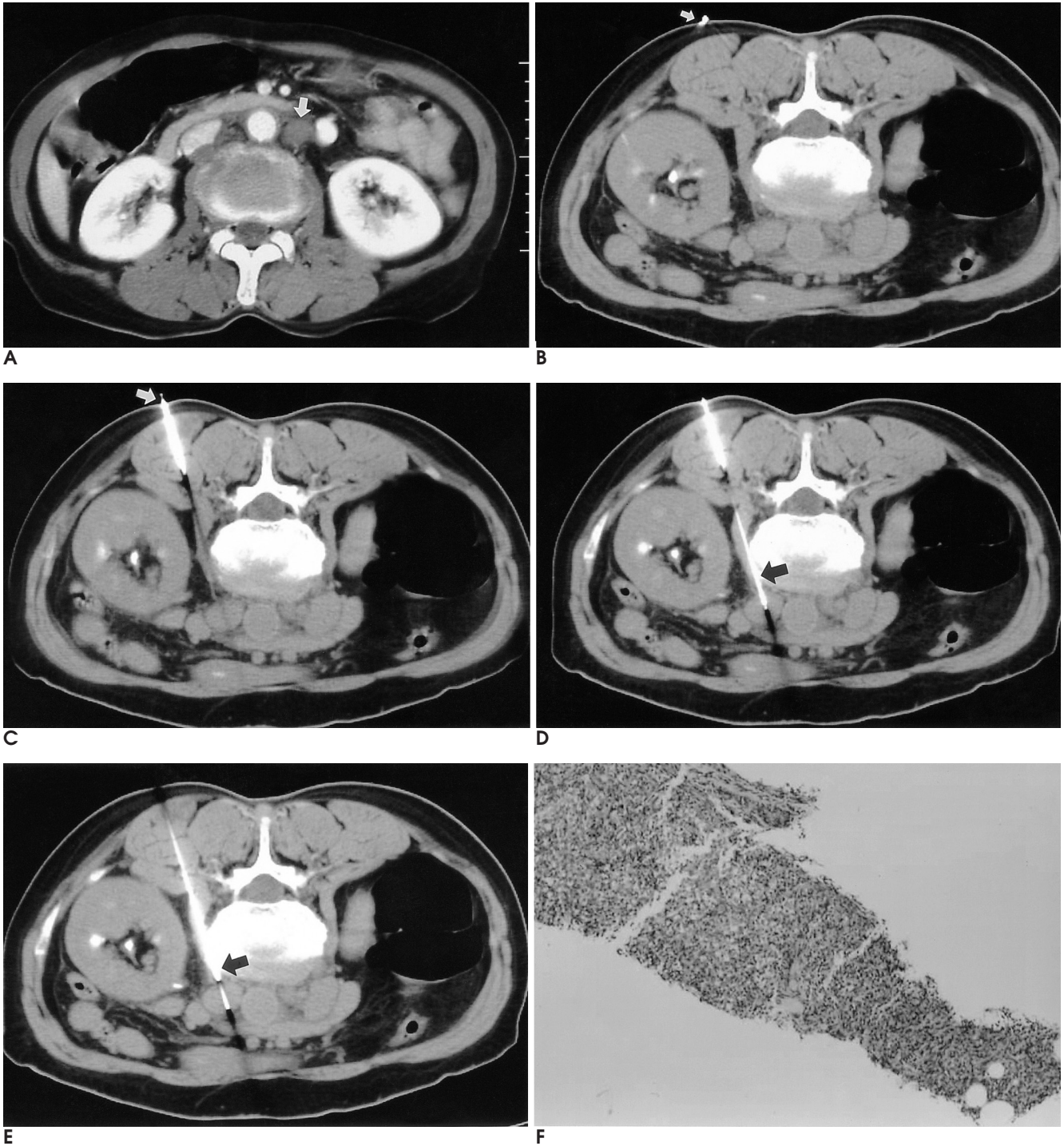


(3 - 5).

183



**Fig. 1.** Steps of modified coaxial technique in percutaneous CT-guided biopsy of a small paraaortic lymph node.

**A.** Contrast-enhanced CT scan shows a small lymph node (arrow) between abdominal aorta and enlarged left gonadal vein.

