Spine stereotactic body radiotherapy

Zeng et al. retrospectively reviewed a prospective spine SBRT database for cervical spine metastases and sacral metastases. Patients were followed at 2- to 3-mo intervals with a clinical visit and full spine magnetic resonance imaging (MRI) and they report overall survival (OS), vertebral compression fracture (VCF), and MR imaging-based local control (LC) rates.

Fifty-two patients and 93 treated spinal segments were identified. Fifty-six segments were within the cervical spine and 37 within the sacrum, the median follow-up was 14.4 and 19.5 mo, and the median total dose/number of fractions was 24 Gy/2, respectively. Cumulative LC at 1 and 2 yr were 94.5% and 92.7% for the cervical cohort, and 86.5% and 78.7% in the sacral cohort, respectively. Lack of posterior spinal element involvement in the cervical spine ($P < .0001$) and absence of epidural disease (hazard ratio 0.275, 95% confidence interval 0.076-0.989, $P = .048$) in the sacral cohort predicted LC. Median OS was 16.3 and 28.5 mo in the cervical spine and sacrum cohorts, respectively. Two cases of sacral VCF, 1 brachial plexopathy, and 1 lumbar-sacral plexopathy were observed.

Although high rates of LC were observed, strategies specific to the sacrum may require further optimization [1].

Eighty patients treated between October 2008 and February 2012 with postoperative SBRT were identified.

The median follow-up was 8.3 months. Thirty-five patients (44%) were treated with 18-26 Gy in 1 or 2 fractions, and 45 patients (56%) with 18-40 Gy in 3-5 fractions. Twenty-one local failures (26%) were observed, and the 1-year LC and overall survival (OS) rates were 84% and 64%, respectively. The most common site of failure was within the epidural space (15/21, 71%). Multivariate proportional hazards analysis identified systemic therapy post-SBRT as the only significant predictor of OS ($P = .02$) and treatment with 18-26 Gy/1 or 2 fractions ($P = .02$) and a postoperative epidural disease grade of 0 or 1 (0, no epidural disease; 1, epidural disease that compresses dura only, $P = .003$) as significant predictors of LC. Subset analysis for only those patients (n = 48/80) with high-grade preoperative epidural disease (cord deformed) indicated significantly greater LC rates when surgically downgraded to 0/1 vs 2 ($P = .0009$).

Postoperative SBRT with high total doses ranging from 18 to 26 Gy delivered in 1-2 fractions predicted superior LC, as did postoperative epidural grade [2].

1)
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2)
Al-Omair A, Masucci L, Masson-Cote L, Campbell M, Atenafu EG, Parent A, Letourneau D, Yu E, Rampersaud R, Massicotte E, Lewis S, Yee A, Thibault I, Fehlings MG, Sahgal A. Surgical resection of epidural disease improves local control following postoperative spine stereotactic body radiotherapy. Neuro Oncol. 2013 Oct;15(10):1413-9. doi: 10.1093/neuonc/not101. PubMed PMID: 24057886; PubMed Central PMCID: PMC3779044.