

Chromosomal Aberrations in Breast Cancer Patients in West Bengal, India

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ABSTRACT Breast cancer is the most frequent malignancy among women. Since genetic factors such as BRCA1 and BRCA2 as well as reproductive history constitute 30% of the cause, environmental exposure may play a significant role in the development of breast cancer. Likewise, the relevant enzymes involved in the biotransformation of xenobiotics (from tobacco smoke, diet or other environmental sources) might play a role in breast carcinogenesis. We have carried out cytogenetic studies, using the G-banding technique in peripheral blood lymphocytes of 10 patients affected by breast carcinoma. A variety of chromosomal aberrations including aneuploidy, polyploidy, cluster of cells, acrocentric associations, chromosomal breaks and gaps were seen in the peripheral blood leucocytes of the patients. The frequency of aberrant metaphases varied from 5% to 69% in cultured leucocytes. The frequency of aneuploidy in sporadic breast cancer was 43% to 69% and in hereditary breast cancer was 65% to 68% (P= 0.25). The frequency of other aberrations like polyploidy, cluster of cells formation and acrocentric association was significantly found in hereditary breast cancer compared to sporadic breast cancer. Random chromosomal breaks and gaps was found significantly in hereditary breast cancer (p<0.0001). Chromosomal aberrations were not seen in controls. Mitotic index in breast cancer was higher than in controls (P = 0.0038). The present study lays the emphasis on initiating karyotyping as screening recommendations for detecting early age of onset in Hereditary Breast Cancer (HBC) because molecular analysis is a tedious and very costly technique.