

Connection Between Metastatic Breast Cancer and Megakaryocytes in Bone Marrow

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ABSTRACT

Breast cancer is the second leading cause of cancer death in women. Approximately 13% of women will develop breast cancer in their lifetime and incidence rates continue to rise. Megakaryocytes, precursor cells to platelets, have primarily been shown to contribute to the spread of breast tumors. When these tumor cells break off, they are more likely to spread to the bone more than other organs of the body. Despite prior research, current literature suggests that megakaryocytes may actually help prevent the spread of breast cancer metastasis. To bridge this knowledge gap, we attempt to determine if breast cancer influences megakaryocyte's ability to mature and grow. A key characteristic of this maturation is a megakaryocytes ability to adhere. We believe there is 'something' being released from either the bone or the breast cancer cells that affect megakaryocyte proliferation or maturation. Two different breast cancer cell lines (BT549 and MCF7) and an osteoblast cell line were grown and media was collected from each, this was used as conditioned media for megakaryocyte proliferation and adhesion assays. Preliminary data shows that DAMI cells exposed to double conditioned media have a lower level of adhesion compared to normal media. Despite there being a change in adhesion, proliferation remains relatively the same across different treatments. These findings suggest that there is 'something' that is causing change in adhesion, whether it is proteins or RNA from the bone or breast cancer remains unknown and future studies will be conducted to answer these questions.