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Is there hope for early detection of ovarian cancer?

We know that cancer, like most diseases, is more easily treated when found early. Early, however, can mean many things. In cancer detection it means that the tumor isn't very large, the cells haven't grown very deep into the tissue, or that they have not yet spread from the original location to other places in the body. Prevention and early detection depend greatly on an individual to heed warnings (such as staying out of the sun to prevent skin cancer); following screening guidelines according to age (such as receiving a pap smear, colonoscopy, or mammogram); and paying attention to changes, signs, and symptoms in our own body (such as feeling a breast lump). In the case of screening we depend on doctors, scientists, and machines to let us know if we are healthy. Of course we want the best tools possible. The pap smear, for example, identifies abnormal cervical cells so they can be removed either before a diagnosis of cervical cancer or at an early stage. In the case of ovarian cancer no such test exists.

The ovaries are inside the abdominal cavity and cannot be visually inspected without surgery. Therefore, doctors depend on feeling and using ultrasound through the abdomen and vagina. Perhaps you have heard of a test for cancer antigen 125 (CA125). CA125 is a marker in the blood that can indicate cancer in the ovaries. It can also indicate uterine fibroids and other non-cancerous conditions. These false-positive results mean that the test has low specificity. Specificity is the ability of a test to identify the absence of a disease (the probability that a test is negative given that I have no disease). In addition, the CA125 test does not indicate all cases of ovarian cancer, especially early stage cancers. These false-negative results meant that the test has low sensitivity. In the general population a CA125 test can predict that 10% of people who have positive results will actually have the disease. By adding additional ultrasound testing this prediction can be improved to 20%. This low predictive value is why the CA125 test is not recommended as part of a usual physical or gynecological exam the way pap smears and mammograms are. The predictive value is a measure (%) of the times that the value (positive or negative) is the true value. Therefore, this test is most often used in women who have strong family histories of ovarian cancer or those who present with symptoms of ovarian or uterine disorders.

So what does this mean for ovarian cancer, the fifth leading cause of cancer death among women? Every year ovarian cancer is diagnosed in 23,000 women and kills 14,000. In 80% of cases the cancer is not diagnosed until it is in a late stage. For these women the chance of surviving 5 years is only 35%. However, for the 20% of women diagnosed with early stage cancer, the chance of surviving 5 years is 90%, and most of these women are cured with only surgery and do not require chemotherapy.

So for years doctors and scientists have been trying to find a better way to detect ovarian cancer at an early stage. They have found some methods that are better than CA125 but are difficult and expensive to conduct such as DNA testing. However, on February 16th a paper was published in the journal The Lancet, outlining a technique of

analyzing proteins in the blood that are changed by the presence of ovarian cancer. The test was performed using a small blood sample that could be taken by finger prick and requires only 30 minutes to analyze. In the study, 100% of the 50 women with ovarian cancer were positively identified by the test, including all the women with early stage disease. Of the 66 women with conditions other than cancer, 63 were correctly identified as not cancer, resulting in a specificity of 95%. These results show a predictive value for the test of 94%. In the same study they also looked at CA125 results for the women and found a predictive value of 35%. This is above the generally accepted predicted value for CA125 but clearly nowhere near the protein analysis test at 94%. The new test will now undergo additional studies confirming the results in both high and low risk women, specifically interested in the detection of early stage cancer.

This is certainly exciting news and brings renewed hope to the fight against ovarian cancer. For more information on ovarian cancer visit the American Cancer Society at www.cancer.org.

Reference:

Petricoin EF et al. Use of proteomic patterns in serum to identify ovarian cancer. *Lancet* 2002 Feb 16; 359:572-7.

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