

# Combination of narrow band imaging (NBI) and autofluorescence imaging (AFI) videobronchoscopy in endoscopic assessment of lung cancer extension

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**Abstract** Both narrow band imaging (NBI) and autofluorescence imaging (AFI) are new techniques for the assessment of lung cancer. The major aim of this study was to investigate whether the combination of these two techniques improve sensitivity and specificity in the assessment of lung cancer extension. The study prospectively evaluated 118 patients with suspected lung cancer. All of the patients were examined using EVIS LUCERA SPECTRUM videobronchoscopy system. The narrow band imaging preceded autofluorescence imaging examination. In every patient, at least 1 but no more than 4 biopsies were taken from places visualized as pathologic, surrounding primary tumor, and at least 1 biopsy from places that appeared visually normal. Sensitivity, specificity, positive, and negative predictive value for autofluorescence imaging in the

assessment of tumor extension were 89.2, 77.8, 87, and 81%, respectively. Sensitivity, specificity, positive, and negative predictive value for narrow band imaging were 90.4, 82.4, 91.8, and 79.7%, respectively. Corresponding values for combination of techniques were 93.7, 86.9, 94.5, and 85.1%. Combination of techniques significantly improves sensitivity ( $P = 0.034$ ) with borderline effect on specificity ( $P = 0.056$ ) of autofluorescence imaging. There was no significant improvement for sensitivity and specificity of NBI alone. The combination of techniques shows significantly better sensitivity and specificity in the assessment of lung cancer extension when compared to white light videobronchoscopy alone, but improvement is not so convincing when compared to the each technique alone.

**Keywords** Autofluorescence bronchoscopy · Bronchoscopy · Lung cancer · Narrow band imaging

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## Introduction

Narrow band imaging (NBI) and autofluorescence imaging (AFI) videobronchoscopies are relatively new tools in diagnostic bronchoscopy. While NBI is designed for detection of pathological submucosal microcapillary grid, autofluorescence mainly detects pathological changes in the mucosal epithelium. Both techniques are widely used within research protocols as bronchoscopic tools for detection of premalignant lesions and early stage lung cancer [1–6]. The results of the majority of clinical trials show potential benefit of those techniques in detection of precancerous lesions [7–12].

Apart from detection of early stage lung cancer, both, NBI and AFI, showed to be useful in detection of synchronous tumors, follow-up after curative, surgical







