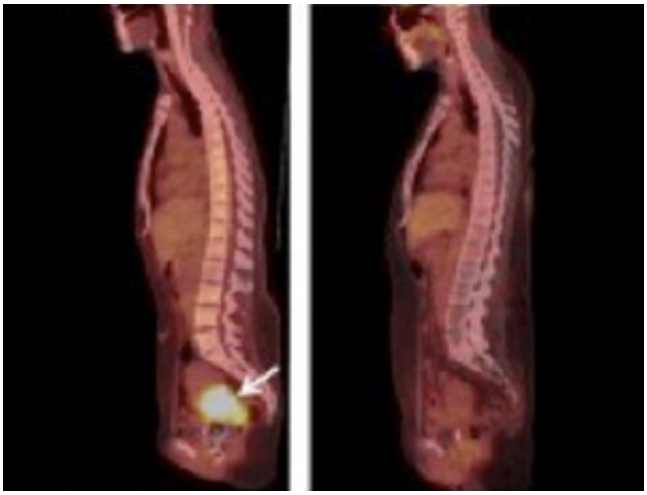
# Pretesting cervical tumors could inform treatment

May 31 2013, by Julia Evangelou Strait



Before treatment, left, a cervical tumor is visible (white arrow) on a PET/CT scan. After successful treatment, right, the tumor is no longer visible. For reasons that are not well understood, some patients' tumors do not respond to therapy. Testing the tumor before treatment for vulnerability to chemotherapy predicts which patients will do well or poorly with standard treatment. Credit: JULIE K. SCHWARZ, MD, PHD

(Medical Xpress)—Doctors at Washington University School of Medicine in St. Louis have shown that testing cervical tumors before treatment for vulnerability to chemotherapy predicts whether patients will do well or poorly with standard treatment. The study supports the future possibility of personalized medicine for cervical cancer, a tumor normally addressed with a one-size-fits-all approach.

"Even though this is a small study, its strength is that it links a lab test of the tumor's chemotherapy response to survival outcomes for the patients," said Julie K. Schwarz, MD, PhD, assistant professor of radiation oncology. "Very few cancers have been studied this way, and this is the first such report for cervical cancer."

Since 1999, nearly all cervical cancer cases have been treated the same way: daily radiation therapy targeted to the tumor plus a weekly intravenous infusion of the chemotherapy drug cisplatin.

"We believe that radiation does the majority of the work with cervical cancer," said Schwarz, who treats patients at Siteman Cancer Center at Barnes-Jewish Hospital and Washington University School of Medicine. "But a randomized trial published in 1999 showed that combining it with cisplatin chemotherapy improved survival outcomes."

Even today, according to Schwarz, doctors have no way of knowing who will do well or poorly with the combined radiation and chemotherapy that every patient receives. Now, Schwarz and her colleagues have shown that the tumor's response to chemotherapy, independent of radiation, may be a major deciding factor in whether a patient will do well with the standard treatment.

The study appears online in the journal *Gynecologic Oncology*.

"This is evidence that cisplatin is not just helping the radiation work better," Schwarz said. "It is having some direct toxic effect on cancer cells that may be hiding elsewhere in the body, some place where the radiation is not hitting it, since we target the radiation so precisely to the main tumor. We think it would be beneficial for that drug to be selected appropriately for the patient's individual tumor."

The investigators tested tumors from 33 cervical cancer patients before

their treatment began. They divided the patients' tumors into three categories – responsive, intermediate response and nonresponsive – based on how well cisplatin killed the tumor cells growing in a dish.

For tumors categorized as responsive – those cancer cells that cisplatin killed most easily – 100 percent of the patients were alive and disease-free after two years. For those that showed an intermediate response, 83 percent of the patients were alive and disease-free after two years. And for those tumors deemed nonresponsive, only 58 percent of patients had two-year disease-free survival.

Cervical cancers can be divided into two main types based on how they look under a microscope – squamous cell carcinoma and adenocarcinoma. The nonresponsive number was even worse for patients diagnosed with the more common squamous cell carcinoma, with 46 percent disease-free survival at two years.

"Ideally, we would like to be able to design clinical trials for the nonresponsive patients," Schwarz said. "One chemotherapy drug isn't working for everyone, but there isn't going to be one explanation for why the chemo doesn't work. It's going to be 50 different explanations, and figuring that out is the challenge."

Schwarz is quick to point out the weaknesses of this study. In addition to the small number of patients, the lab test used was not ideal and should not be used to decide therapy for patients, she said. The investigators initially evaluated 75 tumors for chemotherapy response. And though some patients' data was not included because they did not adhere to the treatment regimen, 31 patients were excluded from the analysis because their tumor cells did not grow well in the lab.

"This is definitely not the definitive test," Schwarz said. "But I think our results should prompt investigators to think outside the box and start

generating new ideas about how best to treat this disease. The bottom line is a one-size-fits-all treatment for each patient is going by the wayside. As we develop personalized strategies, this is the sort of testing that can guide it."

**More information:** Grigsby PW, Zighelboim I, Powell MA, Mutch DG, Schwarz JK. In vitro chemoresponse to cisplatin and outcomes in cervical cancer. *Gynecologic Oncology*. Published online before print April 13, 2013. doi: 10.1016/j.ygyno.2013.04.005

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