**B.** In first step, skin puncture site is decided using slit beam of gantry and localization grid of CT monitor. Puncture site is marked with a tiny lead ball (arrow) on the skin.

**C.** In second step, 17G short needle (arrow) is correctly inserted in the posterior abdominal wall toward the target lesion.

**D.** In third step, 21G hub-removable special needle (arrow) is advanced coaxially as measured on CT monitor through the lumen of 17G short needle.

**E.** In fourth step, 18G guiding cannula (arrow) is introduced coaxially over 21G hub-removable needle of which hub was already removed, and the tip of the guiding cannula is located just around the border of the target lesion. After removing inner special needle, both cytopathologic and histopathologic specimens are obtained through the empty guiding cannula using proper needles including fine needles and automated biopsy guns.

**F.** Photomicrograph shows an adequate core tissue of paraaortic lymphadenopathy. Definitive pathologic diagnosis as 'non-Hodgkin's lymphoma, diffuse large cell type, B-cell lineage' was made after immunohistochemistry (H & E,  $\times 40$ ).

가 21 , 21 - 30 mm가 14 , 31 - 40 mm가 1 19.8  
mm . 가 15 , 가 20  
21 80 ( 56.5 ) .

22 ,

가 7 , 7

CT HiSpeed CTi Pro (GE, Milwaukee, WI,  
U.S.A.) Sytec 3000 (GE, Milwaukee, WI, U.S.A.)

6 - 10 mg Valium

30 Demerol 50 mg .

. CT

CT

Skin Marker Set (Scalan, St. Paul, MN, U.S.A.)

1 mm (Fig. 1B).

Skin Marker Set

2% Lidocaine

38 mm, (hub) 2 cm

17G

(Fig. 1C).

20 cm

25 cm 21 G hub removable needle (Cook, Bloomington,  
IN, U.S.A.) ( , ) 17G

(Fig. 1D).

21G

17 G coaxial , 10 cm 2 cm

18 G guiding cannula (Cook, Bloomington, IN, U.S.A.)

가

(Fig. 1E).

coaxial

**Table 1.** Pathologic Diagnosis of Small Lymphadenopathy around Abdominal Aorta and Inferior Vena Cava in Patients Undergoing CT-guided Biopsy using Modified Coaxial Technique

Diagnosis	No. of cases
Metastatic tumor ( <i>n</i> = 16)	
adenocarcinoma	11
squamous cell carcinoma	2
small cell carcinoma	2
transitional cell carcinoma	1
Lymphoma ( <i>n</i> = 11)	
*NHL, diffuse large cell type, B-cell lineage	10
peripheral T-cell lymphoma	1
Tuberculosis ( <i>n</i> = 6)	
acid-fast bacilli (+)	6
Chronic granulomatous inflammation	2
Chronic inflammation	1
Total	36

\*Non-Hodgkin's lymphoma

21 G  
95% Turner  
19.5 G Autovac (Angiomed, Karlsruhe, Germany)  
Tru-cut 20G Acecut (TSK, Tokyo, Japan)

6 - 8

10%

CT  
2 - 4

3

18

8 ,

22 ,

6

. 36

가 7 ,

가 29

92% (33/36)

(Table 1).

16 (44%) 가

, 11 (31%),

(acid-fast bacilli,

AFB)

6 (17%)가

(Fig. 2).

