

Primary radiation as initial management in endometrial cancer: investigating EBRT, IMRT and HDR brachytherapy

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Objectives

For patients with endometrial cancer at increased risk of perioperative morbidity, primary radiation therapy is an effective alternative treatment option. However, there has been no consensus on radiation technique and little data on outcomes. Our aim was to identify factors which determine patient selection for primary radiation, investigate treatment efficacy of radiation compared to surgical management of endometrial cancer and

to evaluate different radiation modalities including external beam radiation therapy alone or with a boost of either high dose rate brachytherapy or intensity-modulated radiation therapy for differences in toxicities, recurrence-free interval, cancer-specific survival and overall survival.

Methods

The cancer registry database at our institution was searched for all patients

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diagnosed with endometrial cancer from 2004-2014. We identified 78 patients treated with primary radiation and randomly selected a comparator group of 136 patients treated with surgery up front. These patients were analyzed for demographic, clinicopathologic, and outcome variables. The radiation patients were subgrouped according to radiation technique: external beam radiation alone or with either high dose rate brachytherapy or intensity-modulated radiation therapy. Survival probabilities were estimated and plotted using the Kaplan-Meier method. Cox regression models were used to evaluate the effect of clinicopathologic and treatment characteristics on outcomes separately for each treatment type.

Results

Primary patient characteristic cited as the reason for undergoing primary radiation over standard of care included medical comorbidities (48.7%) and morbid obesity (43.6%). Treatment toxicities were similar between therapy groups. The 5-year recurrence-free interval was 65% for radiation vs 85% for surgery. The 5-year cancer-specific survival was similar (radiation 91%, surgery 98%). However, there was a substantial difference in the 5-year overall survival between radiation and surgery, 26% vs 92% respectively. Between radiation subgroups, we found no significant difference in primary reason for undergoing radiation, toxicity from treatment, recurrence-free interval, cancer-specific survival or overall survival. Age and BMI were significantly associated with overall survival in the RT group ($p < 0.01$, $p < 0.01$) in multivariate analysis.

Conclusions

There are several different radiation techniques utilized for inoperable endometrial cancer. Our study demonstrates that toxicities of radiation are comparable to surgery, recurrence and cancer specific survival are similar, but the overall survival in patients receiving primary radiation therapy is much worse due to high rates of death from intercurrent disease. Furthermore, intensity-modulated radiation therapy seems to be a reasonable alternative to brachytherapy, however boosting the total radiation dose via the addition of brachytherapy or intensity-modulated radiation therapy may not improve recurrence or survival.

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