Outcomes of Hypofractionation for Early Stage and Locally Recurrent Non-Small Cell Lung Cancer

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Stereotactic ablative radiotherapy (SABR) is the standard of care for medically inoperable early stage non-small cell lung cancer (NSCLC) patients. However, due to tumor size, location, and dosimetric limitations, not all patients can undergo SABR. At our institution, we have treated these patients with a hypofractionated regimen of 60 Gy in 4 Gy daily fractions. In this study, we aim to determine the clinical outcomes of NSCLC patients treated with this regimen.

**Purpose**
- Median survival from diagnosis was 25 months
- Median survival from treatment was 21 months

**Results**
- Median tumor size: 35 mm (range 16-75)
- Median PTV size: 79.5 ml (range 20.3-244)
- Overall survival was 89% at 1 year and 28% at 3 years
- Progression free survival was 67% at 1 year and 38% at 3 years
- There were 2 local failures in 38 consecutive patients
- A single instance of grade 3 respiratory toxicity was reported, but there were no grade 4-5 toxicities

**Materials/Methods**
- Retrospective review of 38 consecutive NSCLC patients treated with 60 Gy in 4 Gy fractions (BED10=84) from 2007 to 2014
- All patients underwent 4D-CT simulation, and ITV expanded 5 mm to create PTV
- Treatment was delivered using a stereotactic immobilization system and daily CBCT image guidance
- CT or PET-CT scans were obtained at 3-6 month intervals following treatment, and toxicities were scored using CTCAE 4

**Demographics**
- Median age: 72 (range 57-90)
- Median follow up: 11.5 months (range 1-60)

**Re-irradiation vs New Lesion:**
- Log-rank P=0.0003

**Conclusions**
- 60 Gy in 15 daily fractions was well tolerated with minimal toxicities
- Despite having a BED10<100, this regimen resulted in favorable local control and overall survival rates in patients who are not candidates for SABR
- Patients receiving this regimen as re-irradiation did not experience any increased toxicity compared to new sites of disease, but they did have overall worse survival due to distant progression