

Comparison of Patient-Reported Outcomes with Single Versus Multiple Fraction Palliative Radiotherapy for Complicated Bone Metastases

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Abstract

Purpose: We compared patient reported outcomes (PROs) between single fraction (SF) and multiple fraction (MF) radiotherapy (RT) for patients with complicated bone metastases (CBM) in a population-based cohort.

Materials and Methods: All provincial cancer centres participated in the Prospective Outcomes and Support Initiative (POSI), to record PROs prior to and 3-4 weeks following RT for bone metastases. Patients treated in BC between May 2013 and January 2015 who provided PROs before and after RT were identified. PROs were standardized and designed to assess patients' perception of pain, function and symptom distress using a non-dichotomous, ordinal, 5-point scale. CBM was defined as neurological compromise and/or a pathological fracture.

Results: 968 patients completed both pre and post-RT PRO assessments, of which 335 (35%) were categorized as CBM. Amongst the CBM, 38% received SFRT and the three most common sites treated were spine (58%), pelvis (18%) and extremities (17%). Amongst patients with CBM, there were no significant differences in changes in mean PRO scores for total (3.34 vs. 3.71 point improvement; $p=0.37$), pain (1.21 vs. 1.30 point improvement; $p=0.30$), function (0.78 vs. 1.06 point improvement; $p=0.99$) or degree of symptom frustration (1.34 vs. 1.35 point improvement; $p=0.98$) between patients who received SFRT vs. MFRT. Likewise, no differences were observed between mean PRO scores amongst uncomplicated bone metastasis cases for total score, pain, function and symptom distress (3.52 vs. 3.59, $p=0.71$; 1.38 vs. 1.27, $p=0.65$; 0.86 vs. 0.93, $p=1.00$; 1.28 vs. 1.40, $p=0.82$) between SFRT and MFRT respectively. Amongst patients with painful CBM, 72% vs. 74% ($p=0.74$) achieved a pain overall response and 65% vs. 62% ($p=0.56$) achieved a pain partial response for SFRT and MFRT respectively. However, pain CR (20% vs. 32%; $p=0.02$) favoured MFRT. There were no differences in the improvement in total (77% vs. 83%; $p=0.17$), or symptom frustration scores (77% vs. 78%; $p=0.83$) for SFRT and MFRT respectively. However, functional improvement occurred more commonly in the MFRT group (69% vs. 81%; $p=0.04$).

Conclusions: In our study, improvements in PRO for pain and symptom frustration for patients with CBM were similar between SFRT and MFRT supporting the use of hypofractionated regimens in these clinical settings. However, MFRT may be more likely to achieve resolution of

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pain and improve function.