Background

- The standard treatment for men with newly diagnosed metastatic prostate cancer (mPCa) is androgen deprivation therapy (ADT).

- Local radiotherapy (RT) to the prostate has traditionally been reserved for men who require symptomatic relief in patients with metastatic disease.

- However, local RT may have other benefits in addition to symptomatic relief.

- In the pre-metastatic niche model of cancer dissemination, the primary tumour primes distant metastatic sites through the release of circulating tumour cells and chemokines. By definitively treating the primary tumour and eradicating/reducing this persistent source of metastases, the progression of distant metastatic disease may also be reduced.

Purpose

Our study investigates the impact of local RT on overall survival (OS) in men with newly diagnosed mPCa.

Clinical studies examining the role of local therapy in mPCa are scarce. However, data from patients with localized prostate cancer show proof of concept that local treatment of the prostate can reduce distant metastases.

In two large randomized trials of radical prostatectomy (RP) versus observation, RP reduced distant metastases by 43% (hazard ratio [HR] 0.57, p<0.001) and 60% (HR 0.40, p<0.001).

Methods

- Retrospective, population-based study of patients
  - age >= 18 years
  - diagnosed with metastatic (M1) prostate cancer
  - in Manitoba

- Patients with neuroendocrine or small cell histology were excluded.

- Data was collected from Cancer Registry and electronic charts including age, T/N/M stage, PSA, Charlson comorbidity score, RT, surgery, systemic therapy, Gleason score, and ECOG performance status.

- Cox regression was used to predict OS. Likelihood ratio testing was used to identify factors associated with OS. A p value <0.05 was considered significant.

Results

- A total of 323 patients were included and 25 (7.7%) received RT to the prostate within 1 year of diagnosis.

- Median follow up was 2.21 years.

- Mean age was 71.9 years.

- Multivariable analysis showed:

<table>
<thead>
<tr>
<th>Model</th>
<th>RT to pelvis</th>
<th>HR</th>
<th>95% CI</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1 adjusted for chemotherapy, age, and ECOG</td>
<td>Any RT</td>
<td>1.034</td>
<td>0.60 - 1.77</td>
<td>0.9040</td>
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<tr>
<td>No RT</td>
<td>1</td>
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</tr>
<tr>
<td>Model 2 adjusted for chemotherapy, other systemic therapy, age, and ECOG</td>
<td>&gt;=50 Gy</td>
<td>0.589</td>
<td>0.27 - 1.28</td>
<td>0.1815</td>
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<tr>
<td>&lt; 50 Gy</td>
<td>1.631</td>
<td>0.78 - 3.41</td>
<td>0.1934</td>
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</tr>
<tr>
<td>No RT</td>
<td>1</td>
<td></td>
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</tr>
<tr>
<td>Model 3 adjusted for chemotherapy, other systemic therapy, age, and ECOG</td>
<td>&gt;= 1 yr post dx</td>
<td>0.336</td>
<td>0.15 - 0.76</td>
<td>0.0090</td>
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<tr>
<td>&lt; 1 yr post dx</td>
<td>0.788</td>
<td>0.40 - 1.56</td>
<td>0.4936</td>
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</tr>
<tr>
<td>No RT</td>
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</tbody>
</table>

Discussion

In this cohort of patients with mPCa, there was no association between RT to the prostate and OS.

RT within 1 year of diagnosis was associated with a worse OS, which may be confounded by selection bias of those doing well >1 year after diagnosis. Dose prescribed was also higher vs lower.

However, this study was limited by statistical power and additional investigation in a larger population is needed.

Future Directions

To analyze the timing of further metastatic sites with and without local prostate treatment. To analyze bone complications and utilization of palliative RT in patients with mPCa.

Acknowledgments

The research team members and staff at CancerCare Manitoba.

"It takes a village to raise a child." - African Proverb