The suitability of cytology and small biopsy specimens for EGFR mutation testing in metastatic lung cancer 
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Purpose: Obtaining a proper specimen for diagnostic pathology and genetic analysis can be challenging in some patients. The purpose of this study was to examine the diagnostic yield for different specimen types submitted for epidermal growth factor receptor (EGFR) mutation testing in patients with metastatic non-small cell lung cancer (NSCLC).

Methods and Materials: A multicentre retrospective study was conducted of patients with a pathologic diagnosis of non-small cell lung cancer (NSCLC).

Results: For 1499 patients, the pathologic diagnosis was determined from histology in 945 and cytology in 554. Six hundred twenty-seven (41.8%) of these patients had EGFR mutation testing. Mutation testing was requested in a higher proportion of patients with histology compared to those with cytology, 48.6% (459/945) versus 30.3% (168/554), respectively (p < 0.001). In patients with histology the diagnostic yield was 88.2% (19.8% EGFR+; 68.4% EGFR wild type (WT); 17.9% non-diagnostic). There was no statistically significant difference in diagnostic yield (p = 0.063) or mutation rates (p = 0.86) between the two specimen types. The histology and cytology cohorts were no different for age (p = 0.70), ECOG performance status (p = 0.39), and gender (p = 0.24). By location, specimens were obtained from the primary tumour in 317 (50.6%), thoracic lymph node in 87 (13.9%), metastatic site in 158 (25.2%), and pleura/pleural fluid in 65 (10.4%). The diagnostic yields from these sites were 84%, 87%, 91%, and 97%, respectively.

Conclusions: For EGFR mutation testing, oncologists should not feel limited by biopsy site or specimen type. Cytology is sufficient for testing in most patients, and the diagnostic yield is comparable to histology.
Item EORTC-QLQ-C30, its corresponding 13-item lung cancer supplement, and the EuroQol disease-generic questionnaire. Indirect costs of productivity loss were evaluated using the short form health and labor questionnaire, which includes work absences, reduced efficiency at work, and substitution for unpaid work. Time to deterioration (TTD) in HRQOL was calculated from time to randomization to first appearance of clinically significant change. TTD was analyzed using Cox proportional hazard models. The Embase and MEDLINE databases were systematically reviewed to obtain English language articles investigating patient-reported HRQOL after SABR for ES-NSCLC up to August 1, 2015. Review articles, meta-analyses and decision analyses were excluded. Relevant data regarding patient characteristics and study outcomes were abstracted and analyzed.

Results: In the ROSEL study, only TTD of global health status was significantly worse on univariable modeling for surgical patients compared to SABR (HR 0.19, p = 0.038). Indirect costing analysis revealed lower total productivity costs to society for SABR compared to surgery (£95 versus and £3,513, p = 0.044). Patients reported a lower total degree of hindrance in paid and unpaid work for SABR compared to surgery (mean hindrance scores for SABR was 6.0, for surgery 6.9, p = 0.019). In the systematic review, nine out of 204 potential studies met all inclusion criteria and were analyzed. All studies were prospective in design. Overall SABR appeared to be well-tolerated, in a mostly medically inoperable patient population. Clinically and statistically significant deteriorations in fatigue and dyspnea were individually reported in two studies. An isolated report found clinically and statistically significant improvements in emotional functioning over time. Deterioration in dyspnea and physical functioning were noted in other studies, but were neither statistically nor clinically significant.

Conclusions: SABR is an overall well-tolerated modality in patients with ES-NSCLC who either declined surgery or were unfit. Exploratory results in operable ES-NSCLC suggest that SABR may be better tolerated than surgery and incur indirect costing savings. Future clinical trials comparing SABR and surgery would benefit from the inclusion of HRQOL metrics in study design.

158 TUMOUR RESPONSE TO STEREOTACTIC BODY RADIATION THERAPY (SBRT) AS PREDICTOR OF DISTANT FAILURE AND SURVIVAL OUTCOMES IN PATIENTS WITH STAGE I NON-SMALL CELL LUNG CANCER (NSCLC)

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Purpose: SBRT is an alternative treatment to surgery for Stage I NSCLC. Intriguingly, NSCLC lesions post-SBRT rarely exhibit a complete response locally and yet yield excellent local control of around 95%. The degree of treatment response seems to have little effect on current practice. This study investigated tumour response post-SBRT as a clinical outcomes predictor in Stage I NSCLC patients.

Methods: Survival outcomes of 233 patients were reviewed retrospectively from Sunnybrook Electronic Patient Record. Tumour sizes were collected from radiologist’s measurements based on CT-Scan pre and post-SBRT within 6, 12, and 18 months intervals. Each patient’s maximum response within 18 months was calculated and grouped using RECIST 1.1 methodology: complete response (CR), partial response (PR), stable disease (SD), and progressive disease (PD).

Results: The median age of study population was 77.5 years. Median follow up duration was 25 months. Local control (LC), overall survival (OS), and non-local control (NLC) for all patients at two years were: 92.5, 74.6, and 68.0% respectively. Of patients with available pre and post-SBRT tumour sizes (n = 188), 11 (5.9%), 92 (48.9%), 79 (42.0%), and six (3.2%) patients were categorized CR, PR, SD, and PD respectively using RECIST 1.1 methodology. LC were: CR (100%), PR (94.6%), SD (89.7%), and PD (66.7%) respectively after two years. OS were: CR (80.0%), PR (80.8%), SD (72.0%), and PD (44.4%) respectively. NLC were: CR (100%), PR (66.4%), SD (62.5%) and PD (16.7%) respectively. There is a statistically significant difference in NLC between groups (p = 0.0009).

Conclusions: Stage I NSCLC patients with a lesser response post-SBRT are at higher risk of developing non-local recurrences. These patients may benefit from closer follow up and adjuvant treatment post-SBRT.