

CT¹²

CT (HRCT) . HRCT
 7 . 1 , 6 가
 . HRCT , , ,
 , 2 가
 : HRCT (n=7), (n=3), (n=1),
 (n=1) . 2 - 10 mm (n=6) ,
 1
 : 2 - 10 mm ,
 , HRCT

(varicella - zoster virus)

. 7

90% 가
 1 - 3 , , 가
 . Tzanck
 (1). 가 ,
 CT (HRCT) 가 5 . 2 Tzanck
 Picken (2) Kim (3) ,
 가
 7
 가가 . 7 6
 , 1 1

1998 5 2003 2
 HRCT 7
 27 - 45 36.6 , 5 , 2 7 6 (: 3 , : 3 - 16) HRCT ,
 7 (: 5 - 13)
 Tzanck test (multinucleated giant cells)
 가 , 가
 HRCT Somaton Plus (Siemens, Erlangen, Germany)
 Lightspeed Qx/i (GE medicine, Milwaukee, Wis)
 1 - 1.25 mm, 8 - 10 mm, 137 kV, 255 mA
 high frequency reconstruction
 1
 2
 2003 5 14 2003 9 8
 469

algorithm, 1500 HU, 3, 2
 -700 HU. 1
 HRCT, 3 3, 2-10 mm
 2 가 (Fig. 2B). 10 mm (Fig. 3B). 2
 HRCT Table 1 5, 5
 1 cm 1
 3 (Fig. 1A), 1 (Fig. 2A), 2 (Fig. 3A), 1
 HRCT 7, 3, 1
 1, 1 가
 7 6 (Fig. 1B), 1, (varicella - zoster virus)
 2-10 mm (Herpesviridae) (chicken pox, or

Table 1. Summary of Chest Radiographic and HRCT Findings in Patient with Varicella-Zoster Pneumonia

Case No. Sex/Age	Chest Radiographic Findings	Chest CT Findings				
		Location	Nodule	Consolidation	GGO	Miscellaneous
1. M/44	Multiple nodules	All lungs	+			
2. M/45	Multiple nodules	All lungs	+			
3. M/27	Multiple nodules	All lungs	+	+		
4. F/38	Bilateral consolidation	All lungs	+	+	+	ARDS
5. M/36	Nodule	RML, LLL	+	+		
6. F/31	Nodule	RML	+			
7. M/35	No lesion	LLL	+			

GGO: ground glass opacity, LLL: left lower lobe, RML: right middle lobe, ARDS: acute respiratory distress syndrome

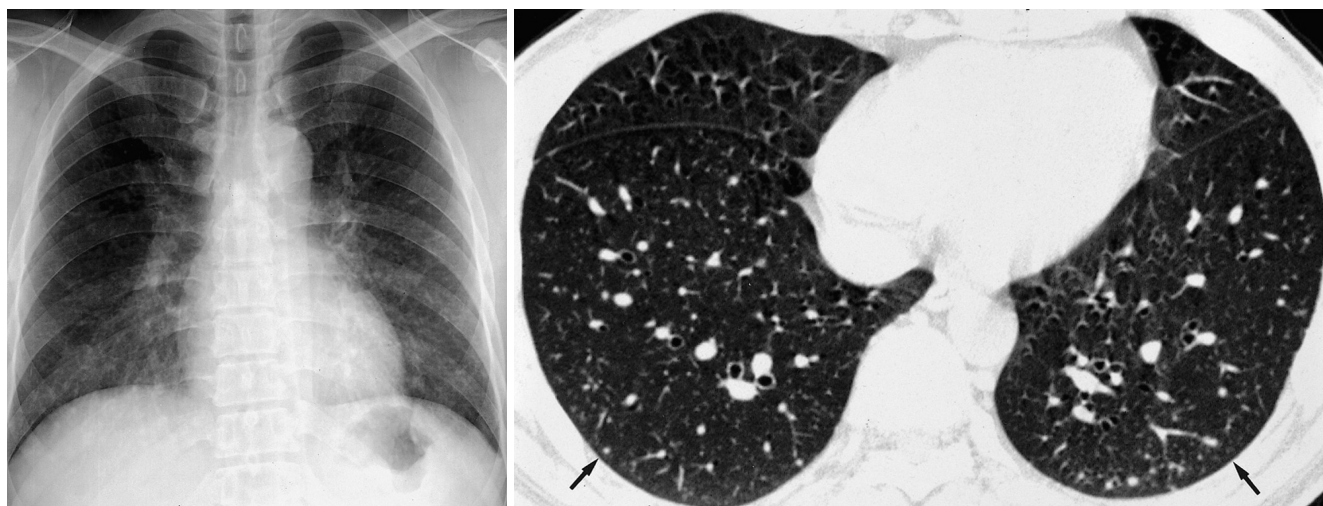


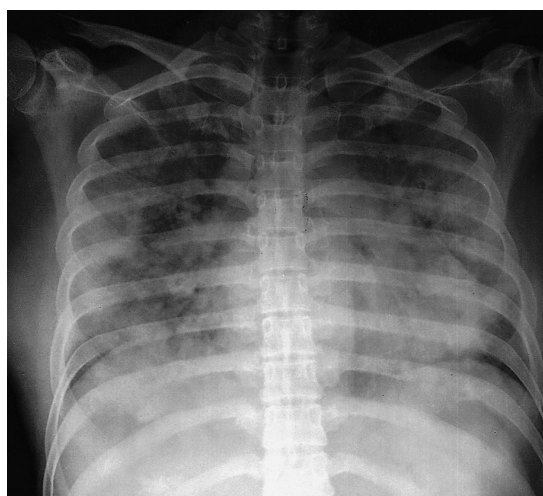
Fig. 1. Varicella-zoster pneumonia in a 39-year-old man with skin rashes, fever and itching sensation (case 1).
 A. Chest radiograph shows multiple small nodules in both lungs, especially lower lung zone.

