

Researchers identify ovarian cancer biomarkers

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Researchers have identified markers unique to the cells of blood vessels running through ovarian tumors. The finding, while preliminary, could one day improve screening, diagnosis and treatment for this disease.

The team of researchers from the University of Michigan, University of Pennsylvania, and universities in Greece and Italy, used a laser technique to isolate blood vessel cells from 21 ovarian tumors and four normal ovarian tissue samples. From there, they were able to determine which genes the vascular cells expressed.

The results identified more than 70 markers that were present in large amounts in the blood vessels of cancer tissue but not in the vessels of normal tissues. The researchers went on to study in detail 12 markers that had not previously been linked to tumor blood vessels. The study appears in the March 1 issue of the Journal of Clinical Oncology.

"Some of these genes, depending on how highly expressed they were in the tumor vasculature, were also prognostic of a patient's survival. We suspect when these genes are highly expressed it may be a sign of a tumor that's able to grow blood vessels more efficiently, and therefore is more aggressive. This may help us down the road in treatment decisions," says lead study author Ronald Buckanovich, M.D., Ph.D., assistant professor of internal medicine and obstetrics and gynecology at the University of Michigan Medical School. Buckanovich was at the University of Pennsylvania when he conducted this research.

The study analyzed the largest number of samples to date in tumor vasculature, or blood vessel, profiling. While many of the genes identified in this analysis have been shown previously to be involved in tumor vasculatures for other cancer types, several of the markers appear to be new.

In addition, the researchers were able to determine that some of the markers present in large amounts in ovarian tumors were not expressed by normal ovaries or other healthy organs. The researchers also found these markers were not present in normal reproductive tissues that experience blood vessel growth, such as the placenta or endometrium. This suggests that the markers are specific to tumors and would not be mistaken for normal blood vessel growth in women of reproductive age.

If the markers do prove to be specific to ovarian tumors, researchers believe that could be a new avenue to develop drugs that would target the blood vessels and strangle the tumor.

Biomarkers are also seen in other cancer types as a potential screening tool. A new way of detecting ovarian cancer could make a significant dent in this disease, where 70 percent of patients are diagnosed after the tumor has grown large or spread. There are few or no symptoms early in the disease and no effective screening tests. Early diagnosis is crucial, marking the difference between a 95 percent survival rate for cancers found at the earliest stage and 20 percent survival among patients diagnosed with advanced disease.

"All the things we could hope for are present with this approach: It has potential for diagnosis, imaging, treatment and prognosis. It needs more work and much more confirmation, but our early results are promising," Buckanovich says.

Continued research will look at developing antibodies and methods to

detect these novel proteins. "In some cases, these are genes that many people have never worked on before," Buckanovich says.

Source: University of Michigan Health System

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