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Cytogenetic heterogeneity as a prognostic indicator in acute myeloid leukemia patients from India

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Acute myeloid leukemia (AML) is a heterogeneous disease where diagnostic karyotype is one of the most powerful independent prognostic indicators in AML. It serves to identify biologically distinct subsets of disease. The chromosomal changes are the signature of gene deregulation in cancer and lead to instability of the genome. The aim of the present study was carried out to appraise clinical significance of numerical and structural chromosomal abnormalities in 321 AML patients. Bone marrow/peripheral blood lymphocytes were carried out by cytogenetics and FISH and multicolour FISH as and when required. Out of 321 patients, trisomy 8 found as sole, complex and secondary change. Along with most commonly observed recurrent chromosomal abnormalities, loss and gain of different chromosomes was also observed. Recurrent translocations t(15;17),t(8;21) and inv(16) were observed along with secondary changes. Rearrangements of 11q23 were observed in 12 patients. Mainly observed translocations were t(1;11), t(6;11), t(9;11), t(10;11), t(11;19) once only in different patients, del(11q23)(n=4), i(11q), t(11;17)(n=2). The loss of sex chromosome was observed in the highest frequency (n=20). Gain of whole chromosomes were; 8 (X23), 10 (X5), 19 (X7), 21 (X10), 22 (X6) and loss of X (X6), Y (X17). Frequent breakpoints in structural abnormalities were gain or loss of different chromosomes i.e., 1q (X8), 5q (X5), 8q (X4), 9q (X5), 11p (X5), 11q (X8), 17q (X9), and 22q (X 6). Study revealed that the gain of chromosomal material was observed much more often than loss. Loss of tumor-suppressor genes might be involved in mechanism of leukemogenesis. Gain as numerical abnormalities may affect gene-dosage and may play a significant role in the pathogenesis of AML. Study highlights the clinical significance of cytogenetics as an independent prognostic indicator in AML, providing the allocation for a stratified treatment approach of the disease.

Biography

Pina J Trivedi has completed her PhD in March 2012 from Gujarat University. She has visited Bremerhaven, Germany during May 6th to 8th 2014 for workshop on Zytovision *In Situ* Hybridization. She is also one of the faculties in a Master's degree course i.e., M.Sc. Cancer Biology which is run by GCRI. She is working in Cytogenetic department of the Gujarat Cancer & Research Institute (GCRI), Ahmedabad, Gujarat, India from last 18 years. She received Young Scientist Award for oral presentation in Indian Society of Human Genetics Conference during 2005 in cytogenetics category. She has more than 41 publications in national and international journals.

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