

PET imaging determines malignancy in potential ovarian cancer cases

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A study presented at SNM's 58th Annual Meeting may provide a new tool for detection of malignant-stage ovarian cancer. Researchers found that positron emission tomography and computed tomography (PET/CT), which images both functional and anatomical changes in the body, was useful for preoperative cancer imaging of ovarian masses when used with a radiotracer that is actively metabolized by cells as fuel. Physicians imaging patients suspected of having malignant tumors can see where cancerous cells are hyper-metabolizing the tracer and accurately predict whether a mass is malignant, cancerous but stable, or benign.

"We found that PET/CT imaging with the radiotracer 18F-FDG gave us beneficial information about the ovarian [cancer stage](#) that helped gynecologists in their treatment planning," says Majbritt Frost, research technologist and lead author of the study at Aalborg Hospital Danmark in Aalborg, Denmark. "This research is important because it gives gynecologists and oncologists the opportunity to provide these women the best possible course of treatment. We were also able to find additional tumors, resulting in patient referral to the appropriate medical specialist."

The American Cancer Society estimates that more than 21,800 American women were diagnosed with ovarian cancer and approximately 13,850 women died from the disease in 2010.

This study was conducted to explore PET imaging with a radiotracer that

combines a fluorine-based [medical isotope](#) with fluorodeoxyglucose (18F-FDG), which mimics glucose as a source of energy, to determine the malignancy of adnexal masses. These are lumps in the tissue of the adnexa, or connected structures of the uterus. Most commonly these masses affect the ovaries and [fallopian tubes](#), but they can also develop within supporting tissues. PET imaging with 18F-FDG was able to ascertain whether lumps were malignant, because cancerous tissues are far more metabolically active than normal cells and this hyperactivity shows up as "hot spots" on PET scans.

For the purposes of this research, 104 patients with a mean age of 62 years presenting adnexal masses with the potential for ovarian cancer were imaged using PET/CT with the radiotracer 18F-FDG prior to surgery. Results of the scans were classified as either benign or malignant and were then compared to surgical findings. Preliminary research shows that 18F-FDG PET/CT was able to successfully detect 84 percent of benign and [malignant tumors](#) for these patients.

The ability to detect ovarian cancer expands hybrid molecular imaging in the field of gynecology. Already molecular imaging is useful for the staging of cervical cancer, and continuing research may one day open the door for the staging of endometrial and other cancers for women.

More information: Scientific Paper 2310: M. Frost, V. Iyer, R. Fisker, E. Søgaaard-Andersen, A. Grove, B. Lund, I. Noer, Aalborg Hospital, Aalborg, Denmark; "18F-FDG PET/CT prediction of malignant versus benign lesion in patients presenting with adnexal mass," SNM's 58th Annual Meeting, June 4-8, 2011, San Antonio, TX.

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