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Novel Therapeutic Approach to a Solitary Vertebral and Para-Vertebral Body Metastasis: Long-Term Follow-Up

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Abstract

Objectives:

Historically, spinal metastases were treated only with palliative intent. However as local and systemic therapies continue to improve, advanced imaging enables the more frequent detection of metastases in their earlier phases of growth. Herein we report a patient with long-term follow up after combined IMRT and radiosurgery for an asymptomatic T8 spinal metastasis secondary to primary lung cancer.

Methods:

Background: A 78-yr old male underwent the surgical resection of a seemingly solitary 26mm squamous cell carcinoma of the left lung in 2009. However pathologic study of the resected specimen revealed a 1.1mm satellite lesion, 14mm from the dominant tumor, thereby upstaging the initial diagnosis to pT4pN0M0.

Post operatively, the patient underwent 3 cycles of Taxol and Carboplatin, followed by surveillance CT imaging. In June 2011, 21 months after surgery, CT showed an asymptomatic, 2.6 cm AP x 4.5 cm TR x 2.7 cm CC, osteolytic lesion involving the right T8 pedicle and lamina, extending to right 8th rib, costovertebral and costotransverse joints, accompanied by a 4.3 cm x 2.7 cm adjacent posterior soft tissues mass. MRI and PET/CT confirmed no other metastases. CT-guided needle aspiration of the T8 lesion revealed poorly-differentiated carcinoma consistent with the patient's known lung primary.

Following the diagnosis of metastasis, the T8 vertebral body and gross tumor were treated with combined radiation modalities. Initially, a 9-field IMRT was used to deliver 40Gy at 2Gy/day to the T8 vertebral body and also all other soft tissue tumor visualized on computerized imaging. Subsequently a single radiosurgical fraction of 10Gy was delivered via CyberKnife just to the tumor volume, thereby resulting in a total lesion dose of 50Gy. The maximum combined spinal cord dose from both plans was kept below 45Gy.

Results:

Result: Repeat PET/CT imaging at 3 months showed disappearance of the T8 lesion, a finding that persists through 10 years of post-XRT follow up. At last follow-up (10 years after radiation treatment), the patient remains neurologically intact and pain free with no evidence of residual disease. At age of 90 he still works on his 20-acre farm, lives independently while performing all his ADLs.

Conclusion(s):

Conclusion: In carefully selected spinal metastasis patients, conventionally fractionated XRT combined with radiosurgery can result in a complete tumor response, potentially rendering some patients cancer-free. While even after a decade of follow-up the likelihood of cure from this approach remains unknown, it did nevertheless provide our patient protracted disease free survival along with a very high quality of life.