An Audit of 30 & 90 Day Mortality after 382 courses of external beam radiotherapy in unselected patients

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Introduction

Early mortality following external beam radiotherapy (EBRT) is not uncommon and a recent update of the Cancer Reform Strategy[1] recommended measurement of 30 & 90 day mortality after palliative and adjuvant/radical radiotherapy respectively.

While it is common practice to record deaths within 30 days of chemotherapy, this is less frequent following EBRT, despite local control and long-term survival being reported. The National Chemotherapy Advisory Group report in 2009 showed significant mortality rates within 30 days of chemotherapy[2]. Some patients were dying before any benefits of treatment may have been achieved, due to disease progression and possibly treatment-related toxicity. It is important to ensure that the same is not occurring following radiotherapy.

We are aware of only two audits in the UK regarding these end-points in unselected EBRT patients[3,4], ***with no national standard currently set.***

Aim

To assess early mortality following all radiotherapy courses over a two month period at our centre. 30 & 90 day mortality are the main outcome measures for palliative and non-palliative cases respectively, calculated from the end of actual (not planned) treatment that represents treatment-free survival days. Results are compared by treatment intent, cancer site and in palliative cases, by fraction number delivered. Intention to treat (ITT) is measured from radiotherapy referral to start of treatment.

Methods

A single-centre retrospective design was employed at The Sussex Cancer Centre, which provides radiotherapy to the majority of Sussex Cancer Network's 1.2 million population.

MOSAIQ™, an electronic radiotherapy scheduling program, linked to an in-house referral system, has recorded all delivered EBRT since October 2011. Using this program, unselected patients undergoing EBRT within a two month period (February-March 2012) were identified.

Measured data included date of treatment, protocol, cancer site, age, intent, number of fractions and survival. Intention to treat was measured in days from referral date to date of first treatment.

Adjuvant and radical courses were counted as non-palliative to reduce coding anomalies, maintaining consistency with previous data[4]. Mortality data was obtained from GP records and hospital databases. Re-plans and boosts were merged with original courses, with end date being the final date of all radiotherapy given. EBRT for different sites in the same patient were treated as separate courses unless treatment dates overlapped.

Results

- **417 EBRT courses were delivered with validated survival data for 382 obtained (91.6%).**
- **Average age of the sample was 67.2 years with breast, prostate, skin and lung being the most common cancer sites, shown in figure 1.**
- **Treatment intent was 42.7% palliative and 57.3% non-palliative.**
- **30 day mortality for palliative cases was 12.9%, with fractions delivered shown in figure 2.**
- **Lung cancer comprised 30% of these deaths.**
- **90 day mortality was 2.3% for the non-palliative group.**
- **There were no significant differences in age or ITT between non- and early mortality groups.**

Figure 1. Cancer Site of Total Sample

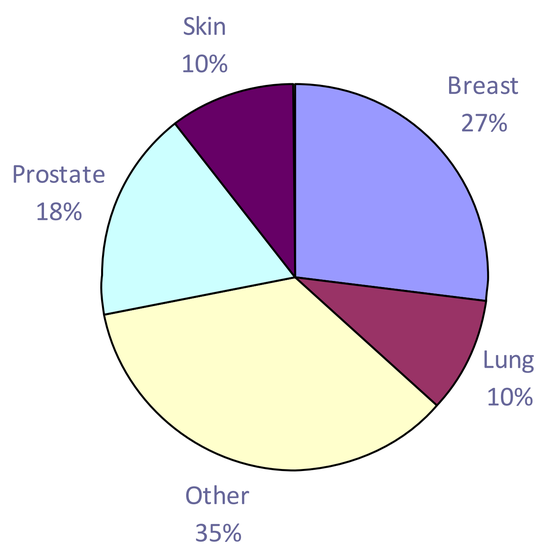

Figure 2. Fractions delivered amongst Early Mortality Cases in the Palliative Group

Fractions Delivered	% cases (n = 21)
1	57.1
2-5	38.1
6-10	4.7
11-20	0

Action Plan

Results were presented to the Department and to the Sussex Cancer Network. On re-audit, performance status can be assessed after recently becoming a component of the department's online radiotherapy referral form. Discussion with clerical managers has addressed only 59.6% of community deaths being recorded on hospital systems. Plans for re-audit have therefore been made with more streamlined online data collection.

Discussion

This is the third audit of this kind and shows that **90 day mortality is <5% for non-palliative groups and 30 day mortality for palliative patients is 12.9%.** The subset analysis of mortality by delivered fractions supports appropriate selection of patients for palliative radiotherapy. Our results are in-keeping with previously presented data[3,4], as shown in figure 3. **Together, these values could form a national standard for early mortality rates following EBRT.**

Figure 3. Comparison of results to previous audits

	Leeds[4]	Cambridge[3]	Brighton
Palliative Mortality <30 days	12%	8.9%	**12.9%**
Non-palliative Mortality <90days	2.4%	-	**2.3%**

References

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