

Cancer Advances: Genetic Counseling and Testing Results in Diagnosis of Early-Stage Tumors

From the March 1, 2002 issue of the *Journal of Clinical Oncology* According to a new study by researchers at the Memorial Sloan-Kettering Cancer Center, genetic counseling and testing increase surveillance efforts among women at high-risk for breast and ovarian cancer, resulting in the diagnosis of early-stage tumors. In the first prospective study of patients with BRCA1 and BRCA2 mutations, researchers conclude that physical examinations, imaging techniques and risk-reducing surgery result in the diagnosis of early-stage breast and ovarian cancers. Screening tools used in the study included breast self-examinations, mammography, ovarian ultrasonograms, and CA-125 tests. Women who choose risk-reducing surgery had either their breast tissue or ovaries and fallopian tubes removed. BRCA1 and BRCA2 genes are known as the breast cancer susceptibility genes, which, when mutated, are thought to predispose women to breast and ovarian cancer. When there is a mutation in either gene, it can no longer control cell growth and division, resulting in an increased risk of breast and ovarian cancer. "These results are encouraging and show that vigilant surveillance by high-risk women can lead to the early diagnosis of breast and ovarian cancer," said Kenneth Offit, MD, senior study author and Chief of the Clinical Genetics Service at Memorial Sloan-Kettering Cancer Center. "These early cancers were found using a variety of strategies, including risk-reducing surgery and screening techniques." The study included 251 patients (233 women) who were identified as having mutations in the BRCA1 and BRCA2 genes. The average age for study participants at the time of testing was 47.7 years. Following genetic counseling, women were tested for BRCA1 and BRCA2 mutations, and received guidance on screening and risk-reducing surgery options. Women were then followed for an average of two years using standardized questionnaires, chart reviews and contact with their primary care physicians. For women who did not have their breast tissue, ovaries or fallopian tubes removed, there was an overall increase in the number of mammograms, clinical breast examinations, ovarian ultrasonograms, and CA-125 blood tests performed after women received genetic testing. Of the 165 women with breast tissue at risk, 12 were diagnosed with a new primary breast cancer, with nine of those tumors diagnosed at the earliest stage. Half of these cancers were detected by mammography (including one by MRI) and half were detected by physical examination during the time in between annual mammograms. Of the 29 women who chose to undergo risk-reducing mastectomy, two were found to have unsuspected early-stage breast cancers at the time of surgery. Of the 89 women who did not have their ovaries and fallopian tubes removed, five ovarian cancers were detected using transvaginal ultrasound and CA-125 tests. All of the ovarian cancers were found at an earlier stage than is typical. These findings are important since ovarian cancer is usually detected once it has spread to other parts of the body. Of the 90 women who chose to remove their ovaries, two early-stage ovarian cancers were detected at the time of surgery. The authors caution that although this study demonstrates that early-stage cancers may be diagnosed by screening and prophylactic surgery following genetic testing, the long-term outcome for this group of women is not yet known. In addition, this study does not address whether surgery decreases the rate of subsequent cancers. **What does this mean for patients?** To increase the likelihood that breast and ovarian cancer can be detected early, women should talk to their family about their medical history to find out if any family members - including women on their father's side of the family - had these cancers. Women with a family history of breast or ovarian cancer should talk to their doctor or a genetic counselor to determine whether they should consider genetic testing or participate in a special screening program. Although CA-125 tests were used in this study to screen for ovarian cancer, it is not common for physicians to use this test to screen for ovarian cancer. Additionally, researchers are currently studying new ovarian cancer screening tests. Women interested in screening for ovarian cancer should talk to their doctor.