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Title: Is the EBUS TBNA cytology adequate for EGFR analysis?

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Body: Background: Endobronchial ultrasound (EBUS) guided transbronchial needle aspiration (TBNA) allows safe and reliable sampling of mediastinal and hilar lymph nodes with excellent specificity and good sensitivity. It is a well established technique in the diagnosis and staging of lung cancer including pathologic sub-typing and recent studies have shown that the samples may also be adequate for molecular testing. Aim: To evaluate the adequacy of EBUS TBNA samples used for epidermal growth factor receptor (EGFR) mutation screening. Methods: Retrospective study of 46 consecutive EBUS-TBNA samples obtained from lymph nodes > 5mm short-axis and central lung parenchymal lesions. Fisher's exact test was used to compare the 2 groups. Results: Of the 46 EBUS TBNA samples sent for EGFR testing, 38 were obtained from lymph nodes (19 subcarinal, 9 right paratracheal, 4 left paratracheal, 10 right hilar and 4 left hilar) and 8 from central lung parenchymal masses. In the lymph node group, 35 (92%) samples were negative for EGFR mutation, 3(8%) failed testing and none were positive for EGFR; 30 had adenocarcinoma, 1 adenosquamous, 2 squamous and 5 NSCLC-NOS(not otherwise specified). In the central lung mass group (n=8), one positive with exon19 deletion, 6 negative and one failed testing or was inadequate; 3 had adenocarcinoma, 3 NSCLC-NOS, 1 squamous and 1 adenosquamous. The overall EBUS-TBNA adequacy from both lymph nodes and central lung masses was 91% and there was no difference between the groups. Conclusion: Molecular testing of EBUS TBNA samples obtained from mediastinal and hilar lymph nodes is feasible and our study shows a higher proportion of 92% adequacy. The common reason for failed testing was paucicellular specimen and degraded DNA.