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Abstract
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Pelvic Nodal Irradiation followed by A Stereotactic Body Radiation Therapy Boost for High Risk Adenocarcinoma of the Prostate: Early Outcomes of Over 400 Patients

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Abstract

Objective: Pelvic nodal irradiation for high risk prostate cancer has gained modern support with the publication of the ASCENDE-RT and POP-RT trials. Utilization of stereotactic body radiation therapy to radiobiologically escalate the dose to the prostate following nodal irradiation has been studied in limited numbers. Due to the unique radiobiology of prostate cancer with a low alpha/beta ratio, this approach has the potential to treat micrometastatic disease to the pelvic lymph nodes while exploiting the radiobiologic advantage of SBRT in escalating dose to the prostate with the boost. Here we report the results of the largest database of patients treated in this fashion.

Methods: A large single institutional database of 4,800 patients was interrogated to identify all those who underwent nodal irradiation followed by an SBRT boost to the prostate and seminal vesicles. In general, indications was high risk disease by D'Amico classification. Conventional fractionation was utilized to treat pelvic lymph nodes to a dose of 4500 cGy in 25 fractions of 180 cGy followed by a 3 fraction SBRT boost. All patients were treated using a robotic radiosurgical platform with fiducial tracking. Toxicity was evaluated using the CTCAE version 5.0. Biochemical relapse following radiotherapy was defined according to the Phoenix definition.

Results: A total of 460 patients were identified who underwent nodal irradiation (4500 cGy in 25 fractions) followed by a radiosurgical boost with a median age of 71 years. All patients were diagnosed with high risk adenocarcinoma of the prostate. The mean pretreatment PSA was 22.8 ng/mL. The majority (81%, n = 373) were treated in concert with ADT. The most common (80%, n = 366) prostate/seminal vesicle boost utilized was 2100 cGy in 3 fractions. The rate of severe genitourinary and gastrointestinal toxicity was 1% and 3%, respectively. The rate of genitourinary and gastrointestinal ⩾ grade 2+ toxicity was 7% and 7%, respectively. For those patients with at least 12 months of follow up (n = 186) a total of 15 PSA failures were identified for a bDFS of 91.9% (171/186).

Conclusion: In the largest cohort reported to date, pelvic nodal radiation followed by an SBRT boost in patients with higher risk prostate cancer appears to be safe and effective for the treatment of high risk prostate cancer. Longer term follow-up will be required to ultimately determine efficacy.