Aberrant expression of cell-cycle regulator cyclin D1 in breast cancer is related to chromosomal genomic instability

朱娟秀

Lung JC;Chu JS;Yu JC;Yue CT;Lo YL;Shen CY;Wu CW

摘要

Abstract

To account for the accumulation of genomic alterations required for tumor progression, it has been suggested that the genomes of cancer cells are unstable and that this instability results from defective mutators (the mutator phenotype cell-cycle regulators act as the mutators contributing to genomic instability, the present study, based on primary tumor tissues from 71 patients with breast cancer, was performed to determine whether there was an association between aberrant expression of cell-cycle regulators (cyclin A, cyclin D1, cyclin E, RB1, p21, and p27) and chromosomal instability. Comparative genomic hybridization was used to measure chromosomal changes, reflecting genomic instability in individual tumors, whereas immunohistochemistry was used to detect aberrant expression of cell-cycle regulators. Overexpression of cyclin D1 was found to be significantly correlated with increased chromosomal instability (defined as harboring more than 7 chromosomal changes), with 63% of tumorsoverexpressing and 27% of tumors not overexpressing, with cyclin D1 showing chromosomal instability ($P < 0.05$). Interestingly, this relationship was independent of cell outgrowth (as detected by the proliferation marker Ki-67) and was particularly significant in tumors not expressing p27 or in tumors with detectable RB1. These results suggest that cyclin D1 plays an alternative role in the regulation of genomic stability.