



가  
18 G 21 G 3-5  
가 102  
50 76%(38/50)  
80%(40/50) 가 94%(47/50) 52  
50%(26/52) 54%(28/52) 가  
69%(36/52) 가 (p < .05). 9 (8.8%)  
24 6 (5.9%)  
2 (2%)  
가  
가  
(1-18).  
가  
가  
(5-12).  
(automated gun)  
1998 2 1999 1  
가  
107  
5 102  
26 72 54.3  
78:24  
가  
가  
1 cm 가 가  
1999 12 10 2000 5 17  
53

102 50  
(n=10), 52 (n=1), (n=3),  
(n=27), (n=3),  
(n=6)  
(n=3), 102 50 가 52 가  
(n=10), (n=26) 3 1  
6  
가 (n=13)  
21G Chiba needle (SooHo  
Meditech, Seoul, Korea) , 18G Automated Gun  
(Tsk Laboratory, Tochigi - Ken, Japan)  
가  
2% Lidocaine 10 cc  
(stylet)  
가  
가  
95% 1 - 2  
3 - 5  
1 - 2  
10%  
2 가

102 50 가 52 가  
3 1  
102  
Table 1  
21 가  
17 가  
44  
40 , 4 , 6  
2  
가  
6 3 가  
2 2 1  
3 44  
38 6 6  
가 3 , 가 2 ,  
가 1 2  
1  
가  
47 , 가  
3 가 , , ,

**Table 1.** Results of Transthoracic Biopsy in 102 Patients

	FNA	AGB	FNA+AGB
<b>Malignant lesions</b>			
Squamous cell carcinoma (n = 23)	17	18	22
Adenocarcinoma (n = 16)	14	14	16
Small cell carcinoma (n = 7)	5	5	6
Large cell carcinoma (n = 2)	0	1	1
Metastatic carcinoma (n = 2)	2	2	2
<b>Benign lesions</b>			
Tuberculosis (n = 17)	9	12	14
Lung abscess (n = 4)	4	1	4
Organizing pneumonia (n = 11)	10	8	11
Aspergillosis (n = 2)	2	2	2
Sclerosing hemangioma (n = 1)	1	1	1
Other benign tumor (n = 4)*	0	4	4
Nonspecific inflammation (n = 13)	9	9	11

\* : other benign tumor - teratoma (1), hamatoma (1),  
neurilemmoma (2)  
FNA : Fine needle aspiration, AGB : Automated gun biopsy.

**Table 2.** Results of Transthoracic Biopsy in 102 Patients

	FNA		AGB		FNA + AGB	
	Malignant (n = 50)	Benign (n = 52)	Malignant (n = 50)	Benign (n = 52)	Malignant (n = 50)	Benign (n = 52)
Specific diagnosis	38	26	40	28	47	36
Suggestive diagnosis	6	16	4	15	0	12
Nondiagnostic tissue	6	10	6	9	3	4
Sensitivity	88%	81%	88%	83%	94%	92%*
Accuracy	76%	50%	80%	54%	94%*	69%*

FNA: Fine needle aspiration, AGB : Automated gun biopsy.

\*: significant difference with FNAB or AGB ( $p < .05$ )

88%, 88%, 94%  
( $p > .05$ ), 80%, 76%, 94% 83%, 54% 88% 80% ,

가 (  $p < .05$ ) (Table 2). 43 (25%) CT 13

28 , 15 , 9 , 42 , 16 , 26 , 10 , 가 18 , 8 , 5 0 6 9 6 10 3 4

- 2.5 cm 가 2 가 10 . Weisbord (26)

가 48 , 4 , 2 , 36 가 2 , 가 6 3

83%, 81%, 92% , 54%, 50%, 69% 가 (  $p < .05$ ) (Table 2). 9 (8.8%) 7 4 가 3 가 3 cm

24 6 (5.9%) 2 가 (27) 가 ,

60 - 97% (1 - 3, 5, 10), 67 - 98% (4, 15, 17, 23, 27)

88% 76% 81% 50% (28).

