New technique may help detect potential breast cancer spread

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A new phase III clinical trial of early stage breast cancer patients has shown that a molecule designed to home in on nearby lymph nodes is just as accurate as current techniques, but faster, more specific and easier to use.

"These results will really enable molecular biology to enter the operating room for lymph node detection," said breast surgeon Anne Wallace, MD, professor of clinical surgery at the UC San Diego School of Medicine and the Moores UCSD Cancer Center, and one of the study leaders. Wallace described her team's results May 7, 2009 at the 3rd International Symposium on Cancer Metastasis and the Lymphovascular System in San Francisco.

When a woman has breast cancer, doctors want to be sure that the disease has not spread to her lymph nodes, the first place a cancer may go. The lymphatic system is a network of vessels, ducts and glands that usually carry disease-fighting cells throughout the body, but also can act as a conduit for cancer cells to access the bloodstream.

According to Wallace, the presence or absence of cancer in lymph nodes is an important predictor of breast cancer prognosis, and as a result, the appropriate treatment. But finding the right lymph nodes to test and a standardized method of doing so hasn't been easy.

Wallace and David Vera, PhD, professor of radiology at the UC San Diego School of Medicine, were instrumental in the early development

and testing of the molecule, called Lymphoseek®, a radiopharmaceutical that binds to the receptor on lymph node white blood cells called macrophages. The radioactive portion of the molecule essentially lights up, enabling detection of such nearby "sentinel nodes" that are the most likely candidates to biopsy for possible cancer.

The trial, led by research teams at the Moores UCSD Cancer Center, the Moffit Cancer Center in Tampa, FL and other centers, along with the Dublin, OH-based Neoprobe Corporation, which developed Lymphoseek, compared the molecule's ability to detect nearby sentinel lymph nodes to that of the standard method using blue dye and a radioactive tracer substance.

In the trial, the Moores Cancer Center team, which also examined the technique separately in melanoma patients, looked at 46 early stage breast cancer patients. Each patient received Lymphoseek, and a short time later, blue dye - which can also be detected and imaged as it enters the lymph nodes.

The surgeons removed the detected lymph nodes, which were subsequently sent to pathologists to determine whether cancer was present. The researchers found that more than 98 percent of sentinel lymph nodes containing blue dye also had Lymphoseek. Twenty-eight percent of the lymph nodes were positive for cancer, 100 percent of which were detected by Lymphoseek.

"The advantage in Lymphoseek is that we now have an agent that is tested and designed specifically for detection of sentinel lymph nodes," Wallace said, noting that blue dye is not specific for this use, lasts a shorter time in the body and may not always go to only sentinel nodes. "Lymphoseek is easier to use, takes less time to find lymph nodes and is cleared faster from the body. This could standardize the process of lymph node mapping and make the process easier, particularly for less

experienced surgeons."

According to Wallace, these results could lead to other research on receptor binding imaging for different types of cancers, and propel the field of imaging cancer based on molecular profiling.

Source: University of California - San Diego (news : web)