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Single Institution Experience with Radiosurgery for Gynecological Cancer

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Abstract
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Abstract

Objective:

1) To describe the use of stereotactic body radiotherapy (SBRT) in gynecological cancers.
2) To evaluate toxicity, local control, and overall survival in patients with gynecological cancer treated using radiosurgery.

Consolidation brachytherapy is a critical treatment component for gynecological cancer patients. Some patients unfortunately are unsuitable for brachytherapy for a variety of reasons. Conventional radiation therapy retreatment is rarely used because of toxicity. SBRT may prove to be a safe alternative in patients with recurrent or advanced gynecological tumors.

Methods: From 2009 to 2021, 73 patients with 89 tumors were treated with radiosurgery for gynecological malignancies. Four patients were included in more than 1 group.
Patients were divided in 4 groups according to the indications of SBRT.
Group 1: Patients undergoing radiosurgery as a boost after conventional radiation therapy. This group comprises 8 patients that were not candidates for brachytherapy.
Group 2: SBRT boost was used prior to conventional radiation therapy as a debulking technique because of large size tumors. This group consisted of 21 patients.
Group 3: This group of 23 tumors (22 patients) received salvage SBRT for recurrences after radiation therapy. There were 12/23 tumors that presented with local recurrences and 11/23 with elsewhere recurrences.
Group 4: There were 37 tumors (26 patients) that received SBRT for metastatic disease. Sites of disease were: lungs 10/37 (27%), liver 7/37 (18.9%), spine 6/37 (16.2%), pelvis 5/37 (13.5%), abdomen wall 3/37 (8.1%), brain 2/37 (5.4%), the retroperitoneum 2/37 (5.4%), the chest wall 1/37 (2.7%), and the bladder 1/37 (2.7%).
The 73 women had ages ranging from 37 to 91 with a median age of 66 years old. The primary sites originally treated were 33/73 cervical (45.2%), 26/73 uterine (35.6%), 9/73 ovarian (12.3%), 3/73 vaginal (4.1%), and 2/73 vulvar (2.7%). Of the 26 uterine primaries, 3 were sarcomas. Of the 3 vaginal primaries, 1 was a sarcoma. All patients were treated with Linac based SBRT using volumetric modulated arc therapy (VMAT). The total number of fractions used ranged from 1 to 10 with a dose per fraction from 5 to 20 Gy and a total dose ranging from 8 Gy to 60 Gy.

Results: The overall survival ranged from 1 to 145 months with a median of 13 months. The clinical and imaging follow up ranged from 1 to 118 months with a median of 12 months. There are 40 patients currently alive with a survival time ranging from 4 to 145 months and a median of 21 months. There are 33 patients who have died with a survival time ranging from 1 to 90 months and a median of 10 months. Four patients were lost on follow-up.
The analysis by group resulted in the following:
Group 1: The overall survival ranged from 6 to 145 months with a median of 25 months. Six patients are alive without evidence of disease (NED) and one patient is alive with disease. There was one patient lost in follow up.
Group 2: The overall survival ranged from 3 to 90 months with a median survival of 14 months. There are 11 patients who are alive without evidence of disease. Ten patients have expired with progression of distant metastases and local control of treated sites.
Group 3: The overall survival ranged from 5 to 57 months with a median of 15 months. Four patients are alive without evidence of disease. Seven are alive with disease, 6 have local control and 1 has progression of disease. Ten patients have expired with 6 having local control of the site treated and 4 with progression of

disease. There was one patient lost in follow up.
Group (4): The overall survival ranged from 1 to 78 months with a median of 10 months. Four patients are alive without evidence of disease. Six patients are alive with disease with 5 having local control of the site treated and 1 having progression of disease. Fifteen patients have expired with 12 having local control of the site treated and 3 with progression of disease. There was one patient lost in follow up.

Conclusion: SBRT was well tolerated when delivered to several sites including pelvic nodes, para-aortic nodes, or distant metastases. Gynecological tumors including recurrence appear to respond well to SBRT, with low rates of local failure even when used as salvage retreatment.