

## CT 1

. . . 2 . 2

: CT  
 :  
 :14] (n=31) 31 [ :53.6 (28-78 ), :17,  
 (n=13), CT(n=17) (n=8), (n=4),  
 (n=2), (n=1), 가 3 .  
 : 20 가 11 [  
 (n=4), (n=2), (n=2), (n=1), (n=1), Kaposi  
 (n=1)] . 20 16  
 (n=12), (n=8), (n=7), (n=6)  
 가 11 (n=15), [n=10, : 5,  
 : 5] (n=10), (n=5),  
 (n=4), (n=1) 2 .  
 CT 10 (n=6), (n=6), (n=8), (n=5)  
 가 9 . (n=7), [n=5, :5,  
 :2] . 가 (n=2), (n=1), (n=1),  
 (n=4) . 7 (n=6), (n=5),  
 (n=4), (n=3) .  
 :

CT

가

, , 가 , CT  
 , (1,2).

(2).

(3)

가

CT

CT

1993 1 1998 3

31 53.6 , 17 , 14 28-78 ,

31 , 17

CT Somatom Plus(Siemens, Erlangen, Germany) collimation 1mm, kV/mA = 137/255, matrix 512×512, FOV 50 high frequency reconstruction algorithm

methe-namine silver

28

CD<sub>4</sub><sup>+</sup>

(n=13, (n=2), (n=1), (n=1)]

(AIDS, n=8)

(n=4), (n=2),

CT

가

1 3 가

31 20

, 11

(n=1), (n=4), (n=2), (n=1), (n=1), (n=1),

20 (Table 1)

16 (n=12), (n=8), (n=7),

(n=6)

11 15

5 5

3 (Fig. 1A), 1

1 10 4 1

가 1

Table 1. Chest Radiographic and HRCT Findings of 20 Pure Pneumocystis Carinii Pneumonia

Findings	Chest radiograph(n= 20)	HRCT(n= 10)
Parenchymal opacities		
Consolidation	12	6
Ground-glass	7	6
Linear-reticular	8	8
Nodules	6	5
Distribution		
Bilateral	15	7
Unilateral	3	3
Predominance	10	5
Central	5	5
Lower	5	2
Ancillary findings		
Cysts	5	1
Pneumothorax	1	1
Pleural effusion	10	4
Adenopathy	4	2
Normal findings	2	0

