

# CT Fluoroscopy

1

2

: (CT fluoroscopy)

가

: 2002 1 2005 3

22

CT fluoroscopy

: 22 24 16 , 8

100% 75%

$3.75 \pm 1.68$  cm

$3.05 \pm 2.98$  cm

20

$1.85 \pm 1.09$ ,

4

$3.13 \pm 1.73$

( $p=0.030$ ).

3 ,

1

: CT fluoroscopy

( CT),

가 (1 - 12).

( CT

fluoroscopy)

가

CT fluoroscopy

(fine needle aspiration biopsy)

(core

가

needle biopsy)

가

(13 - 15).

,

CT fluoroscopy

가

CT fluoroscopy가 4 channel multi - detector spiral CT scanner (Siemens Somatom Volume Zoom, Erlangen, Germany) (Fig. 1).

(Joy stick)

가 CT

(foot switch) CT pedal)

(foot

가

2 mm

1 cm

가

image level

2002 1 2005 3 24 (22 )

level

level

1 cm

(marker)

(Fig. 2).

2005 10 23

2006 2 22

: CT Fluoroscopy

(radiopaque)

가

가

가 (Fig. 3).

22 G Chiba (Cook, Bloomington, U.S.A.)

10cc

95%

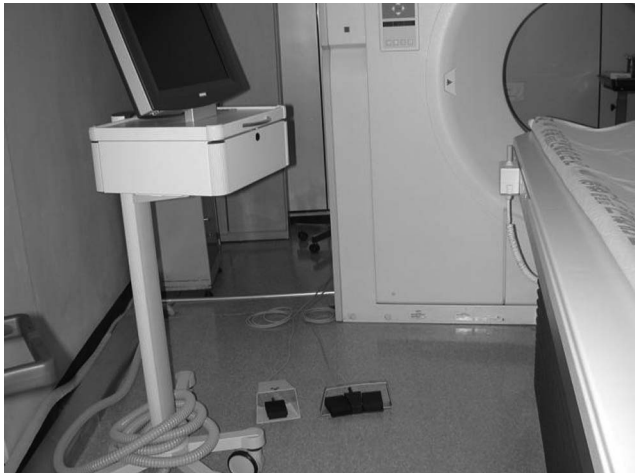
가

, CT

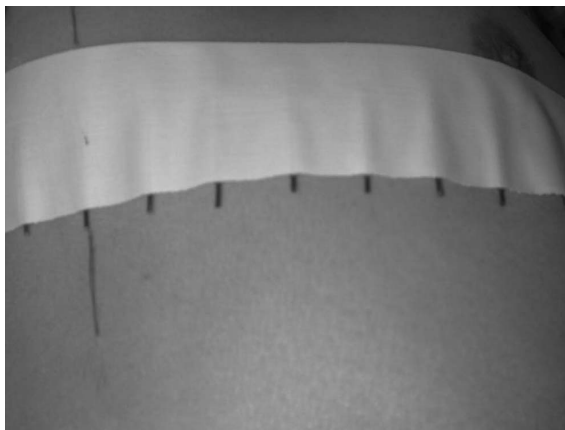
( CT fluoroscopic guidance)

Kolmogorov - Smirnov

t



**Fig. 1.** Real time CT-fluoroscopy system with control box and foot pedal.



A



B

**Fig. 2. A, B.** Adhesive tape with copper grids was applied on the skin of the patient, and then scan was obtained.



A



B

**Fig. 3. A, B.** After the skin was aseptically prepared and draped, appropriate puncture was done. Scan by CT fluoroscopy showed the needle in exact location.

## CT fluoroscopy 가

(artifact)

22 9 , 13 ( 57.2 ) 4 , 2 , 24 CT 가 8 , 14 (Table 1). 3.28 ± 2.51 cm , 4.84 ± 1.89 cm . CT fluoroscopy 3.75 ± 1.68 cm, 4.38 ± 2.53 cm, CT 3.05 ± 2.98 cm, 5.10 ± 1.49 cm 1.56 ± 1.34, 2.32 ± 1.27 가 (Table 2). 가 20 3.49 ± 2.69 cm, 4.65 ± 1.88 cm, 4 (needle holder) 2.25 ± 0.87 cm, 6.17 ± 1.61 cm (13 - 15). 1.85 ± 1.09, 3.13 ± 1.73 가 (Table 3). CT fluoroscopic guidance 17.75 ± 6.02 , 24.6 ± 10.48 ( , 23.4 ) (12, 18 - 20). 3 Wallace (19) 88%( , 82%; , 100%) (1) 95.8% 87.62% (3) 24 20 83% 36 6 (17%)가 100%, (21) 75% , 1 30 22 4 3 , 1 .

