

Single-fraction radiotherapy for bone metastases

New research suggests that in patients with mostly non-spine bone metastases, single-fraction stereotactic body radiotherapy (SBRT) could be non-inferior to standard multifraction radiotherapy (MFRT).

Quynh-Nhu Nguyen (MD Anderson Cancer Center, Houston, TX, USA) and colleagues did a single-centre, randomised, phase 2, non-inferiority trial of 160 patients with radiologically confirmed painful bone metastases. The patients were randomly assigned (1:1) to receive single-fraction SBRT (at a dose of 12 Gy for ≥ 4 cm lesions or 16 Gy for < 4 cm lesions; $n=81$) or MFRT (30 Gy in 10 fractions; $n=79$). The primary endpoint was pain response, defined according to international consensus criteria as a combination of pain score and analgesic use. The non-inferiority margin was defined as 10%.

In the intention-to-treat population, the proportion of pain responders (complete responses and partial responses) at 1 month was 36 (44%) of 81 patients in the single-fraction SBRT group versus 24 (30%) of 79 in the MFRT group ($p=0.18$), and at 3 months was 31 (38%) versus 17 (21%) ($p=0.05$). However, in a per-protocol analysis of evaluable patients who actually received treatment according to trial protocol, there were more pain responders in the SBRT group than in the MFRT group at 2 weeks (34 [62%] of 55 patients vs 19 [36%] of 52 patients; $p=0.01$), at 3 months (31 [72%] of 43 vs 17 [49%] of 35; $p=0.03$), and at 9 months (17 [77%] of 22 vs 12 [46%] of 26; $p=0.03$). No differences were noted between the groups in terms of adverse events or quality-of-life scores.

Nguyen explained, "This is the first non-spine bone metastases

trial comparing higher dose single fraction radiotherapy vs multifraction standard fractionated radiotherapy for patients with painful bone metastases." According to Andrew Hendifar (Cedars-Sinai Medical Center, Los Angeles, CA, USA), "Improved efficacy and patient convenience support the use of single fraction stereotactic body radiotherapy for patients with painful bone metastases." Tetsuo Saito (Kumamoto University Hospital, Kumamoto, Japan) said, "This is an important hypothesis-generating study that suggests quick and effective pain palliation after single-fraction stereotactic radiotherapy." However, he added, "The superiority of stereotactic radiotherapy over conventional radiotherapy should be tested in phase 3 studies."

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