

Pregnancies Lower Breast Cancer Risk in BRCA1 and BRCA2 Mutation Carriers

Good news for women with inherited mutations in BRCA1 or BRCA2 genes: A woman's risk to develop breast cancer after age 40 is the lower, the more pregnancies she has had. This is the result of the International BRCA1/2 Carrier Cohort Study (IBCCS), in which the German Cancer Research Center (Deutsches Krebsforschungszentrum, DKFZ) is involved.

It is known that women with mutations in the BRCA1 and BRCA2 genes have an increased breast cancer risk. In the general population, factors such as multiple pregnancies, first pregnancy at a young age and breastfeeding have a protective effect. But what about mutation carriers? In order to shed light on this and other questions, a number of researchers in France, the U.K., the Netherlands, Sweden, Germany and Canada initiated the IBCCS study. All study participants had a mutation in the breast cancer genes, BRCA1 or BRCA2; 853 of them had breast cancer. Professor Jenny Chang-Claude, Division of Clinical Epidemiology at the DKFZ, Dr. Nadine Andrieu, Institut National de la Santé et de la Recherche Médicale (INSERM), France, and colleagues used the data of 1600 study participants to investigate whether and how factors of the reproductive phase (breastfeeding, pregnancy, age at first pregnancy, miscarriages, abortions) influence the breast cancer risk in this group of persons.

The scientists discovered that women with one child have the same breast cancer risk as childless women. Among mothers of several children, however, the risk of developing breast cancer after age 40 was lowered by 14 percent with every child. The positive effect may be accounted for by the fact that the milk forming cells in the glandular tissue of the breast only mature completely during a pregnancy. Scientists suppose that the cells' tendency to transform decreases with increasing maturation degree.

A significant difference became apparent when the epidemiologists evaluated the cancer risk according to the type of mutation: Among women with a BRCA2 mutation, the cancer risk was about twice as high for women who had given birth to their first child after age 20 compared to those who had become mothers under age 20. For carriers of BRCA1 mutations, the scientists found the exact opposite: The risk of getting breast cancer was lower in women who had given birth to their first child after age 30.

It was not relevant for the cancer risk whether the pregnancies were terminated prematurely due to miscarriage or abortion. Neither do breastfeeding habits seem to have an influence on cancer risk in mutation carriers.

Nadine Andrieu et al.: "Pregnancies, Breast-Feeding, and Breast Cancer Risk in the International BRCA1/2 Carrier Cohort Study (IBCCS)", Journal of the National Cancer Institute, April 19, 2006; 98: 535-544.

Das Deutsche Krebsforschungszentrum hat die Aufgabe, die Mechanismen der Krebsentstehung systematisch zu untersuchen und Krebsrisikofaktoren zu erfassen. Die Ergebnisse dieser Grundlagenforschung sollen zu neuen Ansätzen in Vorbeugung, Diagnose und Therapie von Krebserkrankungen führen. Das Zentrum wird zu 90 Prozent vom Bundesministerium für Bildung und Forschung und zu 10 Prozent vom Land Baden-Württemberg finanziert und ist Mitglied in der Helmholtz-Gemeinschaft Deutscher Forschungszentren e.V.

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