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Patients with BRCA1 mutations, but not BRCA2 mutations, had poorer prognosis compared with noncarriers

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Patients with breast cancer who had a BRCA1 mutation had significantly worse overall and recurrence-free survival rates compared with patients without BRCA mutations, but no evidence for a difference in survival was found between patients with BRCA2 mutations and those without a BRCA mutation, according to data from a large Dutch study presented at the AACR Annual Meeting 2013, held in Washington, D.C., April 6-10.

Previous studies investigating survival differences between women with BRCA1 or BRCA2 mutations and those without a BRCA mutation, or noncarriers, have been inconsistent, according to Marjanka M. K. Schmidt, Ph.D., a group leader in the Experimental Therapy Division of the Netherlands Cancer Institute in Amsterdam. "We have analyzed data from one of the largest, least biased, BRCA1/2-genotyped breast cancer cohorts," she said.

Schmidt and colleagues evaluated BRCA status and survival in 5,518 patients who had been diagnosed with breast cancer before the age of 50 and had been treated at any one of 10 cancer clinics in the Netherlands. They found that 3.6 percent of the patients had a BRCA1 mutation and 1.2 percent had a BRCA2 mutation.

Researchers tested patients' samples for 78 different inherited BRCA1 or BRCA2 mutations and linked these to long-term outcome during a mean follow-up of 11.3 years. The proportion of ER-positive tumors was

similar between noncarriers' tumors (86 percent) and tumors from patients with a BRCA2 mutation (81 percent) but was low among tumors from patients with BRCA1 mutations (29 percent).

The data revealed that women with a BRCA1 mutation were 1.5 times more likely to have a breast cancer recurrence and were 1.2 times more likely to die from breast cancer compared with noncarriers. There was no evidence for worse survival among patients with BRCA2 mutations compared with noncarriers.

In preliminary analyses, the effect of BRCA1 on survival remained after the researchers adjusted for tumor characteristics. "However, in our review, we also found that the effects were attenuated when tumor characteristics were adjusted for," Schmidt said. "So part of the worse survival in BRCA1 mutation carriers is likely explained by tumor characteristics and part by the mutation itself."

The differences in survival between BRCA1 mutation carriers and noncarriers might indicate that treatment should depend, in part, on which mutation a woman has, according to Schmidt.

"Currently, patients are treated on the basis of their tumor characteristics, not on their BRCA status, aside from prophylactic measures and, for example, PARP inhibitors in clinical trials," she said. "If we could show that BRCA status, independent of tumor characteristics, is predictive of prognosis, this could be taken into account in prediction models and could facilitate treatment decisions."

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