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ABSTRACT

Somatic mutations of PIK3CA, which encodes the p110α catalytic subunit of phosphatidylinositol 3-kinase, have recently been shown to play an important role in the pathogenesis and progression of human breast cancers. Mutational analysis of PIK3CA was done in 105 Indian breast cancer patients. Relationship of these mutations with various clinicopathologic variables [Histologic grade, clinical staging, lymph node status, menopausal status, estrogen receptor (ER) and progesterone receptor status (PR)] and expression, determined by immunohistochemistry was studied. Missense mutations of PIK3CA were found in 18 of 105 breast cancer patients comprising of 10 and 8 of exons 9 and 20 respectively while exon 18 showed no mutation. The frequency of PIK3CA mutations in Indian breast cancer patients is less as compared to other studies reported previously. When all cases of mutation were considered together we found no significant association with histological grading, clinical stage, nodal status, menstrual status as well as ER/PR status. On expression analysis we found that none normal control showed any expression in normal tissue while out of 105 tumor samples 38 sample showed high or over expression of PIK3CA gene and 67 patients showed low or nil expression of PIK3CA gene. PIK3CA/akt expression correlates significantly with clinico-pathological variables such as clinical stage (P= <.0001), lymph node (P=<.0001) and histological grade (P=0.0106). In addition we have found that PIK3CA/akt expression increases with disease progression. The results suggest that mutation of PIK3CA might contribute to development of early stage breast cancer and could provide to a potent target for early diagnosis and therapy.