Susan G. Komen for the Cure
Research Grants – Fiscal Year 2011

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Role of lymph node lymphangiogenesis and VEGF-C in the progression of micrometastases

Investigator(s): Mihaela Skobe, PhD
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Awarded**:** $600,000.00
Grant Mechanism: Investigator Initiated Research
Research Focus: Biology

Public Abstract:
Presence of cancer in the lymph nodes, i.e. metastasis, is an important indicator of patient's outcome and lymph node status is critical for deciding on the choice of therapy for the patient. Lymph node metastasis is currently defined as a tumor nodule in the lymph node which is greater than 2mm in size. The greater the number of lymph nodes with metastases large than 2mm, the more there is a risk for a patient to develop metastases in other organs. As a result, these patients will receive a more aggressive therapy than patients without lymph node metastases. Because of important advances in the techniques for detection of cancer cells, one can now detect even very cells in the lymph nodes. The significance of such findings for the patient is not understood. The overall goal of our studies is to understand the significance of small metastases in the lymph nodes for formation of metastases in other organs. Our hypothesis is that formation of new lymphatic vessels in the lymph node (lymphangiogenesis) helps tumor cells to survive and grow in the lymph node, and ultimately to form metastases in other organs. We will test this hypothesis in mouse models of breast cancer. We will follow the fate of tumor cells in the lymph node by imaging in the live mouse, to see whether the cells in the lymph node indeed travel to other organs and form metastases there. We will block formation of new lymphatic vessels in the lymph node to examine whether this will decrease lymph node and lung metastases. A major challenge in breast cancer is treatment of metastatic disease after the tumor has been surgically removed. We expect our studies to show utility of blocking lymphatic vessel growth for treatment of metastases and prevention of local recurrence after the tumor removal. The outcome of this research could lead to rapid use in patients, since several inhibitors of lymphatic vessel growth have already been developed for use in the clinic. Results of our studies are also expected to be helpful for better identifying patients which are at high risk for distant metastatic disease and for identifying patients which would be candidates for anti-lymphangiogenesis therapy.

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