

Correlation of PET response to treatment outcomes in patients treated with Trimodality therapy for locally advanced non-small cell lung cancer

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Aim: To determine the impact of the FDG-PET/CT for treatment response and outcomes after preoperative chemo-radiation therapy (CRT) for locally advanced non-small cell lung cancer (NSCLC) patients.

Materials and Methods: A retrospective review of 22 charts was done. Patients (pts) had either operable N2 disease or bulky hilar disease (T1-3, select T4, N0-2, stage II and IIIA, resectable chest wall disease), potentially resectable after CRT. Trimodality treatment consisted of weekly Carboplatin (C, AUC of 2) and Paclitaxel (P, 50 mg/m²) during RT, 50.4 Gy, surgical resection and additional adjuvant C (AUC 6) day 1 and P 100 mg/m²/wk days 1, 8, and 15 every 4 wks x 3. The pre- & post-treatment PET data information, standard uptake values (SUV) were used to assess the outcomes. The pathological response rates, recurrence free survival (RFS) and overall survival (OS) were estimated using Kaplan-Meier curve.

Results: Median follow-up was 41.7 months (range: 4.9-75.7). Median age was 60 years (48-78). Twelve patients had squamous histology and 9 adenocarcinoma. Ten pts had clinical T3, one T4 and 16 had clinical N2 disease. Median primary tumor size was 4 cm (range: 1.1-8). Median RT dose was 50.4 Gy (range: 40-54). Lobectomy was done in 9 pts, pneumonectomy in 8, 3 bilobectomy and 2 wedge resection. Pathologic CR at primary site was noted in 19 (86%) pts and in 11 pts (52%) at nodal sites. Median interval from completion of RT to PET evaluation was 19 days. The median pretreatment SUV for the primary lesion and lymph node (LN) regions was 11 (2.9-31.2) and 0 (0-13.7). Post-treatment SUV was 0 (0-9.3) and 0 (0-6.7) for both sites respectively. Median drop in SUV for primary site was 7.75 (0.9-31.2, p= 0.01) and 0 for LN (-1.5-13.7, p= 0.37). Median survival was 49.7 months (43.4 vs. 49.7 months at SUV of < vs. ≥ 7.75; p= 0.62). There was no difference in survival when the drop in SUV at 3 was estimated (49.7 vs. 44.3 months with SUV of < vs. ≥ 3, p= 99). Loco-regional failures were noted in 4 pts (18%): 3 local & 1 pt with regional failure. Recurrence free survival was 41.1 months and no difference in RFS was noted in relation to the SUV values at 7.75 (p= 0.54) and 3 (p= 0.99).

Conclusions: In our series, the drop in SUV at primary site correlated with best pathological CR rates after the trimodality therapy and improvement in RFS and OS.

Biography

Aruna Turaka joined the staff of Fox Chase's Radiation Oncology Department in 2009. I have special interest in treating lung cancers with different RT techniques including IMRT, IGRT and SBRT. I also specialize in treating patients with CNS malignancies, Lymphomas (including TBI), CNS Lymphoma and Plasmacytomas. My philosophy has always been to provide the best patient care to improve the quality of life for her patients.

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