



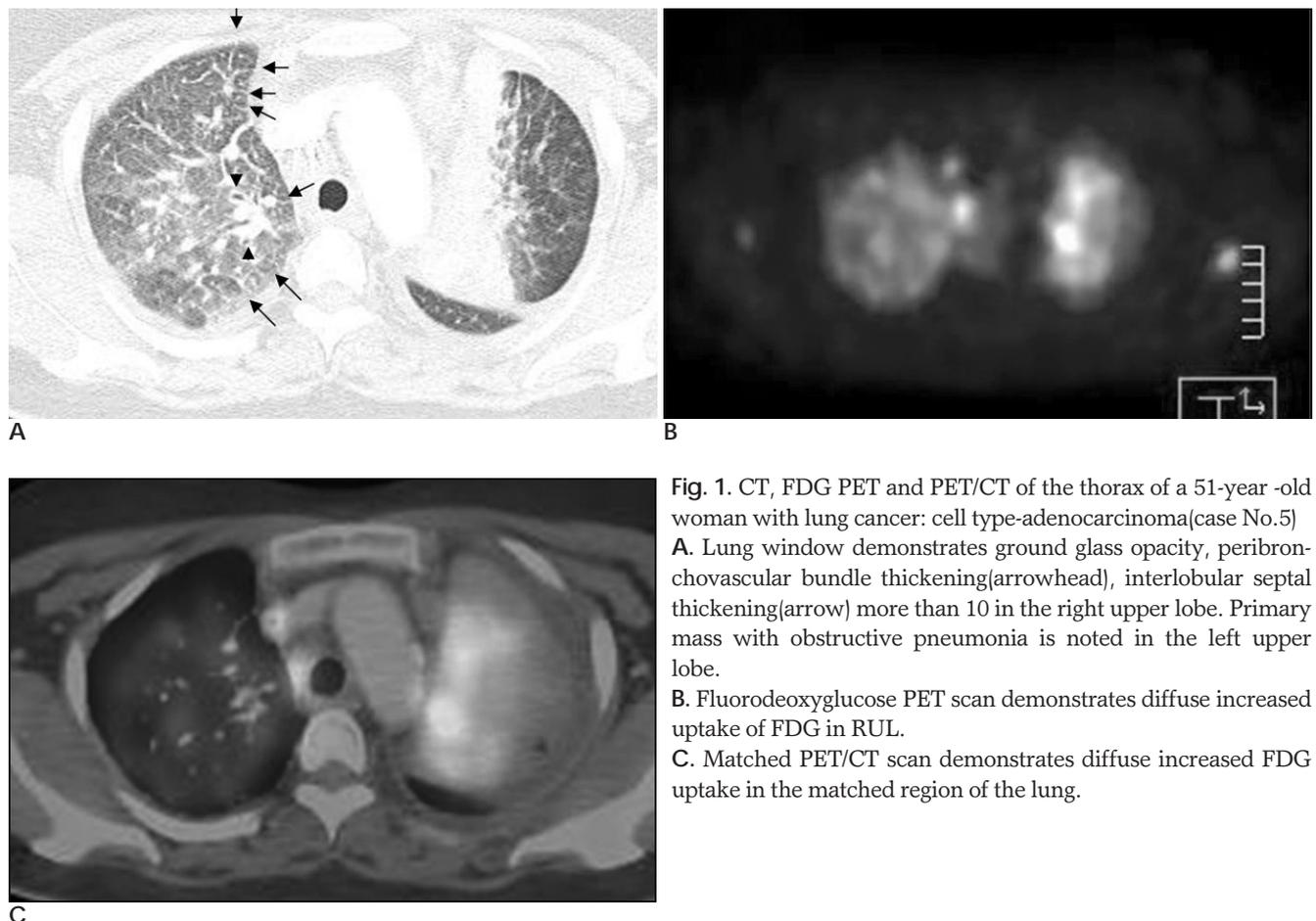
5 가 ,  
 1 8  
 6.69 mmol/L  
 5.6 MBq/kg (0.15 mCi/kg) 18F - fluoro - deoxy -  
 glucose (18F - FDG) 60  
 500 mL ( 700 mL)  
 PET (3 min/bed)  
 (Ordered subset expectation  
 maximization algorithm: 4 iteration, 8 subunits)

