What's the Latest in Inflammatory Breast Cancer Research?

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Powered by recent research, scientists are making headway in understanding the basic biological mechanisms at work in inflammatory breast cancer (IBC)—and how to intervene in ways that may slow or stop the cancer.

IBC is a rare and fast-growing disease in which lymph vessels in the skin of the breast become clogged with tumor cells, causing the breast to appear red and swollen. It accounts for only 1 to 5 percent of all breast cancers in the United States and often isn't diagnosed until it has reached a fairly advanced stage, when it can be difficult to treat successfully.

Recent studies have shown that IBC has a unique biology—different, in many respects, from that of more common forms of breast cancer. This knowledge may help researchers identify women (and men) who have a heightened risk of the disease and might benefit from frequent monitoring. It may also enable researchers to zero in on therapies that are particularly effective against this type of breast cancer.

Although it differs in many respects from other varieties of breast cancer, IBC has certain characteristics in common with them, researchers have found. For example, IBC has a range of subtypes. Like more common forms of cancer, IBC can be classified by whether it grows in response to estrogen and progesterone, whether it carries a surplus of the HER2 protein, and whether—like triple-negative breast cancer—it lacks receptors for progesterone and estrogen and doesn't produce excess HER2. These features can influence how IBC is treated.

To better understand the disease and improve diagnosis and treatment, investigators at Dana-Farber have established an Inflammatory Breast Cancer Registry, which includes clinical information and tumor samples from patients with IBC. An analysis of the data showed that such patients could benefit from receiving PET/CT scans at their time of diagnosis.

"PET/CT imaging is not routinely used for newly diagnosed breast cancer in general," explains Beth Overmoyer, MD, who directs the Inflammatory Breast Cancer Program at Dana-Farber. "But these scans provide vital information in accurately staging IBC. We found that they demonstrated

advanced IBC not seen by other imaging tests, and the information from PET/CT imaging also changed patients' radiation therapy treatment plans."

Tissue from the registry enabled Dana-Farber scientists to identify a cancer cell survival pathway—JAK2, STAT3—that is especially active in IBC. In laboratory work, Dana-Farber scientist Kornelia Polyak, MD, PhD was able to suppress the pathway in IBC in mice using the drug Ruxolitinib (Incyte Corp.).

"Her discovery allows us to bring this research forward," Overmoyer says, adding that Dana-Farber is now spearheading a multi-institutional pre-operative clinical trial using Ruxolitinib in triple-negative IBC. "It is exciting to see this 'bench to bedside' process succeed because of patient participation in our IBC registry."

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