

CT 1

. . . . . 2 . . . . .

: X- CT  
 : X  
 17 9 , 4 ,  
 1 , 2 , 1 가  
 . CT , CT  
 : 가 8 (8/9),  
 (1/3) 3 (3/4), 1 (1/1),  
 1 (1/3) (1/9), (1/4),  
 1 (1/3) 15 (15/17)  
 4 (4/9), 3 (3/4), 1 (1/3)  
 . CT 5 (5/9), 2 (2/4),  
 3 (3/3) 2 (2/9)  
 4 (4/9), 3 (3/4), 1 (1/3)  
 :  
 , CT

(1). , 1991 3 1998 3 CT  
 , 17  
 (2-7). CT  
 가 37 84 62 ,  
 6 , 11 .  
 가 6 (n=4), (n=2),  
 (n=3), (n=8)  
 9 (9 ) ,  
 4 ( 1 3  
 2  
 1 ) , 2 ,

<sup>1</sup>  
<sup>2</sup>  
 1999 3 4 1999 8 19

CT GE 9800 (GE medical system, Milwaukee, Wisconsin, U.S.A.) Somatom Plus 24 (Siemens medical systems, Erlangen, Germany), Somatom Plus 4 (Siemens medical systems, Erlangen, Germany)

CT CT (Ultravist, Schering, Germany)  
3ml/kg  
25  
5mm 10mm mediastinal window(level, 0 HU ; width, 300 HU) lung window(level, -700 HU ; width, 1500 HU)

CT

1) , 2) , 3) CT , 4) , 5)  
(stretching), (squeezing)가

3cm CT (CT angiogram sign) (2), (bubble-like) 가 (2).

1cm 2



Fig. 1. 82-year old male with bronchioloalveolar carcinoma. Contrast enhanced CT scan shows consolidation in the right lower lobe. CT angiogram(arrows) is well seen. Attenuation of consolidative lesion is lower than that of muscles.

(Table 1)  
8 (8/9)  
1 (Fig. 1).  
3 (3/4), 1 (1/1), (1/3)  
(Fig. 2)  
(1/9), (1/4), (1/3)  
1  
15 (15/17)  
4 (4/9), 3 (3/4), 1 (1/3)  
(Table 2).  
CT 5 (5/9), 2  
(2/4), 3 (3/3)  
2 (2/9) (Fig. 3)  
(Table 2).  
4 (4/9), 1  
(1/3) 2cm  
4 3

Table 1. Visually Assessed CT Attenuation of Consolidated Lung Compared with that of Adjacent Muscles

Type of tumor	Attenuation		
	Low	Iso	High
Bronchioloalveolar Ca (n= 9)	8(89%)	0	1(11%)
Malignant Lymphoma (n= 4)	0	3(75%)	1(25%)
Epidermoid Ca (n= 1)	0	1(100%)	0
Metastasis (n= 3)	1(33%)	1(33%)	1(33%)

Ca : carcinoma



Fig. 2. 62-year old female with lung metastasis from mucinous adenocarcinoma of pancreas. Contrast enhanced CT scan shows consolidation in the both lower lobe. Consolidative parenchyma has numerous low attenuation areas.

(Fig. 5) 3 1  
(Table 2).

가

가

(1).

(2,3,8-11),

(2,3,9,12), CT

(2,3,6,8,11),

(2,3,13,14),

(2,5)

가

가

Table 2. CT Findings of Consolidative Malignant Neoplasms of the Lung

	BAC (n= 9)	ML (n= 4)	Mucoepidermoid Ca(n= 1)	Metastasis (n= 3)
Air-bronchogram	9(100%)	4(100%)	1(100%)	1(33%)
stretching and squeezing	4(44%)	3(75%)	0	0
CT angiogram	5(56%)	2(50%)	0	3(100%)
Pseudocavitation	2(22%)	0	0	0
Lymphadenopathy	4(44%)	3(75%)	0	1(33%)

(air-space)

(stroma)

가

(scar)

가

2

(type 2 pneumocyte)

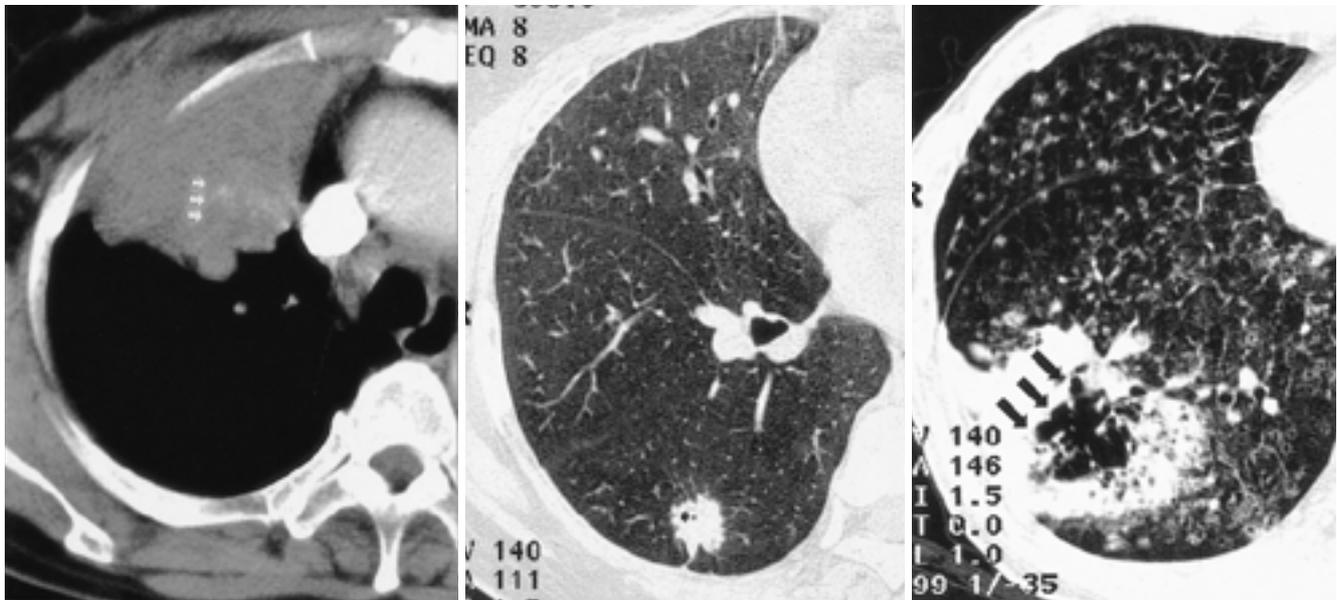
(Clara cell)

(8-10).

BAC : Bronchioloalveolar carcinoma

ML : Malignant lymphoma

Ca : Carcinoma



3A

3B

4

Fig. 3. 53-year-old female with metastasis from colon cancer (non-mucin secreting type).

A. Contrast enhanced CT scan shows consolidation in the right upper lobe. Attenuation of consolidative parenchyma is same as that of muscles. Multiple calcifications are seen within the consolidation(arrows).

B. High-resolution CT scan at the level of right lower lobe shows a pulmonary nodule. The nodule has spiculated margin and internal small air-lucency(arrows).

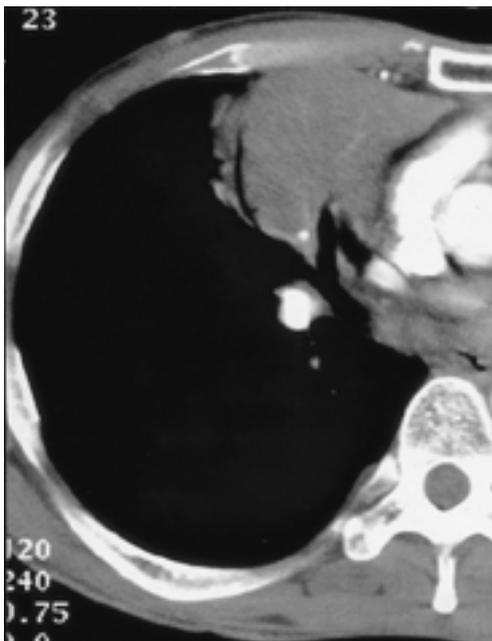
Fig. 4. 62-year-old male with bronchioloalveolar carcinoma.

High-resolution CT scan peripherally located tumor mass which contains large pseudocavitation(arrows). Note widespread extensive multiple nodules containing central cavitation.

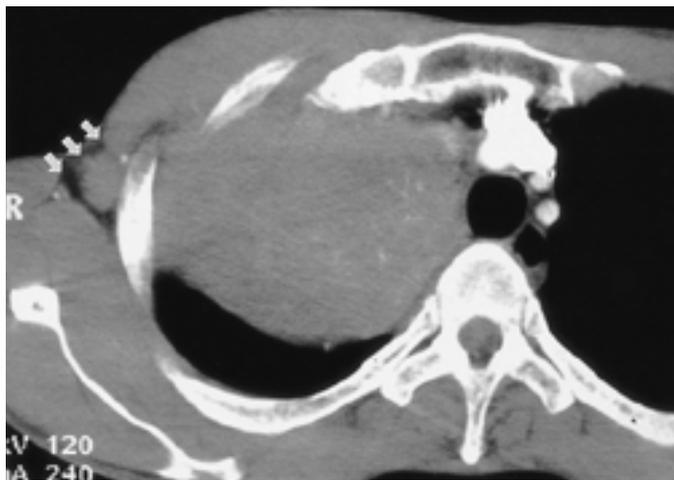
가 . Gaetae (6) (air-space) CT (lepidic) 가 2

가 2 (15,16)

1

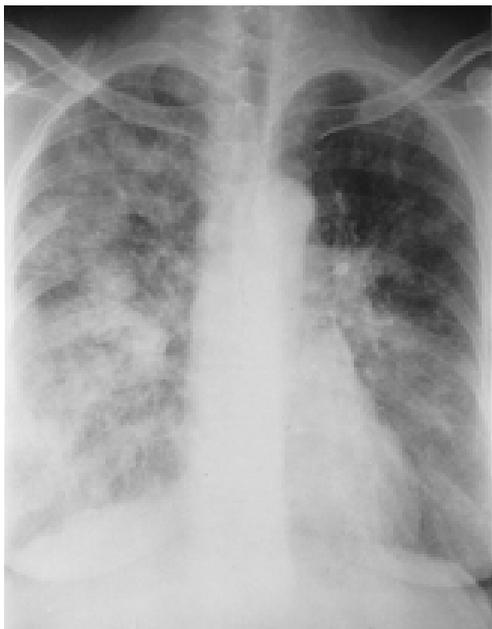


A



B

Fig. 5. 37-year-old male with malignant lymphoma. A, B. Contrast enhanced CT scans show consolidation in the right upper lobe. The consolidative parenchyma is volume expansive and its attenuation is same as that of muscles. Note axillary(arrows) and subcarinal lymphadenopathy.



A



B

Fig. 6. 50-year-old female with mucoepidermoid carcinoma. A. Chest radiograph shows multifocal patchy consolidation in both lungs. B. High-resolution CT scan shows multifocal parenchymal consolidation and ground-glass opacity in both lower lobes.

(17)

87%

(anterior mediastinal)

47.1%

54.3%

가

3 (75%)

1

3cm

(12)

(minor salivary gland)

가

가

4 (4/9)

3 (3/4)

(high

1 (1/3)

grade)

(19)

(interalveolar septa)

가

(18).

CT

가

가

가

가

(lepidic)

가

(4,8).

CT

(11)

2

(2/4)

3 (3/3)

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471

50%

(13,14).

2 (2/9)

가

38%

(2)

55%

2cm

4

3

(5)

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## Malignant Pulmonary Neoplasms Causing Airspace Consolidation: CT Findings<sup>1</sup>

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**Purpose :** To determine the CT findings of consolidative malignant neoplasms of the lung.

**Materials and Methods :** Seventeen patients in whom pulmonary consolidation was seen on chest radiography were involved in this study. In all cases malignancy was subsequently proven; the neoplasms involved were bronchioloalveolar carcinoma (n = 9), malignant lymphoma (n = 4), mucoepidermoid tumor (n = 1), metastasis from colon cancer (n = 2), and metastasis from pancreatic mucinous adenocarcinoma (n = 1). CT images were retrospectively analyzed in terms of enhancement pattern of the consolidation, morphologic appearance of an air-bronchogram, CT angiogram sign, pseudocavitation, and lymphadenopathy.

**Results :** Visually assessed enhancement pattern of the consolidation showed lower attenuation than adjacent muscles in bronchioloalveolar carcinoma (8/9) and metastasis (1/3); isoattenuation in malignant lymphoma (3/4), mucoepidermoid carcinoma (1/1), and metastasis (1/3); and higher attenuation in bronchioloalveolar carcinoma (1/9), malignant lymphoma (1/4), and metastasis (1/3). Among the 15 of 17 patients for whom an air-bronchogram was available, a stretching and squeezing pattern was seen in bronchioloalveolar carcinoma (4/9), malignant lymphoma (3/4), and metastasis (1/3). CT angiogram sign was identified in bronchioloalveolar carcinoma (5/9), malignant lymphoma (2/4), and metastasis (3/3). Pseudocavitation was observed in two patients with bronchioloalveolar carcinoma, while lymphadenopathy was seen in bronchioloalveolar carcinoma (4/9), malignant lymphoma (3/4), and metastasis (1/3). Conglomerate and extrathoracic lymphadenopathy are commonly associated with malignant lymphoma.

**Conclusion :** Malignant neoplasms which appear as consolidative lung lesions appear not only as bronchioloalveolar carcinoma, which is well known, but also in other forms. Although these lesions cannot be differentiated on the basis of air-bronchography and CT angiography, poor enhancement of consolidative lesion and pseudocavitation are characteristic findings of bronchioloalveolar carcinoma, and conglomerate or extrathoracic lymphadenopathy are also characteristic of malignant lymphoma.

**Index words :** Lung neoplasms, CT  
Lung, CT

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