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Prospective evaluation of SBRT for definitive management of medically-inoperable lung cancer

Arica Hirsch [1] , Angelica Green [2] , Majid Mohiuddin [3] , James Ruffer [2]

1. Radiation Oncology, Advocate Lutheran General Hospital, Chicago, IL 2. Illinois Cyberknife at Advocate Lutheran General Hospital 3. Oncology, Advocate Lutheran General Hospital

Corresponding author: Arica Hirsch, ahirsch@chicagocancer.org

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Abstract

Objectives: In patients with clinical stage I NSCLC, surgical resection is the recommended therapy. However, in those patients deemed medically inoperable, Stereotactic Body Radiation Therapy (SBRT) provides an effective non-invasive alternative. We prospectively evaluated treatment outcomes of SBRT in early stage, medically inoperable NSCLC patients treated between 2011 and 2014.

Methods: 67 patients with medically-inoperable, primary NSCLC were evaluated in this study with a prospectively maintained database between 12/27/2011 and 4/29/2014. 25 males and 42 females were included, between 60 to 90 years of age. Histologies are as follows: adenocarcinoma (37), non-small cell carcinoma, NOS (5), squamous cell carcinoma (21), and other (4). 25 patients underwent fiducial placement. Patients received a total dose of 45-60Gy in 3-5 fractions. The prescription isodose line ranged between 58% -80% and the tumor volumes measured between 3.86cm3 and 153.93cm3. Acute and late toxicities were graded with CTCAE Version 3.0. Study outcomes included: local control (LC), regional control (RC), distant control (DC), overall survival (OS), acute and late toxicities.

Results: With a median follow-up of 18.3 months, LC, RC and DC rates were 97%, 80.6%, and 85% respectively, and overall survival, 75%. Grade 1 and 2 dyspnea was observed in 10% and 5% of patients, respectively, and grade 1 cough in 20% of patients. No clinically significant pneumonitis was experienced in this study. Local control was examined as a function of tumor size, tracking technique and dose-fractionation. Only dose-fractionation was found to correlate with local control rates (p=0.034).

Conclusions: Stereotactic Body Radiation Therapy (SBRT) is an effective mode of therapy for medically inoperable patients with early stage NSCLC. These results are comparable to those described in the literature for surgical resection in this patient population, suggesting that SBRT can be an equally effective non-invasive alternative for appropriately selected patients.

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