PET/CT Allegro PET 16 CT  
 (gemini scanner, Philips, U.S.A.) . CT  
 120 kVp, 130 mAs, 0.9 sec , 5 mm , 0.5 sec

**Table.1.** PET/CT Findings of Patients with Pulmonary Lymphangitic Metastasis

Patients	CT component		Interlobular septal thickening (No./section)	Thickening of peribronchovascular interstitium	Fissural thickening	PET component		Grade
	Location	Location				Location	Pattern	
1. F/39	unilateral	Left	<5	absence	thick			absence
2. M/54	bilateral, BLL		5 - 10	absence	thick			absence
3. M/58	bilateral, BLL		5 - 10	presence	absence	bilateral, BLL	multinodular	Gr 1
4. F/50	bilateral, BLL		<5	presence	thick	unilateral, RLL	multinodular	Gr 1
5. F/51	bilateral, all lobe		>10	presence	thick	bilateral, RUL, lingular	multinodular	Gr 2
6. M/71	unilateral	RLL	<5	presence	absence			absence
7. F/53	bilateral, BLL		5 - 10	presence	thick			absence

\*Grade 0, no activity; grade 1, activity less than or equal to mediastinal background activity; grade 2, activity higher than mediastinal background activity.



**Fig. 1.** CT, FDG PET and PET/CT of the thorax of a 51-year-old woman with lung cancer: cell type-adenocarcinoma(case No.5)  
**A.** Lung window demonstrates ground glass opacity, peribronchovascular bundle thickening(arrowhead), interlobular septal thickening(arrow) more than 10 in the right upper lobe. Primary mass with obstructive pneumonia is noted in the left upper lobe.  
**B.** Fluorodeoxyglucose PET scan demonstrates diffuse increased uptake of FDG in RUL.  
**C.** Matched PET/CT scan demonstrates diffuse increased FDG uptake in the matched region of the lung.

가 0 .

CT . CT

PET

PET/CT

7 PET CT

FDG 가 3 가

, FDG 가 4 2 가

CT

CT PET 2 가

, 2

PET/CT

7

가

FDG 가 3

가 가 (Table 1).