3 2

2

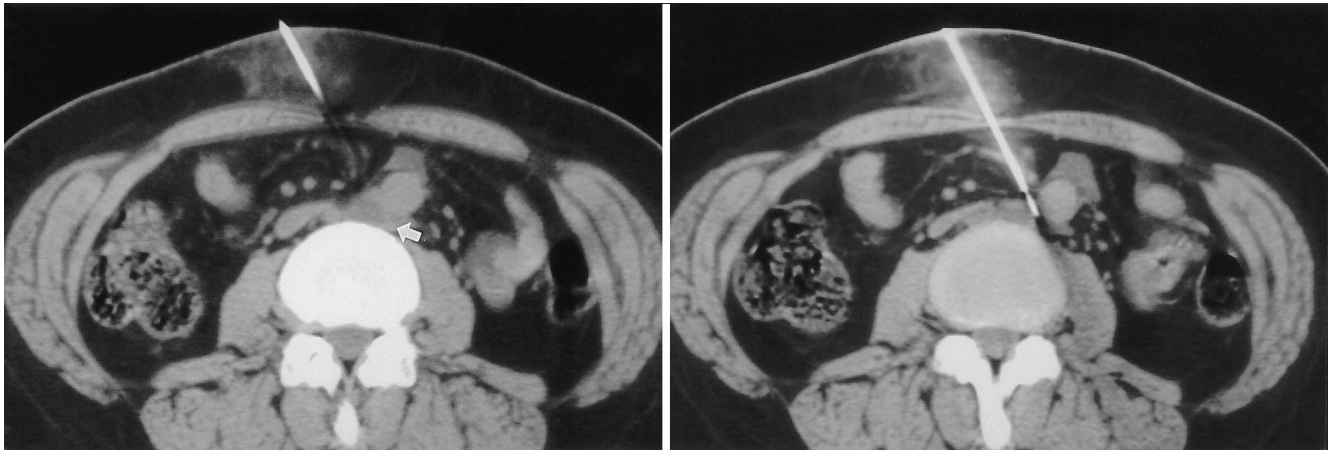
2

가

1

1

97% (35/36)



**A** **B**  
**Fig. 2.** A 50-year-old woman with small paraaortic lymphadenopathy confirmed as tuberculosis with positive acid-fast bacilli.  
**A.** Small lymph nodes (arrow) are noted around abdominal aorta. A 17G short needle is correctly aiming to the paraaortic nodes.  
**B.** A needle hits the target lesion, and multiple biopsy specimens were obtained. Acid-fast bacilli were detected.

가 , ,  
 67% (4/6), 33% (2/6) .  
 . , , 3 , , ,  
 (10).  
 가  
 2 CT  
 , ,  
 가 .  
 (6).  
 가  
 , , tandem ,  
 가  
 (10 - 12).  
 CT  
 ,  
 vanSonnenberg  
 (8) (hub)가  
 가  
 가  
 가  
 가  
 (9). mm

가 15 mm  
120 mm  
cut  
15 mm  
115 mm  
가  
20 mm  
Tru -  
가  
CT  
가  
CT  
가  
가  
가  
diffuse large B cell  
가  
, peripheral  
T - cell lymphoma  
(6).  
가  
17G  
가  
가  
가  
가  
5 mm  
18G  
가  
CT  
(7, 13).  
가  
가  
가  
AFB  
(10).  
가  
가  
가

1. Fisher AJ, Pauson EK, Sheafor DH, Simmons CM, Nelson RC. Small lymph nodes of the abdomen, pelvis, and retroperitoneum: usefulness of sonographically guided biopsy. *Radiology* 1997;205: 185-190
2. Welch TJ, Sheedy PF 2nd, Johnson CD, Johnson CM, Stephens DH. CT-guided biopsy: prospective analysis of 1,000 procedures. *Radiology* 1989;171:493-496
3. Kohler MF, Berchuck A, Baker ME, Szpak CA, Soper JT, Clarke-pearson DL. Computed tomography-guided fine needle aspiration of retroperitoneal lymph nodes in gynecologic oncology. *Obstet Gynecol* 1990;76:612-615
4. Fortier KJ, Clarke-Pearson DL, Creasman WT, Johnston WW. Fine needle aspiration in gynecology: evaluation of extrapelvic lesions in patients with gynecologic malignancy. *Obstet Gynecol* 1985;65: 67-72

