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ELISA-detected p53 protein accumulation is a prognostic factor in a large cohort of breast cancer patients. Levesque, M.A.[1], Yu, H.[2], Clark, G.M.[3], Diamandis, E.P.[1], *Dept Path Lab Med, Mount Sinai Hospital, Toronto, Ontario, Canada., [2]Diagnostic Systems Labs, Webster, TX, USA. [3]Dept Medicine, Univ Texas Health Sci Ctr, San Antonio, TX, USA.*

Evidence that tumoral p53 protein accumulation has prognostic value in breast cancer has been equivocal, perhaps due to the various immunohistochemical methods employed. In contrast, we used an immunofluorometric assay to measure p53 protein concentrations in tumor extracts from 998 breast cancer patients, and found p53 overexpression associated with poor disease-free and overall prognosis. Multivariate Cox regression analyses in which patient age, tumor size, presence of lymph node metastases, estrogen and progesterone receptor expression, S-phase fraction, and DNA ploidy were included in the models showed significantly increased risks for relapse ($p=0.02$) and death ($p<0.01$) in patients with tumors having p53 levels above the median cutoff point of 0.16 ng/mg of extracted protein. Similarly, the use of the quartiles of the p53 protein distribution to divide patients into four groups revealed trends for higher risk of relapse ($p=0.02$) and death ($p=0.06$) for patients in successively increasing quartiles. After stratification of patients by nodal status, p53 accumulation in node-positive patients predicted 1.6- and 2-fold higher risks of relapse and death ($p<0.01$ for both), respectively, but p53-positivity was not associated with worse outcome in node-negative patients. Patients with estrogen receptor-positive tumors also had reduced survival if their tumors were p53-positive ($p=0.02$ for relapse and $p=0.01$ for death). Finally, p53-positivity was also associated with reduced disease-free (RR=1.73, $p=0.04$) and overall (RR=2.04, $p=0.03$) survival of patients given chemotherapy, alone or in combination with other treatments, but was not a significant prognostic factor for patients who received either no postoperative therapy or treatments not incorporating chemotherapy. Kaplan-Meier survival analyses confirmed these findings in the subgroups of patients. These findings indicate that the assessment of p53 overexpression in breast tumors by a simple, sensitive, and cost-effective method may identify patients with reduced survival and thus could be incorporated into the biochemical workup of resected breast tumors.