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Hadassah blood test for BRCA mutations said to be 'cheaper, more accurate and faster'

• By JUDY SIEGEL

A new blood test to detect carriers of the BRCA1 or BRCA2 gene mutation for breast cancer is "faster, more accurate and cheaper" than conventional tests, claim the researchers at Jerusalem's Hadassah University Medical Center who developed the test.

Although not yet on the market, the Hadassah researchers said it would provide test results in up to six days – instead of a couple of weeks.

BRCA mutations usually strike at a younger age than non-inherited breast cancer, and also trigger ovarian cancer occur more frequently in female carriers and prostate cancer in male carriers. According to an article

just published in the journal *Cancer Prevention Research*, the new screening test is "95 percent accurate," even among people who are not carriers.

The news has aroused much interest among scientists around the world as well as the general public.

The research was conducted by Prof. Tamar Peretz, Yulia Barash and Tamar Zahavi of Hadassah's Sharett Institute of Oncology, along with Jasmine Jacob-Hirsch of Sheba Medical Center, Rachel Levy-Drummer of Bar-Ilan University, Dr. Asher Salmon of Barzilai Medical Center and Mali Salmon-Divon of Ariel University.

The "simple" test uses white blood cells separated and cultured in a short time. After-



ASHER SALMON
(Courtesy Hadassah)

wards, the cells are irradiated, and the level of expression of 18 genes are measured. This enables the identification of carriers at a very high level of accuracy.

Salmon said the new test will be an effective alternative for

existing ones. The technology, he added, can "deepen our understanding on the function of cells harmed by BRCA1 and BRCA2 mutations, and in the future, of additional mutations."

In the first stage of the research, the difference in the expression of genetic profiles in each genome (containing some 30,000 genes) was examined using expression microarray technology. When the genomes of women with the mutation and without were compared using "probe sets," a total of 1,500 genes were found to be expressed differently.

In the second stage, the list was reduced, using real-time PCR (polymerase chain reaction) technology, to further shorten the list to 18 genes in

which the differences were most significant. Finally, a validation study of 40 BRCA carriers was conducted versus a control group, and sensitivity of 95% and specificity of 88% were found. (Sensitivity measures the proportion of actual positives that are correctly identified as such, while specificity measures the percentage of healthy people who are correctly identified as not having the condition.)

About 5% of all breast cancers can be attributed to an inherited mutation in one of two cancer susceptibility genes, but those who have it are much more likely to develop the cancer than those without the mutation and to contract it in their fertile years and not in

middle and old age, as occurs in non-heritable breast cancer.

Asked to comment, BRCA researcher Prof. Ephrat Levy-Lahad – who is head of medical genetics at the capital's Shaare Zedek Medical Center – said Hadassah's research was "a very interesting preliminary study, but they will have to show that it holds up with a larger sample of women with mutations and an even larger range of mutations."

Levy-Lahad added that "the specificity is lower than conventional gene sequencing. The Hadassah team is competing with the gene sequencing technique, which is the gold standard and even more accurate. The question is whether their findings will hold up."