



Clinical utility of thoracic endosonography (EBUS/EUS-b) in mediastinal staging of patients with non-small cell lung cancer: comparison with integrated PET/CT – a real-life prospective study in Greece

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Background: Accurate mediastinal staging in patients with non-small cell lung cancer (NSCLC) is crucial for the determination of optimal treatment management.

Methods: This was a real-life prospective study enrolling 140 patients between December 2016 and August 2018. We aimed to determine the clinical utility of EBUS/EUS-b in mediastinal staging of patients with NSCLC in comparison with integrated PET/CT. Furthermore, SUV_{max} cut-off value with the highest specificity/accuracy was evaluated. Subgroup analysis according to histological type was performed.

Results: One hundred and thirty patients were eligible for analysis (mean age ± SD: 67.6±7.6, males 97). Three hundred different lymph node stations were sampled (272 through EBUS-TBNA and 28 through EUS-b FNA). Mean SUV_{max} of all malignant lymph nodes was 7.46 (SD =5.54). Sensitivity, specificity, PPV and NPV of EBUS/EUS-b for the identification of mediastinal malignant lymph nodes was 93.8%, 100%, 100%, and 93.4%, respectively. Accordingly, PET/CT yielded 92.2% sensitivity, 43.9% specificity, 64.8% PPV and 83.3% NPV. For adenocarcinoma (n=76) NPV were 86.2% with EBUS/EUS-b and 75% with PET/CT. NPV for squamous cell (n=46) was 100% with EBUS/EUS-b and 90.9% with PET/CT. EBUS/EUS-b staging yielded excellent agreement with final staging (97.5%, Tau 0.94, P<0.001). ROC curve analysis identified the value 4.95 as the optimal SUV_{max} cut-off value with the best specificity (87.4%) and accuracy (79%) (AUC 0.69; 95% CI: 0.73–0.84, P<0.001).

Conclusions: Thoracic endosonography is an excellent, minimally invasive tool yielding high sensitivity and diagnostic accuracy in mediastinal staging of patients with NSCLC. Implementation of both EBUS/EUS-b and PET/CT is necessary before any surgical intervention.

Keywords: Lung cancer; EBUS/EUS-b; PET/CT; SUV_{max} cut-off value; diagnostic accuracy