5. Knelson M, Haaga J, Lazarus H, Ghosh C, Abdul-karim F, Sorenson K. Computed tomography-guided retroperitoneal biopsies. *J Clin Oncol* 1989;7:1169-1173
6. Erwin BC, Brynes RK, Chan WC, Keller JW, Philips VM, Gedgaudas-McClees RK, et al. Percutaneous needle biopsy in the diagnosis and classification of lymphoma. *Cancer* 1986;57:1074-1078
7. Schweiger GD, Yip VY, Brown BP. CT fluoroscopic guidance for percutaneous needle placement into intraabdominopelvic lesions with difficult access routes. *Abdom Imaging* 2000;25:633-637
8. vanSonnenberg E, Lin AS, Deutsch AL, Mattrey RF. Percutaneous biopsy of difficult mediastinal, hilar, and pulmonary lesions by computed tomographic guidance and a modified coaxial technique. *Radiology* 1983;148:300-302
9. vanSonnenberg E, Casola G, Ho M, Neff CC, Varney RR, Wittich GR, et al. Difficult thoracic lesions: CT-guided biopsy experiences in 150 cases. *Radiology* 1988;167:457-461
10. Wittich GR. *Abdomen biopsy*. In *Syllabus of categorical course on interventional radiology*. Galveston; UTMB, 1995;215-223
11. Gupta S, Ahrar K, Morello FA Jr, Wallace MJ, Madoff DC, Hicks ME. Using of coaxial technique with curved inner needle for CT-guided fine-needle aspiration biopsy. *AJR Am J Roentgenol* 2002;179:109-112
12. Gupta S, Ahrar K, Morello FA Jr, Wallace MJ, Hicks ME. Masses in or around the pancreatic head: CT-guided coaxial fine-needle aspiration biopsy with posterior transcaval approach. *Radiology* 2002;222:63-69
13. Sheafor DH, Pauson EK, Kliewer MA, DeLong DM, Nelson RC. Comparison of sonographic and CT guidance techniques: does CT fluoroscopy decrease procedure time ? *AJR Am J Roentgenol* 2000;174:939-942

## Percutaneous Biopsy for Small Lymphadenopathy Around the Abdominal Aorta and Inferior Vena Cava Using the Modified Coaxial Technique Under CT Guidance<sup>1</sup>

Chi Sung Song, M.D.

<sup>1</sup>Department of Radiology, Boramae Hospital

**Purpose:** The author wanted to report the accuracy and safety of performing percutaneous biopsy of a small lymphadenopathy around the abdominal aorta and inferior vena cava (IVC) with using the modified coaxial technique (MCT) under CT guidance.

**Materials and Methods:** Thirty-six cases of CT-guided biopsy using MCT were performed in 35 patients (15 men and 20 women, aged 21 - 80 years, mean age: 56.5 years), who had small lymphadenopathy around the abdominal aorta and IVC. The maximum diameters of the target nodes were 11 - 20 mm in 21 cases, 21 - 30 mm in 14 cases and 31 - 40 mm in 1 case (mean diameter: 19.8 mm). The locations of the target lesions were the left or posterior side of the aorta ( $n=22$ ), between the aorta and IVC ( $n=7$ ), and the right or posterior side of the IVC ( $n=7$ ). Using the modified coaxial technique, a guiding cannula was introduced precisely to the border of the target lesion. Fine needle aspiration biopsy was performed through the cannula and this was followed by multiple core biopsies (6 - 8 cores) using an automated biopsy gun. The pathologic results and complications were reviewed. The clinical course after biopsy and the histopathologic diagnosis were reviewed by following up the medical records.

**Results:** From examining the 36 biopsies, a definitive pathologic diagnosis was made in 33 cases (92%). The etiologies were as follows; 16 (44%) metastatic tumors, 11 (31%) lymphomas and 6 cases (17%) of tuberculosis with positive acid-fast bacilli (AFB). Two cases were reported as chronic granulomatous inflammation due to suspected tuberculosis, and they were treated with tuberculosis medication. One case was reported as chronic inflammation and so re-biopsy was performed; this resulted in the diagnosis of tuberculosis with positive AFB. Serious complications such as rupture of major vessels or bowel perforation did not occur.

**Conclusion:** It is considered that performing percutaneous biopsy for small lymphadenopathy around the abdominal aorta and IVC with using the modified coaxial technique under CT guidance is an accurate and safe procedure.

**Index words :** Biopsies, technology  
Lymphatic system, biopsy  
Retroperitoneal space

Address reprint requests to : Chi Sung Song, M.D., Department of Radiology, Boramae Hospital  
425 Shindaebang 2-dong, Tongjak-gu, Seoul 156-707, Korea.  
Tel. 82-2-840-2270 Fax. 82-2-840-2489 E-mail. chiss@brm.co.kr