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Extended-field IMRT does not increase duodenal toxicity risk

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A study of women with cervical or endometrial cancer who require treatment to the para-aortic (PA) lymph nodes can safely receive extended-field intensity modulated radiation therapy (EF-IMRT) without increased risk of duodenal toxicity, according to a study published in the July-August 2015 issue of *Practical Radiation Oncology* (PRO), the American Society for Radiation Oncology's (ASTRO's) journal focused on the clinical practice of radiation oncology.

IMRT is one of the radiation therapy (RT) treatment options for cervical and endometrial cancers. RT is employed to treat both known disease and to prophylactically treat lymph nodes that may harbor microscopic spread of cancer cells too small to be visualized by scans. PET/CT scans are frequently used to assess the lymph node in locally advanced cervical cancer. Unfortunately, PET/CT scans have a false-negative rate of 20-25 percent for PA disease, which could result in undertreating patients if they receive pelvis-only RT. EF-IMRT, to include both the pelvic and PA region, is recommended for patients who present with PA nodal disease. In addition, some patients with cervical and endometrial cancers may be found to have pelvic nodal disease on a PET/CT scan and have a higher risk of microscopic disease in the PA region. For these patients, the IMRT treatment field may be extended to treat the PA region prophylactically.

This single-institution, retrospective analysis included 76 patients with cervical or endometrial cancers who were treated with EF-IMRT to the PA lymph nodes—to treat known PA disease or for prophylactic intent.

The study included patients cared for at the University of Pittsburgh Cancer Institute, Pittsburgh, between 2005 and 2013. The median age of patients at treatment was 54 years (range: 26-84 years). Sixty four of the 76 patients (84.2 percent) had cervical cancer as their primary cancer type, and 12 patients (15.8 percent) had endometrial cancer. Forty-one patients were treated with EF-IMRT due to positive PA disease, and 35 patients were treated prophylactically. The median follow-up duration for all patients was 18.5 months (range: 4.1-91.7 months).

Two recent gynecologic studies[1,2], have examined the safety of EF-IMRT and in one, the volume of the duodenum receiving 55 Gy (V55) was found to be an important dosimetric predictor of duodenal toxicity. None of the patients in this study had V55 above 15 cm3, the previously published criteria for an increased risk of duodenal toxicity.

Utilizing the National Cancer Institute's Common Terminology Criteria for Adverse Events (CTCAE) scale, three of the 76 patients (3.9 percent) in this study were found to have Grade 3 acute gastrointestinal (GI) toxicity, which is classified as "requiring hospitalization or elective operative intervention indicated; disabling." Only three of the remaining 73 patients experienced Grade 2 GI toxicity, which indicates a "likely duodenal obstruction creating symptomatic, altered GI function."

"Our study confirms that when the duodenal dose was kept within the prescribed limits, V55 below 15cm3, patients who received EF-IMRT had very low rates of side effects and excellent regional control," said Sushil Beriwal, MD, the study's lead author and an Associate Professor of Radiation Oncology at the University of Pittsburgh Cancer Institute, Pittsburgh, specializing in gynecologic, breast and prostate cancers. "This is one of the largest studies to examine duodenal toxicity rate for EF-IMRT treatment of gynecologic malignancies. These findings are especially important for patients who have positive metastatic disease in the para-aortic lymph nodes; they are typically the patients with

advanced cervical and endometrial cancer, many of whom will likely receive concurrent chemotherapy, which can increase the risk of side effects and toxicity. EF-IMRT is an excellent option for durable control of their disease. We hope to see larger, randomized trials to further define and refine EF-IMRT for these patients."

More information: "Extended field intensity modulated radiation therapy for gynecologic cancers: Is the risk of duodenal toxicity high?" dx.doi.org/10.1016/j.prro.2014.10.013

1. Verma J, Sulman EP, Jhingran A, et al. Dosimetric predictors of duodenal toxicity after intensity modulated radiation therapy for treatment of the para-aortic nodes in gynecologic cancer. Int J Radiat Oncol Biol Phys. 2014;88:357-362.

2. Poorvu PD, Sadow CA, Townamchai K, Damato AL, Viswanathan AN. Duodenal and other gastrointestinal toxicity in cervical and endometrial cancer treated with extended-field intensity modulated radiation therapy to paraaortic lymph nodes. Int J Radiat Oncol Biol Phys. 2013;85:1262-1268

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