

Introduction

Endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) can obtain samples for both histology and cytology results. It is known that histology is a more reliable exam for the diagnosis of mediastinal lymph node metastasis. This study aims to investigate the diagnostic role of cytology in EBUS-TBNA for lung cancer.

Methods

This retrospective study was conducted on adult (≥ 19 years) patients who have been diagnosed with lung cancer at Seoul National University Hospital and were examined by EBUS-TBNA from May 2010 to December 2019. EBUS-TBNA was performed under conscious sedation using 22G needles.

The histology and cytology samples were matched one to one. A total of 5492 lymph nodes were analyzed. Pathologic results were classified as positive when malignant cells were present in the histologic or cytologic specimen.

Results

Of the 2176 lung cancer patients, there were more males (1597, 73.4%), and smokers (1588, 73.0%). The mean age was 68 years old. The most common pathologic subtype was adenocarcinoma (51.9%), followed by squamous cell carcinoma (29.8%), other non-small cell lung cancer (10.0%), and small cell lung cancer (8.3%). The 4R lymph node (1644, 29.9%) was the most common aspiration site, followed by the subcarinal 7 lymph node (1608, 29.3%).

The discrepancies between the cytology and histology were 10.8%. Mostly, histology shows more accuracy than cytology to diagnose lung cancer. However, in 130 (3.4%) nodes showing negative or insufficient results in histology, malignant cells were observed in cytology slides.

Conclusion

The cytology of EBUS-TBNA has diagnostic power in lung cancer.

Table 1 Characteristics of the 2176 patients and 5492 lymph nodes

Characteristics	Data	Characteristics	Data
Male sex	1598 (73.4%)	Nodal station (n=5492)	
Age	67.8 \pm 9.8	1R	7 (0.1%)
BMI	23.5 \pm 3.1	2R	422 (7.7%)
Smoking		2L	15 (0.3%)
Never	589 (27.0%)	4R	1644 (29.9%)
Ever	1589 (73.0%)	4L	683 (12.4%)
Pathologic diagnosis		7	1608 (29.3%)
Adenocarcinoma	1079 (51.0%)	10R	136 (2.5%)
Squamous cell carcinoma	619 (29.8%)	10L	40 (0.7%)
Other non-small cell carcinoma	207 (10.0%)	11R	540 (9.8%)
Small cell carcinoma	172 (8.3%)	11L	317 (5.8%)

Table 2 Comparison between histologic and cytologic results from the same endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) specimens

		Histologic results			Total
		Positive	Negative	Insufficient	
Cytologic results	Positive	1300	123	7	1430
	Negative	296	3599	74	3969
	Insufficient	12	70	11	93
	Total	1608	3792	92	5492

Sensitivity of cytology = 80.8%; Specificity of cytology = 94.9%;
Positive predictive value of cytology = 90.9%; Negative predictive value of cytology = 90.7%.