가 10 1 , 5 10

가 1 , 5 가 1 . 3

가 10

가 1

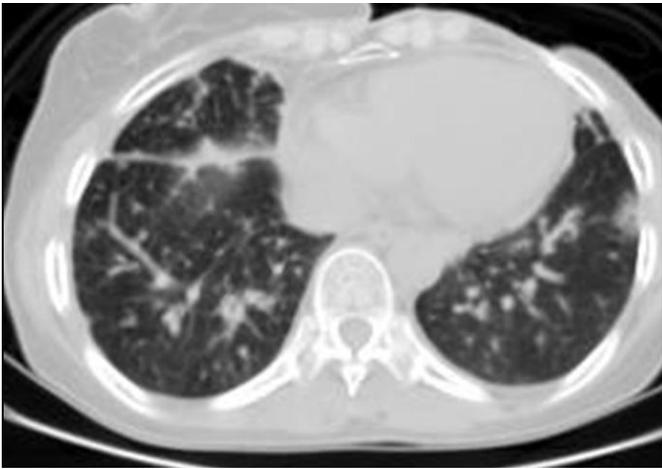
FDG 2 , 가

(SUV (standardized uptake value)) 2.5

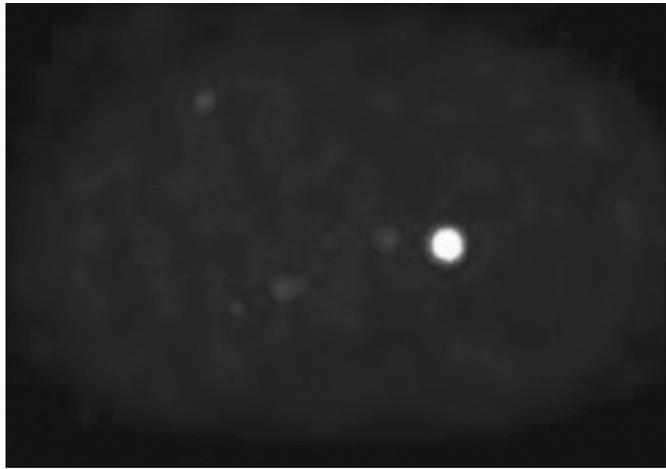
(Fig. 1). SUV FDG 가 가

SUV

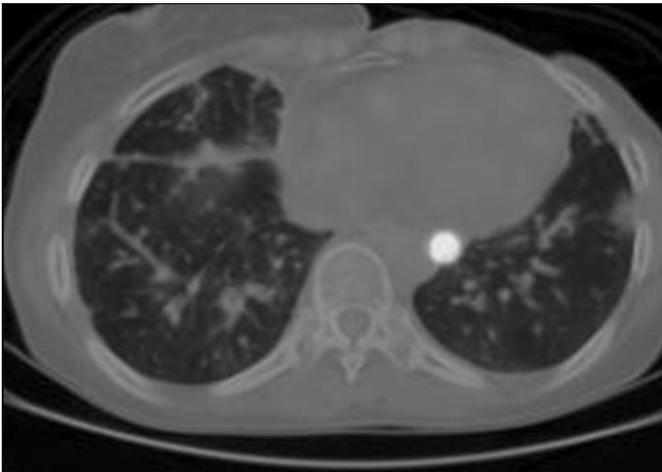
가 1, 2



A



B



C

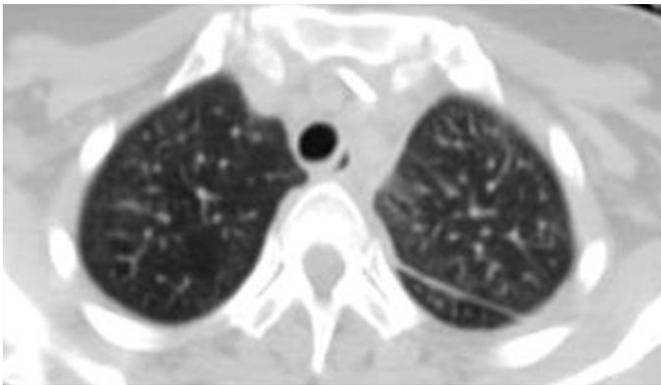
**Fig. 2.** CT, FDG PET and PET/CT of the thorax of a 50-year-old woman with breast cancer : cell type-intraductal carcinoma (case No.4)

**A.** Computed tomography demonstrates less than 5 interlobular septal thickening.

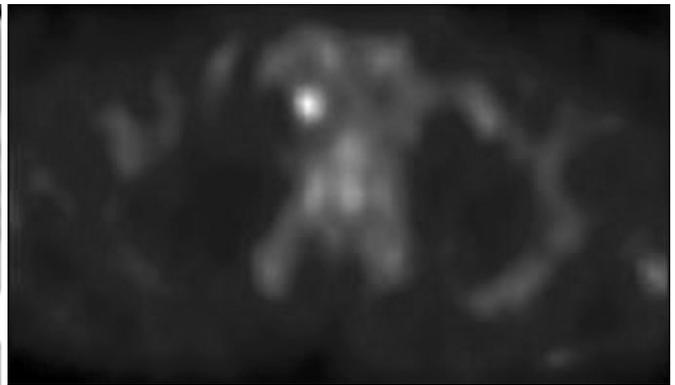
**B.** FDG PET scan demonstrates diffuse mild increased uptake (less than mediastinal blood pool) of FDG.

