

DETERMINANTS OF SUCCESS IN EGFR MUTATION STATUS ANALYSIS IN EBUS-TBNA SPECIMENS: THE ROLE OF PET-CT

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Objectives: Endobronchial Ultrasound guided Transbronchial Needle Aspiration (EBUS-TBNA) is useful in obtaining Epidermal Growth Factor Receptor (EGFR) mutation status in patients with advanced Non-Small Cell Lung Cancer (NSCLC), but determinants of successful EGFR mutation status analysis remained unknown.

Methods: We retrospectively reviewed case files from patients undergoing EBUS-TBNA in our Division to search for determinants of success in obtaining EGFR mutation status.

Results: 93 patients undergoing EBUS-TBNA were identified between January 2012 and March 2013. Of these, 58 were diagnosed with NSCLC and 14 patients had PET-CT performed with SUV data available. Twenty-seven (46.55%) underwent testing for EGFR mutation status, with 12 patients tested positive and 6 rejected. Our yield was 78% with an EGFR mutation rate of 57%. Bivariate correlation analysis showed that females ($r=0.523$, $p=0.015$), never smokers or light smokers ($r=0.523$, $p=0.015$) were the predictors of EGFR mutation status. Lesion sizes, number of passes, FEV1, duration of procedure and SUV on PET-CT were not correlated to EGFR mutation status. For the predictors of success in EGFR testing, number of passes ($r=-0.463$, $p=0.015$) and SUV on PET-CT ($r=0.635$, $p=0.02$) were the only predictors of success in EGFR testing. Receiver Operations Characteristics (ROC) curve (Figure) showed that with a SUV cut-off of 9.6 or more conferred a sensitivity of 66.7% with a specificity of 80%, with an AUC of 0.933 (95% CI 0.782-1.084, $p=0.028$) in predicting rejection in EGFR testing for mutation status.

Conclusion: In our Chinese cohort of advanced NSCLC with mediastinal nodal involvement, we were unable to demonstrate an effect of SUV on PET-CT scans and EGFR mutation status, although we showed that patients with high SUV (>9.6) could predict inadequacy of cellular material in obtaining EGFR status in EBUS-TBNA samples. Furthermore, the number of EBUS-TBNA passes also predicts success in EGFR testing.

ROC Curve for predictor of SUV in predicting rejection in EGFR mutation status

