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Angiogenesis linked to poor survival in patients with rare type of ovarian cancer

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Researchers from The University of Texas M. D. Anderson Cancer Center have found that increased angiogenesis, or blood vessel formation, and vascular endothelial growth factor expression are associated with poor survival in women with sex cord-stromal ovarian tumors. This data was presented in a poster session today at the Society of Gynecologic Oncologists' 40th Annual Meeting on Women's Cancer.

Sex cord-stromal ovarian tumors are rare, accounting for five to seven percent of all ovarian cancer diagnosed, and there is little data available on how they advance, or metastasize, in patients. These findings provide doctors greater understanding into how they may be able to successfully treat patients with this type of tumor by inhibiting angiogenesis according to the study's authors.

"These tumors tend to metastasize very differently from other, more common types of ovarian tumors," said Jubilee Brown, M.D., assistant professor in the Department of Gynecologic Oncology and lead author on the study. "For instance, sex cord-stromal tumor cells rarely break away and invade the lymph nodes, but we still see evidence of their spread to distant locations in the body such as the abdomen and liver. This unusual progression hinted that a different pattern of metastasis in which tumor cells break off and invade the blood system, may be at play."

The American Cancer Society estimates approximately 21,650 new cases of ovarian cancer were diagnosed in the United States in 2008.

There are more than 30 different types of ovarian cancer, categorized by the type of cell where the malignancy begins. Sex cord-stromal ovarian tumors, which develop in the connective tissue that holds the ovary together, are typically diagnosed at an earlier stage.

Researchers looked at 54 sex cord-stromal ovarian tumor samples, 28 from women with primary occurrences and 26 from women with recurrences. The samples were evaluated for two common indicators of angiogenesis: expression of the vascular endothelial growth factor (VEGF) protein and high microvessel density (MVD), or a large number of blood vessels associated with the tumor. Of those tumors studied, VEGF overexpression was noted in 52 percent and a high MVD was present in 32 percent. Both high MVD and VEGF were linked to significantly poorer survival (130 months versus 415 months in those with high MVD and 154 months versus 394 months in those with VEGF overexpression). Researchers noted that high MVD was also associated with recurrence and metastasis to other locations such as the abdomen, liver, lung and bone.

"Unlike most ovarian tumors which metastasize to nearby tissues or invade the lymphatic system, we suspect that the biological qualities of sex cord-stromal tumors, especially their ability to spread to and survive in distant sites of the body, explain why this type of ovarian cancer behaves so differently in patients," said Anil Sood, M.D., professor in the Departments of Gynecologic Oncology and Cancer Biology at M. D. Anderson and senior author on the study. "By honing in on how sex cord-stromal tumors utilize the blood vessels to become deadly, we can begin to test targeted anti-angiogenic therapies as possible means to control their growth."

Anti-angiogenic agents have been used in other cancers including colorectal, breast, lung and kidney cancers to slow tumor growth. Brown is currently the principal investigator on a Gynecologic Oncology Group

Phase II clinical trial at M. D. Anderson to test the efficacy of bevacizumab (Avastin), a drug that blocks angiogenesis through antibodies against VEGF, in patients with sex cord-stromal tumors.

Source: University of Texas M. D. Anderson Cancer Center