

# Prognostic significance of mutations in the *p53* gene, particularly in the zinc-binding domains, in lymph node- and steroid receptor positive breast cancer patients

E. Kucera, P. Speiser, M. Gnant, L. Szabo, H. Samonigg, H. Hausmaninger, M. Mittlböck, M. Fridrik, M. Seifert, E. Kubista, A. Reiner, R. Zeilinger, R. Jakesz

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## Abstract

The aim of our study was to evaluate if *p53* mutations, especially those in the L2/L3 domains of the *p53* gene, add prognostic information for node-positive and steroid receptor positive breast cancer patients. Two hundred and five tumour samples from a randomised clinical trial of 596 lymph node- and steroid receptor positive breast cancer patients were included. All patients had been randomly allocated to receive 20 mg of adjuvant tamoxifen (TAM) daily for 2 years or TAM plus one cycle of low-dose, short-term chemotherapy. For detection of *p53* mutations we used *in vitro* amplification by polymerase chain reaction and consecutively performed temperature gradient gel electrophoresis (PCR-TGGE) and direct sequencing. We found *p53* mutations in 42/205 (20%) cases: 16/42 (38%) *p53* mutations occurred within the L2/L3 domains of the *p53* gene, and 26/42 (62%) outside the L2/L3 domains. *p53* mutation served as a statistically significant parameter in predicting disease-free survival in univariate ( $P=0.02$ ) and multivariate ( $P=0.009$ ) analysis. For overall survival, no significant differences were observed. Patients with tumours that had *p53* mutations within the L2/L3 domains of the gene showed no significant difference to those with mutations outside the L2/L3 domains for disease-free survival. For overall survival, mutations in the L2/L3 domains showed a marginally significant difference ( $P=0.05$ ) in multivariate analysis, but not in univariate analysis ( $P=0.13$ ). We conclude that mutation in the L2/L3 domains of the *p53* gene is not an independent prognostic indicator of disease outcome for patients suffering from breast cancer with lymph node metastases and positive steroid receptors.

**Keywords:** [breast cancer](#), [lymph node-positive](#), [steroid receptor positive](#), [prognosis](#), [p53 mutations](#), [L2/L3 domains](#), [PCR](#), [temperature gradient gel electrophoresis](#), [low-dose chemotherapy](#)