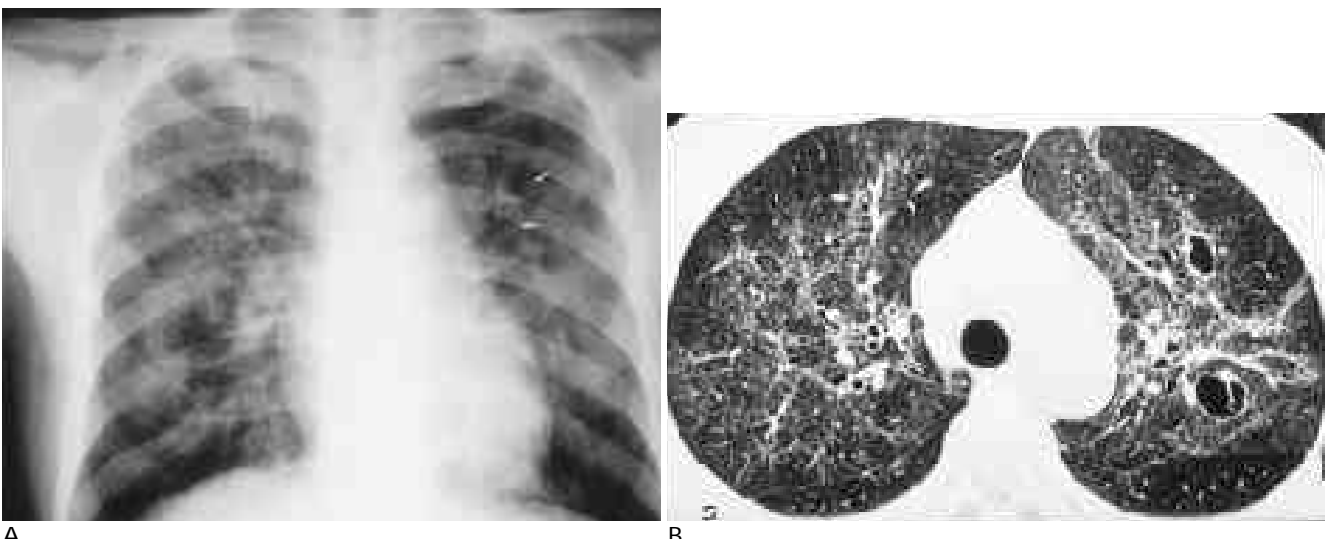


Fig. 1. 43-year-old man with AIDS showing lung cysts associated with pneumocystis carinii pneumonia.  
A. Chest radiograph shows bilateral diffuse haziness with central predominance and thin walled cystic lesions (arrows) in the left upper lobe.  
B. HRCT shows bilateral ground-glass opacities with multiple linear-reticular opacities. Note two thin-walled cystic lesions in the left upper lobe.

가 2

10 CT (Table 1)

(n=8), (n=6), (n=6), (n=4)

(n=5) 2, 3, 2

saic) 5 (Fig. 2), 1, 4, (patchy or mo-

2, 4

3, 3, 1

5, 1, 3, 1

5mm 가

(centrilobular nod-

ule)

가 9, 7

3, 2

가 7 (70%) 5

ular) (intralobular)

(Crazy-paving appearance) 2 (Fig. 2, 3),

1B). 1 3 (Fig.

(Fig. 1B). 1

4 2 1

1 2 CT

1 1cm 가

11 (Table 2)

(n=6), (n=6), (n=5),

9

가 2

3, 가 2

1 가

7 CT (Table 2)

(n=5), (n=4), (n=3), (n=6)

1 3

11 CT 7

Table 2. Chest Radiographic and HRCT Findings of 11 Pneumocystis Carinii Pneumonia Combined with Other Lung Diseases

Findings	Chest radiograph(n= 11)	HRCT(n= 7)
Parenchymal opacities		
Consolidation	6	3
Ground-glass	5	5
Linear-reticular	4	4
Nodules	6	6
Well-defined	3	3
Ill-defined	3	3
Distribution		
Bilateral	9	7
Unilateral	1	0
Ancillary findings		
Cysts	0	1
Pneumothorax	0	0
Pleural effusion	3	1
Adenopathy	2	2
Cavities	2	1

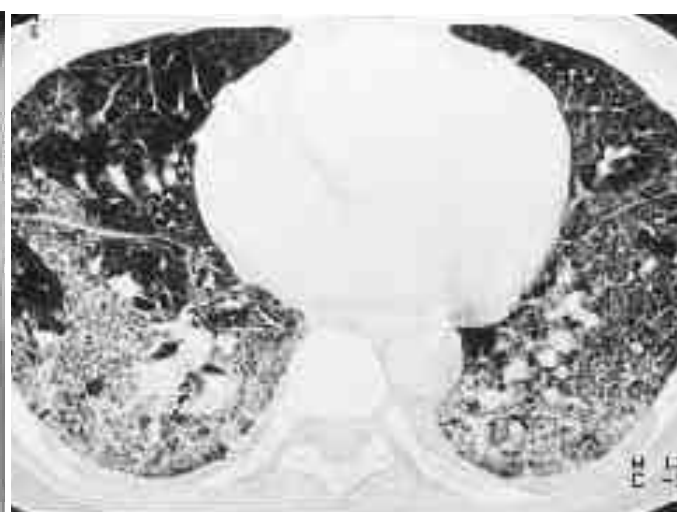


Fig. 2. 48-year-old man with AIDS showing a "mosaic pattern" of ground-glass opacity.  
 A. Chest radiograph shows bilateral diffuse haziness.  
 B. HRCT shows a "mosaic pattern" of ground-glass opacities. The lesion in the right lower lobe contains numerous small reticular opacities representing "crazy-paving" appearance.

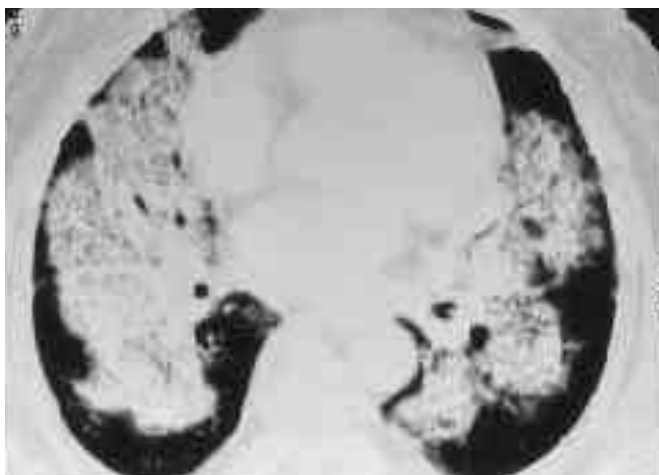
3 2 1  
3  
1  
(flame-shaped)  
가 2 가  
1  
가  
가  
가  
(4-7)  
(lymphoplasmacytic interstitial pneumonia)  
(eosinophilic foamy alveolar exudate)  
(interstitial pattern),  
(inter-  
stitial granulomatous pattern),  
(interstitial pneumonitis with organizing pneumonia),  
(diffuse alveolar damage)  
(8).  
(9).  
(7,10)  
(11)  
(12).  
18%  
20  
2 (10%)  
1 1cm  
CT



A



B



C

Fig. 3. 58-year-old woman of pneumocystis carinii pneumonia without underlying disease.

A. Chest radiograph shows bilateral diffuse consolidations with lower zonal predominance and another consolidation in the right upper lobe.

B. HRCT through the carina shows bilateral patchy consolidations. Note reticular opacities within ground-glass opacities in the right lung.

C. HRCT through the lower lobes shows bilateral patchy consolidations and bilateral central ground-glass opacities containing reticular opacities suggesting "crazy-paving" appearance.

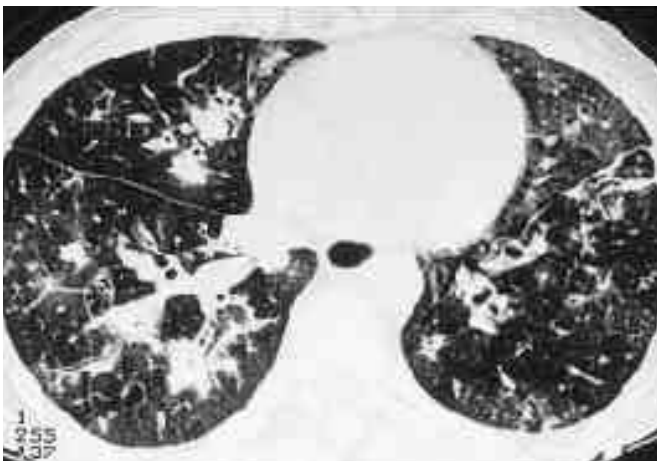
(n = 1, 5%), (n = 6, 30%), (n = 5, (crazy-paving appearance)  
 25%), (n = 1, 5%), (n = 4, 20%),  
 (n = 10, 50%) 가  
 2 ( , ) 가  
 CT (n = 8, 80%) 5 10 (n = 6, 60%) (n = 6, 60%)  
 (12) CT (pneumatocele) 1)  
 가 가 (60-80%) check-valve , 2) check-valve  
 (8,15,17-19). 가  
 10 CT , 3) , 4)  
 가 5 (50%) (19). Chow (20)  
 (8,17,18). 가 (subpleural cyst)  
 (alveolar interstitial thickening)  
 (organization)  
 가 ,  
 가



A



B



C

Fig. 4. *Pneumocystis carinii* pneumonia with Kaposi's sarcoma in a 35-year-old woman with idiopathic CD4<sup>+</sup> T-lymphocytopenia.

A. Chest radiograph shows bilateral multiple patchy haziness. Note ill-defined and irregular nodular lesions in both lower lungs.