**C.** Matched PET/CT scan demonstrates diffuse mild increased uptake of FDG in the corresponding area.

가 가 SUV  
 가 가 1 가 5 FDG CT가 가 가  
 1 (Fig. 2).  
 FDG 가 4 CT 가 (8, 9). CT  
 가 가 10 가 2, 5 가 2 ,  
 5 10 2 (Fig. 3). (10, 11). CT 가 가  
 , FDG 가 3 2 가  
 , FDG 가 4 3 가  
 , (1, 12).  
 가 FDG 가 PET FDG  
 PET PET/CT가 가 PET/CT  
 가  
 2004 . FDG  
 CT  
 (13 - 15).



A



B



C

**Fig. 3.** CT, FDG PET and PET/CT of the thorax of a 39-year-old woman with lung cancer: cell type-adenocarcinoma(case No.1: pulmonary lymphangitic metastasis was pathologically confirmed by wedge resection)  
**A.** Lung window demonstrates interlobular septal thickening less than 5 and no peribronchovascular bundle thickening in left upper lobe.  
**B.** Fluorodeoxyglucose PET scan demonstrates no abnormal parenchyma uptake.  
**C.** Matched PET/CT scan shows interlobular septal thickening without FDG uptake in matched area.

PET/CT CT  
 64 PET/CT  
 CT가 가 (16,  
 가 가 PET FDG  
 17). 가 PET FDG  
 가 가 가 PET FDG  
 가 PET 1  
 (6, 7). FDG  
 가 , 가 , 가  
 가 Acikgoz G (6)  
 가 FDG  
 가 CT 가  
 가 가  
 가 가  
 가 .  
 가 PET CT CT  
 가 , 가 FDG  
 가 , FDG 3  
 가 , 가 PET FDG  
 가 CT 가  
 PET/CT PET  
 , PET  
 가 CT , , 가  
 가 , , 가

monary lobule: normal and abnormal CT appearance. *AJR Am J Roentgenol* 1988;151:21-25

4. Grenier P, Valeyre D, Cluzel P, Brauner MW, Lenoir S, Chastang C. Chronic diffuse interstitial lung disease: diagnostic value of chest radiography and high-resolution CT. *Radiology* 1991;179:123-132.
5. Naidich PD, Webb WR, Muller NL, Krinski GA, Zerhouni EA, Siegelman SS. *Computed tomography and magnetic resonance of the thorax, 3rd ed.* Philadelphia: Lippincott-Raven, 1999;418-420
6. Acikgoz G, Kim SM, Houseni M, Cermik TF, Intenzo CM, Alavi A. Pulmonary Lymphatic Carcinomatosis(PLC): Spectrum of FDG-PET Findings. *Clinical Nuclear Medicine* 2006;31:673-678
7. Digumarthy SR, Fischman AJ, Kwek BH, Aquino SL. Fluorodeoxyglucose positron emission tomography pattern of pulmonary lymphatic carcinomatosis. *J Comput Assist Tomogra* 2005;29:346-349
8. Castaner E, Gallardo X, Pallardo Y, Branera J, Cabezuelo MA, Mata JM. Disease affecting the peribronchovascular interstitium: CT findings and pathologic correlation. *Curr Probl Daig Radiol* 2005;34:63-75
9. Johkoh T, Ikezoe J, Tomiyama N, Nagareda T, Kohno N, Takeuchi N, et al. CT findings in lymphangitic carcinomatosis of the lung: correlation with histologic findings and pulmonary function tests. *AJR Am J Roentgenol* 1992;158:1217-1222
10. Stein MG, Mayo J, Muller N, Aberle DR, Webb WR, Gamsu G. Pulmonary lymphangitic spread of carcinoma: apperance of CT scans. *Radiology* 1987;162:371-375
11. Munk PL, Muller NL, Miller RR, Ostrow DN. Pulmonary lymphangitic carcinomatosis: CT and pathologic findings. *Radiology* 1988;166:705-709
12. Honda O, Johkoh T, Ichikado K, Yoshida S, Mihara N, Higashi M, et al. Comparison of high resolution CT findings of sarcoidosis, lymphoma, and lymphangitic carcinomatosis: is there any difference of involved interstitium? *J Comput Assist Tomogr* 1999;23:374-379
13. Aquino SL, Asmuth JC, Alper NM, Halpern EF, Fischman AJ. Improved radiologic staging of lung cancer with 2-[18F]fluoro-2-deoxy-D-glucose-positron emission yomography and computed tomography registration. *J Comput Assist Tomogr* 2003;27:479-484
14. Yi CA, Lee KS, Kim BT, Shim SS, Chung MJ, Sung YM, et al. Efficacy of helical dynamic CT versus integrated PET/CT for detection of mediastinal nodal metastasis in non-small cell lung cancer. *AJR Am J Roentgenol* 2007;188:318-325
15. Bruzzi JF, Murden RF. PET/CT imaging of lung cancer. *J Thorac Imaging* 2006;21:123-136
16. Antoch GA, Stattaus J, Nermat AT, Marnitz S, Beyer T, Kuehl H, et al. Non-small cell lung cancer: dual modality PET/CT in preoperative staging. *Radiology* 2003;229:526-533
17. Shim SS, Lee KS, Kim BT, Chung MJ, Lee EJ, Han J, et al. Non-small cell lung cancer: prospective comparison of integratedFDG PET/CT and CT alone for preoperative staging. *Radiology* 2005; 236:1011-1019

