

Prognostic utility of β -tubulin isotype III and correlations with other molecular and clinicopathological variables in patients with early breast cancer: a translational Hellenic Cooperative Oncology Group (HeCOG) study.

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Source

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Abstract

We evaluated the prognostic and predictive utility of β -tubulin isotype III (TUBB3) tumour gene transcription in early breast cancer patients enrolled in a randomised study. Quantitative reverse transcription-polymerase chain reaction (qRT-PCR) was applied for assessment of TUBB3, ER, PgR, HER2 and MAPT messenger RNA and immunohistochemistry (IHC) for protein expression in 314 patients enrolled in trial HE10/97, evaluating epirubicin-alkylator adjuvant chemotherapy with or without paclitaxel. High TUBB3 mRNA status was associated with advanced T stage, high histological grade, low mRNA and protein levels of ER, PgR and MAPT, and high levels of HER2 ($p < 0.001$). At a median follow-up of 98 months, multivariate analysis showed high TUBB3 mRNA status to have prognostic significance for DFS (HR = 1.83, 95% CI 1.25-2.68, $p = 0.002$) and OS (HR = 1.71, 95% CI 1.03-2.83, $p = 0.038$), along with the number of involved axillary nodes, PgR mRNA status and tumour grade. TUBB3 mRNA levels did not predict benefit from inclusion of paclitaxel in adjuvant chemotherapy (test for interaction $p = 0.96$ for OS, $p = 0.46$ for DFS). Transcriptional activity of β -tubulin isotype III in early breast cancer is an adverse prognostic factor, though not a predictive one for taxane efficacy.