B. HRCT through the upper lobes shows a "mosaic pattern" of ground-glass opacities and multiple small nodular opacities in the left upper lobe.

C. HRCT through the lower lobes shows irregular or "flame-shaped" nodules occurring predominantly in the peribronchovascular region. Multiple bilateral patchy ground-glass opacities are also noted.

Author (Year)	Number of Patients	CT Findings	Other Findings
Kuhlman (12)	12	94% (20/21)	(n=5, 83%), (n=3, 50%), (7%)
Bier (21)	21	10 (40%)	(n=1, 10%), (Solitary pulmonary nodule)
1	1	1cm	
3	2	(Mycobacterium avium-intracellulare complex)	
가	2	가	
(12).	(n=8)		
CD <sub>4</sub> <sup>+</sup> 150 cells/mm <sup>3</sup>	(n=2)	CD <sub>4</sub> <sup>+</sup> 3.8 - 150	CD <sub>4</sub> <sup>+</sup>
가 200 cells/mm <sup>3</sup>	( : 54, : 3.8 - 150)		
200 cells/mm <sup>3</sup>			
8	3 (38%)	(22,23).	
(n=1)		(n=2)	23
2 (9%)		Kim (24)	
		(85%)	

24. , , , , , ,  
 , 1998;39:933-939

## Radiographic and HRCT Findings of Pneumocystis Carinii Pneumonia<sup>1</sup>

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**Purpose :** To analyze the radiographic and HRCT findings of Pneumocystis carinii pneumonia.

**Materials and Methods :** We reviewed the medical records and retrospectively analysed the chest radiographs(n= 31) and HRCT scans(n= 17) of 31 patients with Pneumocystis carinii pneumonia who had been followed up at our institute between, 1993 and March 1998. Pneumocystis carinii pneumonia was confirmed by cytologic evaluation of sputum stained with methenamine silver(n= 25) or on the basis of clinical history(n= 6). The study group included 17 men and 14 women aged 28-78(average, 53.6) years. Twenty-eight patients had underlying conditions such as hematologic diseases(n= 13), AIDS(n= 8), malignancy(n= 2), DM(n= 2) and malnutrition(n= 1), and three were free from underlying diseases.

**Results :** Twenty patients had pure Pneumocystis carinii pneumonia and 11 had combined lung diseases, namely pulmonary tuberculosis(n= 4), pulmonary metastasis(n= 2), bacterial pneumonia(n= 2), atypical mycobacterial infection(n= 1), pulmonary edema(n= 1), and Kaposi's sarcoma(n= 1). Chest radiographic findings of 20 cases of pure Pneumocystis carinii pneumonia included consolidation(n= 12), linear-reticular opacity(n= 8), ill defined haziness(n= 7), and nodules(n= 6), with bilaterality in 15 cases and zonal predominance in ten [central(n= 5), lower(n= 5)]. Ancillary findings included pleural effusion(n= 10), cysts(n= 5), lymphadenopathy(n= 4) and pneumothorax(n= 1). In two patients, findings were entirely normal. HRCT findings in ten cases of pure Pneumocystis carinii pneumonia included ground-glass opacity(n= 6), consolidation(n= 6), linear-reticular opacity(n= 8), and nodules(n= 5), with bilaterality in seven cases and zonal predominance in five [central(n= 5), lower(n= 2)]. Ancillary findings among these cases included pleural effusion(n= 4), lymphadenopathy(n= 2), cysts(n= 1), and pneumothorax(n= 1). HRCT findings in seven cases of Pneumocystis carinii pneumonia combined with other lung diseases included nodules(n= 6), ground-glass opacity(n= 5), linear-reticular opacity(n= 4), and consolidation(n= 3).

**Conclusion :** Although ground-glass opacity in both pure Pneumocystis carinii pneumonia and this same condition combined with other lung diseases is a common radiologic finding, the possibility of variable radiologic findings in cases of Pneumocystis carinii pneumonia and other lung diseases with which it frequently combines is essential for approximate diagnosis of Pneumocystis carinii pneumonia.

**Index words :** Lung, infection

Lung, CT

Lung, radiography

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