With respect to local control and toxicity, SBRT may be a reasonable method of boosting patients who cannot safely undergo brachytherapy boosts for locally advanced gynecologic malignancies.

Neilayan Sen, MD, Jessica Zhou, MD, Ryan Jozwiak, Yixiang Liao, PhD, Krystyna Kiel, MD; Rush University Medical Center

PURPOSE: Delivery of high doses of radiation within a prescribed period of time is associated with local control when treating primary or recurrent gynecologic cancers. Occasionally, patients can not undergo a brachytherapy boost. We report our experience with alternative stereotactic body radiation treatment (SBRT) boost.

MATERIALS AND METHODS: From 2012 to 2014, a total of 8 patients with locally advanced squamous cell carcinoma of the cervix (2 patients) and recurrent endometrial cancer in the vaginal cuff (6 patients) received an SBRT boost after pelvic external beam (EB) radiotherapy (range: 45–50 Gy). One patient received SBRT after EB and 2 high-dose-rate (HDR) brachytherapy fractions. Patients either refused brachytherapy or were high-risk (by medical comorbidities) for brachytherapy. Patients were immobilized using a CIVCO body frame (CIVCO Medical Solutions, Coralville, IA) with abdominal compression. Vaginal and fiducial markers were used to localize tumor at simulation and treatment. Doses typically used for brachytherapy were prescribed to D90 of the planning target volume (PTV) (0–5-mm expansion on clinical target volume [CTV] excluding the rectum when not involved by the tumor). Dose was limited by organ-at-risk tolerances. The Eclipse planning system (Varian, Palo Alto, CA) was used to generate RapidArc plans with 6-MV photons. Treatment was delivered using a True Beam STx linear accelerator (Varian, Palo Alto, CA). Daily cone-beam computed tomographies (CTs) were performed using the rectum, bladder, visible tumor, and markers for image guidance, and ExacTrac (BrainLab, Germany) was used to ensure precision of delivery. Tumor status and toxicities were recorded at regular follow-up intervals; toxicity was graded according to Common Terminology Criteria for Adverse Events version 4.0 (CTCAE v4.0).

RESULTS: Dose/fractionation schemes were 7 Gy × 2 for one patient (after two HDR brachytherapy fractions), 6 Gy × 5 for six patients, and 5.8 Gy × 5 for one patient. Cumulative equalized total dose in 2 Gy/fraction (EQD2Gy) to D90 of the target volume ranged from 74.6 Gy to 84.3 Gy (mean 81.3 Gy). Mean D2cc rectum and bladder doses were 66.3 Gy (range: 59.4–75.8 Gy) and 77.3 Gy (range: 69.6–83.6 Gy), respectively. Mean overlap between the rectum as contoured on daily cone-beam CTs and the PTV was 0.29 cc (range: 0.00–1.42 cc). There were no local recurrences at a mean follow-up of 14.5 months. One patient developed distant metastases at 7 months. One patient developed grade 3 vaginal fibrosis. No grade 4 toxicities were observed.

CONCLUSIONS: With respect to local control and toxicity, SBRT may be a reasonable method of boosting patients who cannot safely undergo brachytherapy boosts for locally advanced gynecologic malignancies.

Proceedings of the 97th Annual Meeting of the American Radium Society — americanradiumsociety.org

Source URL: http://www.cancernetwork.com/ars-2015/sbrt-boost-substitute-brachytherapy-definitive-treatment-gynecologic-malignancies-radiotherapy

Links: