

Concerned about breast and ovarian cancer? Research brings progress

July 6 2022, by Leslie Orr



Richard Moore, MD. Credit: University of Rochester Medical Center

Two new innovations could make it easier for doctors to decipher when cancers that impact women are present and need urgent attention:

- A system to detect circulating tumor cells in the bloodstream earlier and less invasively was recently granted FDA approval, with Wilmot Cancer Institute researchers and Wilmot patients playing a major role in the groundbreaking studies. The new technology is for "liquid biopsies" to track [metastatic breast cancer](#) but could be applied in the future to other cancers.
- Additional research led by a radiologist at the University of

Rochester Medical Center confirms that ultrasounds are an effective predictor of ovarian [cancer](#) in women of average risk who develop a mass in the pelvic region. [The Radiology journal study](#) generated buzz recently because sorting out which women may need surgery or further follow-up care is full of nuances and challenges in the real world of busy medical clinics.

"As part of a leading translational research team, it is gratifying and exciting to see the movement of science toward innovations with actionable information that can guide treatment decisions," said Richard Moore, M.D., chief of the division of Gynecological Oncology and director of the Targeted Therapeutics Laboratory at Wilmot.

Liquid biopsies could simplify metastatic breast cancer detection

Last month, the U.S. Food and Drug Administration granted a United Kingdom-based company, ANGLE, the first-ever product clearance for technology called the Parsortix PC1 Clinical System. It harvests [cancer cells](#) from a patient's blood sample, isolating tumor cells based on size and deformity, for analysis. It takes about two hours for results.

Moore's laboratory at Wilmot was the sole location nationally to test whether the technology produces the same results each time, a research concept known as reproducibility. He also was an investigator on several clinical trials sponsored by ANGLE, enrolling more than 500 local women during the past few years in breast and ovarian cancer trials.

"Technology like this is a big deal because it's designed to capture living cancer cells early on, before a tumor is found by conventional means such as a CT scan or a surgical biopsy," Moore said.

"And if [tumor cells](#) are detected," Moore said, "the technology also

allows us to test for gene expression to discover if a patient could benefit from a treatment that would target those genes—all from a simple blood draw."

Kyu Kwang Kim, Ph.D., research assistant professor of Obstetrics and Gynecology at UPMC, and Negar Khazan, Ph.D., performed the work in the Moore lab. All of the data generated at Wilmot was part of the company's FDA submission, ANGLE said. Moore is continuing to work with teams at ANGLE, which is also funding studies using the Parsotix system to detect ovarian and endometrial cancer.

Investigation of liquid biopsies is exploding; in fact, another Wilmot team led by James McGrath, Ph.D., and Jonathan Flax, M.D., is developing a liquid biopsy test to detect cancer-specific cells for colorectal cancer, which disproportionately impacts Black individuals in the 27-county region from which Wilmot draws patients.

What does cancer look like?

For some types of cancer, such as ovarian, routine screening and early detection is not always possible.

This is why research led by Akshya Gupta, M.D., assistant professor of Imaging Sciences at UPMC is important: He validated an accurate way to classify pelvic lesions that show up periodically in women who do not have a high risk of ovarian cancer. The study showed that based on ultrasound appearance, pelvic lesions can be effectively placed into two categories—classic and non-classic—with 93% sensitivity.

"Classic" is for fluid- or fat-filled cysts that carry a very low risk of being cancerous.

"The [incidence of ovarian cancer](#) in the general population is very low

and the vast majority of lesions that we see as radiologists have classic, benign features where the risk of cancer is exceptionally low, below 1%," Gupta said. "That's reassuring."

But what separates the classic lesions from the ones that need immediate attention?

"Non-classic" masses usually have a solid component or blood flow within the lesion that can be seen on Doppler ultrasound. Of the 970 lesions analyzed in Gupta's study, the non-classic ones had a 32% frequency of malignancy in younger women and a 50% chance of being cancer in older women.

Gupta explained that algorithms have existed for years to assess pelvic lesions but they are often based on patients who have already been referred for surgery or to a gynecological oncologist. These women have a higher incidence of cancer compared to the general population.

Therefore, he said, the classic versus non-classic approach can help to stratify lesions when radiologists are called upon to triage women of average risk for ovarian cancer. Many of these cases come about when [women](#) go to their doctors with concerns about an ovarian cyst, minor abnormal bleeding, or if a small pelvic mass is discovered incidentally during an evaluation for a different health issue.

Provided by University of Rochester Medical Center

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<https://medicalxpress.com/news/2022-07-breast-ovarian-cancer.html>

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