1. . . . . 2002;279-280
2. Heitzman ER. *The lung: radiologic pathologic correlation* 2nd ed. St. Louis: Mosby, 1984;413-421
3. Bergin C, Roggli V, Coblentz C, Chiles C. The secondary pul-

## Comparison between PET and CT Findings for 7 Patients with a Pulmonary Lymphangitic Metastasis<sup>1</sup>

Hee Jin Kwon, M.D., Ki-Nam Lee, M.D., Ki Nam Kim M.D., Do Young Kang, M.D.<sup>2</sup>

<sup>1</sup>Department of Radiology, College of Medicine, Dong-A University

<sup>2</sup>Department of Nuclear Medicine, College of Medicine, Dong-A University

**Purpose:** This study was conducted to compare the PET and CT findings for patients with a pulmonary lymphangitic metastasis.

**Materials and Methods:** We retrospectively reviewed the PET and CT findings of seven patients diagnosed with a pulmonary lymphangitic metastasis between May 2005 and May 2007.

**Results:** All patients had interstitial thickening, as seen on a CT scan, while the PET scans showed abnormal findings in only three patients. In these three patients, one patient had interlobular septal thickening of more than 10, another patient had interlobular septal thickening of more than 5 but less than 10, and another patient had interlobular septal thickening of less than 5. All of the patients had bronchovascular bundle thickening. However, among the four patients that had normal FDG uptake, no patient had interlobular septal thickening of more than 10, two of the patients had interlobular septal thickening of more than 5 but less than 10, and the remaining patients had interlobular septal thickening of less than 5. Only two of the patients had bronchovascular bundle thickening.

**Conclusion:** All patients with pulmonary lymphangitic metastasis have typical CT findings, but some of the patients had FDG uptake, as seen in the PET scans. Thus, CT is a more useful modality for diagnosis for pulmonary lymphangitic metastases.

**Index words :** Lung neoplasms  
Lymphatic metastasis  
Tomography, X-ray computed  
Positron-emission tomography

Address reprint requests to : Ki-Nam Lee, M.D., Department of Radiology, Dong-A University Hospital,  
1,3-ga, Dongdaesin-dong, Seo-ku, Busan 602-103 Korea.  
Tel. 82-51-240-5367 Fax. 82-51-253-4931