1. Stanley JH, Fish GD, Andriole JG, et al. Lung lesions: cytologic diagnosis by fine needle biopsy. *Radiology* 1987;162:389-391
2. Welch TJ, Sheedy H PF, Johnson CD, Johnon CM, Stephens DH, CT-guided biopsy: prospective analysis of 1000 procedure. *Radiology* 1989;171:493-496
3. Westcott JL. Direct percutaneous needle aspiration of localized pulmonary lesions: results in 422 patients. *Radiology* 1980;137:31-35
4. Goralink CH, O Connell DM, El Youset SJ, Haaga JR. CT-guided cutting needle biopsies of selected chest lesions. *AJR Am J Roentgenol* 1988;151:903-907
5. Wescott JL. Percutaneous transthoracic needle biopsy. *Radiology* 1988;169:593-601
6.                ,                ,                가                가?

1995;32:411-415

7. Calhoun P, Feldman PS, Armstrong P, et al. The clinical outcome of needle aspirations of the lung when cancer is not diagnosed. *Ann Thorac Surg* 1986;41:592-596
8. Horrigan TP, Bergin KT, Snow N. Correlation between needle biopsy

- 1998;38:63-658
28. Tolly TC, Feidmeier JE, Czarnecki D. Air embolism complicating percutaneous lung biopsy. *AIR Am J Roentgenol* 1988;150:555-556

## Fluoroscopically Guided Biopsy of Intrathoracic Lesions: Diagnostic Accuracy of Combined Method Including Automated Gun Biopsy and Fine Needle Aspiration<sup>1</sup>

Young-Kon Kim, M.D., Young-Min Han, M.D., Jeong-Min Lee, M.D.,  
Seong-Hee Ym, M.D.<sup>2</sup>, Myoung-Ja Choung, M.D.<sup>3</sup>

<sup>1</sup>Department of Diagnostic Radiology, Chonbuk National University Hospital

<sup>2</sup>Department of Internal Medicine, Namwon Medical Center

<sup>3</sup>Department of Surgical Pathology, Chonbuk National University Medical School

**Purpose:** The purpose of this study was to evaluate the usefulness of combined automated gun biopsy (AGB) and fine needle aspiration (FNA) in the diagnosis of lung lesions.

**Materials and Methods:** Lung lesions in 102 patients were aspirated consecutively using a 21-gauge fine needle and biopsied with an 18-gauge automated gun at intervals of 3 - 5 minutes. Final diagnosis was based on the findings of surgery or clinical follow-up.

**Results:** In 50 patients with malignant lesions, diagnostic accuracy was 80% with AGB and 76% with FNA, but using the combined modality, the figure was 94%. In 52 patients with benign lesions, diagnostic accuracy was 54% with AGB and 50% with FNA; using the combined modality, 69 percent accuracy was achieved. For all lesions, the diagnostic accuracy of the combined modality was thus significantly higher than that of a single method ( $p < .05$ ). The complications which occurred were pneumothorax in six cases (5.9%), chest tubing in two (0.2%) and minor hemoptysis in nine (8.8%).

**Conclusion:** In the diagnosis of lung lesions, the combined use of AGB and FNA is safe and can increase diagnostic accuracy.

**Index words :** Biopsies, technology  
Biopsies, complications  
Fluoroscopy  
Lung, biopsy

Address reprint requests to : Young-Min Han, M.D., Department of Diagnostic Radiology, Chonbuk National University Hospital,  
634-18, Keumam-Dong, Chonju-shi, Chon Buk 561-712, Korea.  
Tel. 82-63-250-1176 Fax. 82-63-272-0481

: \_\_\_\_\_ : \_\_\_\_\_  
 : \_\_\_\_\_  
 : \_\_\_\_\_ : \_\_\_\_\_  
 : \_\_\_\_\_ : ( )  
 : \_\_\_\_\_ ( )

2000 56 ?

- 65 가  
 50,000 가
- (2000. 9. 15. ) : ( ) 70,000 , 30,000 , ( ) 70,000
  - (2000. 9. 15. ) : ( ) 80,000 , 40,000 , ( ) 80,000

(Categorical Course)

56 (Categorical Course) ?

- (5,000 )
- (2000. 9. 15. ) : ( ) 5,000 , 5,000 , ( ) 5,000
  - (2000. 9. 15. ) : ( ) 7,000 , 7,000 , ( ) 7,000

Home Page

Fax

: \_\_\_\_\_ : 025-25-0005-373, : \_\_\_\_\_  
 Home Page : <http://www.radiology.or.kr> E-mail : [office@radiology.or.kr](mailto:office@radiology.or.kr)  
 : 121-8 ○ 137-130  
 Tel (82-2) 578-8003 Fax (82-2) 529-7113