Ovarian cancers detected early may be less aggressive, questioning effectiveness of screening

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The biology of ovarian cancers discovered at an early stage may render them slower growing and less likely to spread than more aggressive cancers, which typically are discovered in an advanced stage, according to a study led by investigators in the Duke Comprehensive Cancer Center. This finding has implications for the question of whether screening for ovarian cancer could save lives.

"Our study showed that the ovarian cancers currently detected at an early stage have gene expression profiles that correlate with favorable outcome, rather than being representative of the entire spectrum of disease aggressiveness," said Andrew Berchuck, M.D., a gynecologic oncologist at Duke and lead investigator on this study. "This highlights the potential challenges of developing a screening test for this disease, because earlier detection of aggressive cases is essential if screening is to reduce ovarian cancer deaths."

The results of this study and the implications for screening as an approach to decreasing mortality parallel the challenges seen in lung cancer and prostate cancer. In those cancers, while screening approaches based on radiological imaging and/or blood markers detect cancers, it remains unclear whether cancer-related deaths are prevented because screening preferentially detects more benign cancers that are much less likely to be fatal, Berchuck said.

"While these results could be seen as discouraging, it must be remembered that this information is an important piece of the ovarian cancer puzzle, and data like these that increase our understanding of the disease hopefully will eventually lead to breakthroughs in prevention, early detection and treatment of this deadly disease," Berchuck said.

Although there is currently no approved ovarian cancer screening test for the general population, the CA125 blood test and transvaginal ultrasound imaging currently are being evaluated in clinical trials.

The researchers looked at gene expression patterns in 166 ovarian cancer tissue samples taken from patients who were treated at Duke, H. Lee Moffitt Cancer Center and Memorial Sloan-Kettering Cancer Center and from the Gynecologic Oncology Group Tumor Bank. For this study, researchers examined samples of advanced ovarian cancers from patients who had experienced long-term survival -- over seven years -- and patients who had done extremely poorly, and died within three years of diagnosis.

The researchers used microarrays - a method for examining thousands of snippets of DNA -- with about 22,000 probe sets to examine patterns of gene expression among the samples, and identified genes that were most predictive of survival.

"We found that certain patterns predicted long-term survival and others predicted a poorer prognosis in advanced stage cases," Berchuck said. "Cancers that were detected at an early stage almost always shared gene expression characteristics with advanced stage cases that were long-term survivors, suggesting a shared favorable biology."

More information: The researchers published their results in the March 24, 2009 issue of the journal Clinical Cancer Research.

Source: Duke University Medical Center