

Prognostic role of BRCA1 mutation in patients with triple-negative breast cancer

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Triple-negative breast cancer (TNBC) is proposed to be an immunohistochemical surrogate of the basal-like breast cancer subtype. In spite of the relative chemosensitivity of this cancer subtype, it is characterized by aggressive clinical behavior; therefore, a further subclassification of TNBC is required to develop new targeted treatment. In previous studies, a strong correlation between BRCA1 mutation-associated tumors and TNBC has been identified. The aim of the present study was to investigate the prognostic significance of carrying two germline BRCA1 founder mutations (4153delA and 5382insC) in patients with TNBC in the Latvian population. A total of 78 consecutive BRCA1 mutation-negative and 38 BRCA1 mutation-positive invasive TNBC patients in stage I–IV with no history of ovarian or other primary advanced cancers, who had undergone definitive surgery and genetic testing between 2005 and 2011, were deemed eligible for study. Relapse rates and breast cancer-specific survival (BCS) outcomes were compared between mutation carriers and non-carriers. Univariate and multivariate analyses Cox proportional-hazards models were used to compute independent predictors of survival outcomes. No statistically significant differences were identified in relation to tumor size, T stage, stage, Ki-67 status and tumor differentiation grade between the two groups. The median follow-up period was 36 months for mutation carriers and 41 months for non-carriers. A higher proportion of BRCA1 mutation non-carriers experienced distant recurrence compared with that of mutation carriers ($P < 0.03$). BRCA1 mutation carriers had a significantly higher BCS than non-carriers (94.9 vs. 76.9%; $P < 0.02$). In the univariate analyses, BRCA1-positive status was associated with decreased risk of distant recurrence (HR, 0.228; 95% CI, 0.052–0.997; $P < 0.049$) and breast cancer-specific mortality (HR, 0.209; 95% CI, 0.048–0.902; $P < 0.036$). In the multivariate analysis Cox proportional-hazards model, BRCA1-positive status was an independent favorable prognostic factor for distant recurrence-free survival (HR, 3.301; 95% CI, 1.102–9.893; $P < 0.033$). In conclusion, results of the present study demonstrate that positive BRCA1 founder mutation status in TNBC, with no evidence of ovarian or other cancer type in advanced stage, significantly improves prognosis.