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Spinal Instability Neoplastic Score (SINS) Outcomes After Spine Stereotactic Body Radiation Therapy (SBRT): A Large Single-Center Institutional Experience

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Abstract
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Abstract

Objectives:

Spine stereotactic body radiation therapy (SBRT) for the treatment of metastatic disease is being increasingly utilized as an alternative to palliative external beam radiation therapy (EBRT) regimens owing to improved pain and local control. Risk of vertebral compression fracture (VCF) remains a significant concern following spine SBRT. We investigated our institutional experience with spine SBRT as it relates to VCF and spinal instability neoplastic score (SINS).

Methods:

The records of 125 patients with 155 spinal lesions treated with SBRT between 2007 and 2022 were reviewed. Clinical and dosimetric information was abstracted from the medical record. Endpoints were change in SINS, VCF rate, and pain control.

Results:

Median dose and number of fractions used was 24 Gy and 3 fractions. The median GTV was 25.8 cm3. Independent of spinal cord level, there was a significant decrease in pain (3.5 vs 1.4, p< 0.01) and SINS (7.1 vs 5.8, p< 0.01) after spine SBRT. There was no difference in SINS or pain reduction by spinal cord level. There were 12 cases (9.6%) of post-SBRT VCF in patients without prior kyphoplasty compared to no cases in the 15 patients that underwent kyphoplasty prior to SBRT, which trended towards significance (p=0.06).

Conclusion(s):

Spine SBRT is an effective treatment to reduce spinal instability and pain in patients with metastatic disease. Kyphoplasty provides excellent protection against VCF and should be considered for patients at risk for fracture.