Study Shows No Increased Risk of Breast Cancer for Non-Carriers in Families with BRCA Gene Mutation [1]

JCO Research Round Up
October 31, 2011

An analysis of more than 3,000 families including women with breast cancer has found that close relatives of women who carry mutations in a *BRCA* gene - but who themselves do not have such genetic mutations - do not have an increased risk of developing breast cancer compared to relatives of women with breast cancer who do not have such mutations.

While these results support most previous evidence regarding risks for women who do not have a mutation in a BRCA gene, they run counter to a more recent study that indicated first-degree relatives (mothers, sisters and daughters) of women with *BRCA* gene mutations are several times more likely than the general population to develop breast cancer - despite not having the mutation themselves. The new findings suggest that women who test negative for the mutation may not need extra cancer screening and other increased preventive measures.

Women who inherit a mutation in the *BRCA1* or *BRCA2* gene carry a 5- to 20-fold higher risk of developing breast or ovarian cancers. First-degree relatives who have not inherited the same family *BRCA* mutation have been considered to have a breast cancer risk similar to that of all close relatives of breast cancer patients, which is considerably lower. But in 2007, a study of women who did not have a specific family *BRCA* mutation showed they had several times the risk of developing breast cancer, and the results raised concerns that non-carriers might require increased cancer screening and preventive measures, such as annual breast MRI and prophylactic surgery.

The studies had looked at women who were in cancer family clinics and compared their breast cancer risk to that of women in the general population. Women from cancer family clinics were more likely to have intensive screening, and breast cancer risks tend to be higher among close relatives of breast cancer patients than those in the general population.

The investigators took a different approach. They studied women with breast cancer in 3,047 families from three cancer registries in Northern California, Australia and Canada. They found nearly 300 families in which a woman had a *BRCA* mutation. They then compared the risk of

breast cancer for first-degree relatives of the breast cancer patients with *BRCA* mutations to those of first-degree relatives of breast cancer patients who did not have the mutation, and found no significant difference. This means that non-carriers of a familial *BRCA* mutation do not have a markedly higher risk of developing breast cancer.

What this Means for Patients

The study showed that close relatives of women who have the *BRCA* gene mutation, which puts them at increased risk for developing breast and ovarian cancers, have a normal cancer risk if they themselves do not have the same gene mutation. Previous studies indicated that these women might be at higher risk for breast cancer - even without the mutation. Such women in families with the mutation should be aware that additional breast cancer screening and other increased prevention measures may not be needed, but that they may still have other risk factors associated with cancer.

Helpful Links

Guide to Breast Cancer [2]

The Genetics of Breast Cancer [3]

Hereditary Breast and Ovarian Cancer [4]

Genetic Testing [5]

Links:
[1] http://www.cancer.net/study-shows-no-increased-risk-breast-cancer-non-carriers-families-brca-gene-mutation
[2] http://www.cancer.net/patient/Cancer+Types/Breast+Cancer
[3] http://www.cancer.net/patient/All+About+Cancer/Genetics/The+Genetics+of+Breast+Cancer
[4] http://www.cancer.net/patient/Cancer+Types/Hereditary+Breast+and+Ovarian+Cancer
[5] http://www.cancer.net/patient/All+About+Cancer/Genetics/Genetic+Testing