Palliative Radiotherapy Utilisation within a Palliative Care Unit

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1 Ann Palliat Med 2017;6(Suppl 2):S140-S146. doi: 10.21037/apm.2017.09.07

Introduction
Palliative radiotherapy (RT) has been demonstrated to be efficacious for symptom management in advanced malignancy2 however concerns have been raised about its appropriateness in deteriorating or dying patients3.

Many of the symptom and clinical issues that arise in advanced cancer are shared across radiation oncology and palliative care, however limited data are available investigating the use of radiotherapy for inpatient palliative care patients.

Given the lack of available evidence, vulnerability of this patient cohort and the potential for both benefits and harms, the question of RT utilisation within the Barwon Health Palliative Care Unit (PCU) was raised.

Aim
The aim of the current project was therefore to evaluate the how, why, where, and when of palliative RT utilisation amongst patients admitted to a regional PCU.

Materials and Methods
A retrospective cohort study was undertaken. All patients admitted to the Barwon Health PCU between August 2011 and June 2016 who underwent RT during their admission were included.

A range of clinico-demographic and RT specific variables were collected.

Opioid consumption was recorded (where available) for those patients who received RT specifically for pain. Mean total opioid use was calculated for the week to RT and then for each subsequent week post-radiotherapy.

Demographic data were analysed descriptively. Wilcoxon Signed Rank Tests were used to compare opioid consumption before and after RT at time points one week, two weeks and three weeks. A Kaplan-Meier curve showing survival following commencement of RT was plotted.

The project was approved by the Barwon Health Research Ethics, Governance & Integrity Unit (Barwon Health reference 16/190).

Results
Sixty episodes of RT were provided to 51 patients during the study period with 54 admissions included in the final analysis. This equated to approximately three percent of all PCU admissions during the study period.

Table 1 demonstrates the clinico-demographic characteristics of the 54 PCU admissions. Table 2 shows that pain management was the commonest reason for RT treatment and the thoraco-lumbar and pelvis were the most commonly irradiated sites.

When RT was used for the specific indication of pain management single fractions were used 68% of the time.

Outcomes

<table>
<thead>
<tr>
<th>Time between commencement of radiotherapy and death (days)</th>
<th>Median (IQR)</th>
<th>Range</th>
<th>≥ 1 site</th>
<th>Concurrent corticosteroids</th>
<th>Pain control</th>
<th>Pain management</th>
<th>Pain intervention</th>
<th>Pain site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Days after RT</td>
<td>4</td>
<td>1-316</td>
<td>56 (11)</td>
<td>47 (87%)</td>
<td>47 (87%)</td>
<td>38 (70%)</td>
<td>38 (70%)</td>
<td>Multiple sites</td>
</tr>
</tbody>
</table>

As shown above the commonest discharge outcome was death with 20% and 43% of patients dying within 14 and 30 days of RT respectively.

Conclusions
A small proportion of all patients admitted to PCU received RT. Almost half of all patients died during their admission and the median survival post-radiotherapy was 36 days. This is in keeping with a previous study performed in a Saudi Arabian PCU4 however is four times longer than the median survival time for all patients who die in the Barwon Health PCU.

Response rates to RT were lower than have been previously reported for all-comers. This likely reflects, at least in part, issues with using opioid consumption as a marker of response. Attempts were made to also analyse pain scores as a further marker of RT efficacy however this was not possible due to considerable variability in pain assessment within the PCU.

This projects highlights that ongoing research is required to optimise the stratification of palliative care inpatients to RT.

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<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Median (IQR)</th>
<th>Range</th>
<th>Gender</th>
<th>Male (n=31)</th>
<th>Female (n=23)</th>
<th>Race</th>
<th>White (n=38)</th>
<th>Non-white (n=16)</th>
<th>Primary cancer</th>
<th>Non-small cell lung</th>
<th>Small cell lung</th>
<th>Neuroendocrine</th>
<th>Other</th>
<th>Brain</th>
<th>Skull</th>
<th>chest wall/ribs/lung</th>
<th>Thoracic spine</th>
<th>Pelvis/sacrum</th>
<th>Lumbar spine</th>
</tr>
</thead>
<tbody>
<tr>
<td>56 (28)</td>
<td>15-86</td>
<td>5-100</td>
<td>White</td>
<td>30 (78%)</td>
<td>8 (22%)</td>
<td></td>
<td>30 (78%)</td>
<td>8 (22%)</td>
<td>Non-small cell</td>
<td>16 (52%)</td>
<td>15 (48%)</td>
<td>6 (19%)</td>
<td></td>
<td></td>
<td></td>
<td>38 (70%)</td>
<td>11 (33%)</td>
<td>13 (39%)</td>
<td>4 (13%)</td>
</tr>
</tbody>
</table>

Conclusions: A small proportion of all patients admitted to PCU received RT. Almost half of all patients died during their admission and the median survival post-radiotherapy was 36 days. This is in keeping with a previous study performed in a Saudi Arabian PCU however is four times longer than the median survival time for all patients who die in the Barwon Health PCU. Response rates to RT were lower than have been previously reported for all-comers. This likely reflects, at least in part, issues with using opioid consumption as a marker of response. Attempts were made to also analyse pain scores as a further marker of RT efficacy however this was not possible due to considerable variability in pain assessment within the PCU. This projects highlights that ongoing research is required to optimise the stratification of palliative care inpatients to RT.