

Mortality following palliative radiotherapy – are we over-using fractionated treatments?

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Background

Early mortality following palliative radiotherapy is not uncommon, but published data are lacking. Palliative treatments can only be regarded as successful if the patient lives to enjoy a period of post treatment relief. In those who may be nearing the end of life, it is important to limit time spent undergoing treatment, while still delivering adequate palliation.

Aim

To assess mortality following palliative radiotherapy at our centre, examining factors that might be associated with early death, including waiting times, inpatient admission, and WHO performance status.

It is common practice to record deaths within 30 days of chemotherapy, but deaths after radiotherapy are less frequently reviewed. This audit assessed 30 day mortality as this figure is comparable to chemotherapy data. As the benefits of palliative radiotherapy may not be apparent for several weeks, 42 day mortality was also recorded.

Standard

No published standard exists. Causality is not a significant issue in palliative radiotherapy. Potential early symptom relief makes treatment worthwhile in poor prognosis patients [1,2,3]. A death rate of 10% at 30 days is not considered unreasonable.

Methodology

This was a retrospective audit. Radiotherapy details, case notes and electronic medical records were examined for all patients completing palliative radiotherapy at our centre in January 2011. For patients from surrounding catchment areas, GPs were contacted to provide date of death or date last seen.

Results

124 patients were audited. The average age was 68 years (range 19-91). The majority of patients had lung (29), prostate (26), or breast carcinomas (20), but most tumour types were represented.

Bone pain was the indication for referral in 58 patients; a further 14 presented with cord compression. Whole brain radiotherapy was delivered to 14 patients. 11 patients received palliative lung treatments, and 3 completed a palliative course for GBM. 24 received radiotherapy for soft tissue disease, ranging from skin metastases to pelvic treatments.

488 fractions were prescribed, and 481 delivered, to patients completing treatment in the month. Two patients did not receive their entire prescribed course, accounting for the 7 missed fractions. 13 patients had multiple sites treated. 466 fractions were delivered on megavoltage linear accelerators, and 15 fractions on a kilovoltage Pantak machine.

11 patients died within 30 days of completing radiotherapy (8.9%); 24 within 42 days (19.3%). Average time from consent to radiotherapy was 7.6 days. Variation in waiting times was not associated with altered mortality.

Mortality can be measured from the referral date, start date, or completion date. The discrepancies between these dates did not significantly alter the 30 day mortality, but had a greater effect on 42 day mortality (Table 1). We chose to use the data from the end of radiotherapy as these represented treatment free survival days.

Table 1: Mortality rates assessed by differing criteria

	From date of referral for RT	From start of RT	From end of RT
Deaths within 30 days	10 (8.1%)	11 (8.9%)	11 (8.9%)
Deaths within 42 days	15 (12.1%)	19 (15.3%)	24 (19.3%)

19 out of 124 patients were admitted for at least part of their radiotherapy and of these 5 (26%) had died within 30 days, and 8 (42.1%) within 42 days. For the 105 outpatients, these figures were 6 (6%), and 16 (15.2%) respectively.

Clinical deterioration while on treatment is an indisputable predictor of poor outcome. Two of our patients fell into this category and both died within 42 days.

Performance status was associated with mortality. 1.6% of those PS 0-1 died within 30 days, on average receiving 3.9 fractions. This rose to 46.7% for those PS 3-4, receiving 3.3 fractions each (Table 2).

Table 2: Mortality and number of fractions in patients of differing Performance Status groups.

	No of patients	Deaths within 30 days	Deaths within 42 days	Number of fractions	Average fractions per patient
All patients	124	11 (8.9%)	24 (19.3%)	452*	3.6
PS=0/1	61	1 (1.6%)	7 (11.5%)	240	3.9
PS=2	44	3 (6.8%)	10 (22.7%)	159	3.6
PS=3/4	15	7 (46.7%)	7 (46.7%)	49	3.3
PS=unknown	4	0 (0%)	0 (0%)	4	1.0

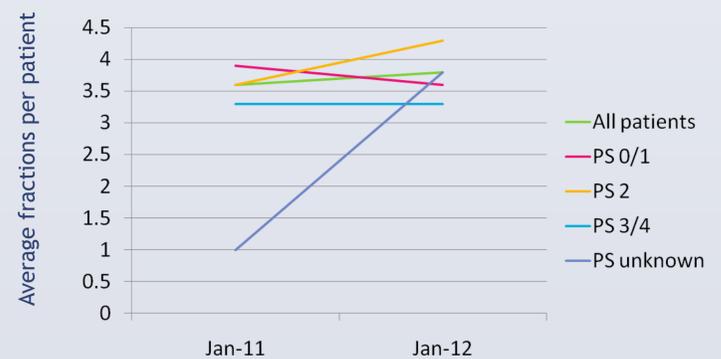
* This figure is lower than the total fractions delivered in the month, to account for the 13 patients who had multiple sites treated.

Action Plan

Results were presented to the Department. The average number of fractions delivered to patients did decrease as the performance status worsened, but not considerably. Patients with long fractionation schedules and early mortality were highlighted. Clinicians were requested to consider shorter treatment plans [4].

Results of re-audit

Re-audit was carried out for all patients completing palliative radiotherapy in January 2012, with emphasis on performance status and number of fractions delivered. 117 patients were included in this re-audit, and PS was available for 106. 55 patients were PS 0/1, 33 were PS 2 and 18 patients were PS 3/4. A total of 443 fractions were delivered.



Discussion

Re-audit showed that prescribing practices had not changed and those of poor PS were still receiving on average 3.3 fractions each.

Clinicians are notoriously inaccurate at predicting prognosis. As a general rule survival is overestimated [5,6]. The strongest predictor of early mortality following palliative radiotherapy in our audit was performance status. Few would argue it is inappropriate to treat patients likely to succumb to their disease rapidly with a single fraction. The potential early benefit, easing a patient's last few days, outweighs the inconvenience of a single hospital visit.

However, a balance needs to be achieved between the time required to undergo palliative radiotherapy, and the potential benefits. Shorter fractionation schedules improve the patient's quality of life by reducing inroads made into their remaining days, and also have a positive impact on limited radiotherapy resources.

References

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