; Ring chromosome; Cytogenetics; Fluorescence in Situ Hybridization; Whole Chromosome paint Probe

Introduction

Acute lymphoblastic leukemia (ALL) is a neoplastic disease characterized by clonal expansion of leukemic cells in the bone marrow (BM), lymph nodes, thymus, or spleen. ALL may be a genetic disorder because essentially most patients harbor acquired genetic alterations (somatic mutations) that contribute to the increased proliferation, prolonged survival, and/or impaired differentiation of the lymphoid hematopoietic progenitors. In the majority, albeit not all, patients diagnosed with ALL, one or more of these genetic alterations are in the form of nonrandom numerical or structural chromosome aberrations that can be detected microscopically [1]. not only within the diagnosis but also in predicting the prognosis and, ultimately, understanding the leukemogenesis [2]. The cytogenetic abnormalities have been established to be very important for the prognosis of ALL patients [3]. Approximately 75% of childhood ALL cases harbor recurrent genetic abnormalities, including aneuploidy or structural chromosomal arrangements, detected by conventional karyotyping and fluorescence in place hybridization (FISH) [4]. Translocations t in infants, are found at the highest frequency in childhood B-ALL. The ring chromosome may be a circular, structural abnormality composed of either multiple chromosomes or one chromosome with loss of genetic material at telomeres one or both ends. The metaphase FISH results of WCP FISH for chromosome 2 with SG showed formation of ring for chromosome 2 altogether metaphases.

This work is partly presented at Joint Event on International Conference on Organ Donation & Transplantation Science, April- 09-10, 2019 at Sydney, Australia

Extended Abstract | Transplant Reports: Open Access | 2018 | Vol.4 Issue.3

Discussion Chromosomes are often regarded merely as static containers for genetic information. However, it is now becoming increasingly clear that chromosomes are highly dynamic structures with a tightly regulated organization. Normal DNA replication leads to two linear sister chromatids organized during a parallel configuration in order that symmetrical separation can occur at the metaphase-anaphase transition. However, a change in topology from linear to circular may totally disrupt this sequence of events. This is an effort to delineate the results of such ring-shaped chromosomes in human cells. Previous studies have demonstrated that the initial formation of ring and dicentric chromosomes in malignant tumors may result from telomere shortening and subsequent fusion of chromosome ends [9]. The incidence of cases with ring chromosomes is generally low in human hematopoietic neoplasias, rather than in ALL it is about 3.4%. Among a consecutive series of 152 childhoods ALL, however, just one case with a hoop chromosome was found [10]. Ring chromosome is usually unstable, resulting in concomitant genetic loss or amplification.

References

1. Krzysztof M, David PH, Peter D (2009) Aplan Cytogenetics and Molecular Genetics of Acute Lymphoblastic Leukemia. Hematol Oncol Clin North Am
2. 2. Downing JR, Harrison CJ (2009) Cytogenetics of pediatric and adolescent acute lymphoblastic leukemia. Br J Haematol 144: 147-156.
3. 3. Siddaiahgari SR, Awaghad MA, Latha MS (2015) Clinical, immunophenotype and cytogenetic profile of acute lymphoblastic leukemia in children at tertiary health care centre in India. Muller J Med Sci Re.

E-mail: prabhudas_@hotmail.comp

This work is partly presented at Joint Event on International Conference on Organ Donation & Transplantation Science, April- 09-10, 2019 at Sydney, Australia