**Table 2.** Comparison between Malignant Lesions and Benign Lesions

	Malignant (8)	Benign (16)	p-value*
Size (cm)	3.75 ± 1.68	3.05 ± 2.98	0.450
Depth (cm)	4.38 ± 2.53	5.10 ± 1.49	0.388
D/S	1.56 ± 1.34	2.32 ± 1.27	0.018
Fluoroscopic time (min)	19.7 ± 9.1	25.4 ± 9.98	0.303

\*Statistically significant &lt; 0.05, t-test

**Table 1.** Cases of Fine Needle Aspiration with CT-fluoroscopy

Malignant tumors (8)	Correct (8)	Incorrect or Inadequate (0)
Squamous cell carcinoma (2)	2	
Adenocarcinoma (6)	6	
Benign lesions (16)	Correct (12)	Incorrect or Inadequate (4)
Tuberculosis (7)	5	2 (inadequate)
Aspergillosis (3)	2	1 (fail)
Inflammation (4)	3	1 (inadequate)
Fibrosis (1)	1	
Organizing pneumonia (1)	1	
Total	20	4

**Table 3.** Comparison between Correct Result Group and Incorrect Result Group

	Correct (20)	Incorrect or Inadequate (4)	p-value*
Size (cm)	3.49 ± 2.69	2.25 ± 0.87	0.182
Depth (cm)	4.65 ± 1.88	6.17 ± 1.61	0.191
D/S	1.85 ± 1.09	3.13 ± 1.73	0.030
Fluoroscopic time (min)	17.75 ± 6.02	24.6 ± 10.48	0.226

\*Statistically significant &lt; 0.05, t-test

가 .

가 (5, 20, 22). 0.17 cm)가 (1.4 ± 6.1 ± 1.68

가 3 가

(2). 83% (1 - 5, 9, 14, 19)

가 3 (inadequate material) 가 (27, 28).

(75%)가 가 22 가

Tsukada (9) (11) CT fluoroscopy 가 가

가 가

3.13 ± 1.73 1.85 ± CT fluoroscopy

1.09 가

가

CT fluoroscopic guidance 17.75 ± 6.02 , 24.6 ± 10.48 ( , 23.3 )

(20) CT fluoroscopy Yamagami 25.6 Sheth (7) CT 45.2 CT CT fluoroscopy

24 3 , 1 (23 - 25), 24

Cox (23) 가 가 가 가

(24) Kazerooni (25) Gupta (26)

가 가

1. : 1000 1994;31:897-900

2. : 1995;32:883-888

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6. .

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## Fine Needle Aspiration of Focal Lung Lesion under CT Fluoroscopic Guidance<sup>1</sup>

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**Purpose:** We wanted to assess the efficacy of using CT fluoroscopy during Fine Needle Aspiration (FNA) for focal lung lesion.

**Materials and Methods:** We retrospectively reviewed 22 patients who had undergone FNA under CT fluoroscopic guidance. The final diagnosis of focal lung lesion was based on surgery, the results of biopsy taken from another site or the clinical diagnosis with imaging follow-up. We reviewed the imaging and recorded the location of the lesion, the lesion size and the depth from the puncture site.

**Results:** In 24 cases of 22 patients, 16 lesions were benign and 8 were malignant. The sensitivity and specificity for malignant lesions were 100%, and 75%, respectively. The mean size of the malignant lesions was  $3.75 \pm 1.68$  cm, and that of the benign lesion was  $3.05 \pm 2.98$  cm. The mean depth of the lesion divided by the size was  $1.85 \pm 1.09$  for 20 lesions of the correct result group and  $3.13 \pm 1.73$  for 4 lesions of the incorrect result group; the difference between the two groups was statistically different ( $p=0.030$ ). The complications after FNA were pneumothoraces in three cases and parenchymal hemorrhage in one case, but no significant complication was noted after the procedures.

**Conclusion:** We could perform the FNA accurately and safely under CT fluoroscopy guidance, so this technique can be used for FNA of focal lung lesion for obtaining a correct result with fewer complications.

**Index words :** Lung, biopsy  
Fluoroscopy

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