

## Correlation of EGFR mutation status in plasma and tissue samples of patients with NSCLC

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**Background/Aims:** Somatic mutations of the gene encoding epidermal growth factor receptor (EGFR) are detected in approximately 30 to 50% of patients with non-small-cell lung cancers(NSCLC). Detecting EGFR mutation is the pivotal step of treatment in patients with advanced NSCLC. Difficulty in obtaining sufficient tissue and bias from the heterogeneity of the tumor samples are the major obstacles. Analyzing EGFR with circulating tumor DNA (ctDNA) in plasma is breakthrough. However, the accuracy is the problem to solve in variable methods. Peptide nucleic acid (PNA) clamping-assisted fluorescence melting curve analysis (PANAMutyper™) is novel and highly sensitive method of detecting EGFR mutation in tumor tissue. This study was designed to evaluate PANAMutyper™ for detecting EGFR mutation with ctDNA of patients with lung cancer. **Methods:** This prospective study was conducted from January 2016 to March 2017. Within 2 days after obtaining tissue samples, plasma samples were collected. Patients with insufficient samples, metastatic cancers from other organs, and small cell carcinoma were excluded. EGFR mutation status was analyzed by using PNA clamping with tissue samples and by PANAMutyper™ with ctDNA of plasma samples. Cases with mutant EGFR in tissue samples were verified by ddPCR with ctDNA of plasma samples. Concordance rate, negative and positive predictive value were analyzed. **Results:** EGFR mutation status detected by PNA clamp with tissue samples and by PANAMutyper™ with ctDNA were compared. Tissue biopsy was done in 158 patients with lung tumor, 23 cases were excluded and 135 cases were enrolled. EGFR mutation rate was 23.0% (31/135) in overall patients. The concordance rate of tissue and plasma samples was 91.9% (124/135). The sensitivity and specificity were 64.5% and 100%, negative predictive value and positive predictive value were 90.4% and 100% according to the tissue samples as a standard. **Conclusions:** This results suggest detection of EGFR mutation status using ctDNA in plasma by PANAMutyper™ is feasible test prior to tissue biopsy.

## Feasibility and safety of nasal route for linear EBUS: a single center experiences

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**Background/Aims:** Linear endobronchial ultrasound (EBUS) has proved to be a safe and accurate method for diagnosing mediastinal lymphadenopathy. Generally It was performed through oral route at most of clinics. Recently, a few studies establishing the feasibility through the nasal route insertion have been conducted in Canada<sup>1,2</sup>, however there has been lack of reports in Asian population. This study aimed to investigate the feasibility and safety of linear EBUS using the nasal route in Korean population. **Methods:** A retrospective analysis was conducted in Incheon St. Mary's hospital, The Catholic University of Korea, between March 2015 and June 2018. Patients with mediastinal lymphadenopathy who underwent EBUS were included. In all cases, insertion of EBUS was initially tried through the nasal route. The oral route was used in case of failed to approach through both nostrils. Clinical parameters, characteristics of the procedure, complications were analyzed. **Results:** Among 252 patients, nasal insertion of the EBUS were succeeded in 90.5% of patients ( $n=228$ ). Only twenty-four patients underwent the EBUS through oral route. There was no significant difference in nodal stations among two groups. Procedural time and dose of analgesics were similar. The quantity of complications associated with the nasal route of insertion (epistaxis and pain) were 2.8% and 1.6% of cases. Severe epistaxis requiring bleeding control occurred in only one case (Table 2). Pain requiring control and balloon rupture are rarely occurred. **Conclusions:** Nasal insertion of EBUS was safe and feasible in Korean population compared with oral route insertion. Further studies are required to confirm safety and diagnostic accuracy for nasal insertion of EBUS in Asian population.

Table 1. Clinical characteristics of patients and procedures

Variable	Stats (N=252)
Age, mean (range)	66.19 (24-88)
Male, n (%)	192 (76.2)
Stations, n (%)	
2L	4 (1.6)
2R	12 (4.8)
4L	63 (25.0)
4R	142 (56.3)
7	158 (62.7)
10L	2 (0.8)
10R	3 (1.2)
11L	18 (7.1)
11Rs	37 (14.7)
11Ri	18 (7.1)
12L	2 (0.8)
12R	2 (1.2)
Mass	7 (2.8)
Duration of procedure, mean (min)	26.37
Total dose of midazolam, mean (mg)	2.73
Total dose of fentanyl, mean (mcg)	59.18

Table 2. Complications of linear EBUS through the nasal route

Complications	Stats (N=252)
Epistaxis, n (%)	
Mild	6 (2.4%)
Severe	1 (0.4%)
Pain, n (%)	
During procedure	3 (1.2%)
After procedure	1 (0.4%)
Balloon rupture, n (%)	2 (0.8%)