B. High resolution CT scan performed 18 days after symptom onset shows randomly distributed multiple small nodules (arrows).

varicella)

(herpes zoster, or shingles)

가 , 50 가 (4). (1, 8, 9).
가 14 (: 3-21) ,
5 - 50% , 9 - 50% 2 - 3 , (9).
(5, 6). , 3 - 4
90%가 20 ,
(20%)
(7).



A

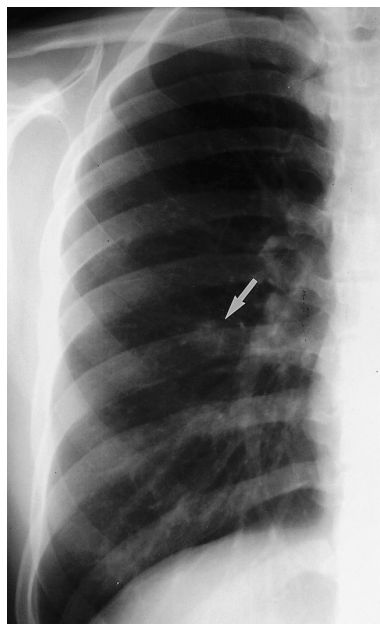


B

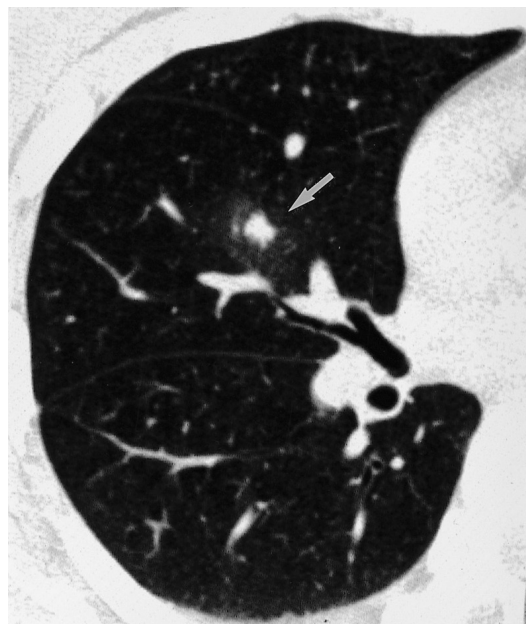
Fig. 2. Varicella-zoster pneumonia with acute respiratory distress syndrome in a 38-year-old woman. Initially she complained skin rashes, but after 5 days she cared with ventilator because of dyspnea and hypoxia (case 4).

A. Initial chest radiograph shows diffuse bilateral air-space consolidation and nodular opacities.

B. HRCT shows diffuse area of ground glass opacity, patchy consolidation, interlobular septal thickening (short arrows) and multiple small nodules (long arrows).



A



B

Fig. 3. Varicella-zoster pneumonia in a 31-year-old woman with skin rashes and general illness (case 6).

A. Chest radiograph shows well-defined single nodule (arrow) in right middle lung zone.

B. High resolution CT scan obtained 3 days after A shows about 10-mm-sized nodule surrounded by ground glass attenuation (CT halo) in right middle lobe (arrow).

- 가 1
- CT
- HRCT
- HRCT
- (3, 11).
- 2 - 10 mm
- 2 - 10 mm
- 가 가
- (10).
- 가 ,
- 가
- 2 - 3 mm
- (1, 3,
- 7, 11, 12).
- CT
- Picken (2), Nakamura
- (8) Kim (3) Picken
- CT
- 5 - 10
- mm , 3
- Kim (3)
- HRCT 1 - 10 mm
- 가
- 가 3 ,
- 가 2 , 1 ,
- 가 3
- HRCT 2 - 10
- 7
- mm
- 가 가
- 가
- 1
- 가 6
- 가 , 6
- . 1
1. Armstrong P, Wilson AG, Dee P, Hansell DM. Imaging of diseases of the chest 2nd ed. St. Louis: Mosby, 1995:215-216
 2. Picken G, Booth AJ, Williams MV. Case report: the pulmonary lesions of chickenpox pneumonia-revisited. *Br J Radiol* 1994;67:659-660
 3. Kim JS, Rye CW, Lee SI, Sung DW, Park CK. High-resolution CT findings of varicella-zoster pneumonia. *AJR Am J Roentgenol* 1999; 172:113-116
 4. Isselbacher KJ, Braunwald B, Wilson JD, et al. *Harrison's principle of internal medicine*. 13th ed. Mcgraw-Hill Professional, 1994;1086-1089
 5. Nilsson A, Ortqvist A. Severe varicella pneumonia in adults in Stockholm County 1980-1989. *Scand J Infect Dis* 1996;28:121-123
 6. Feldman S. Varicella-zoster virus pneumonitis. *Chest* 1994;106:22-27
 7. Fraser RG, Fraser RS, Pare JA, Pare PD, Generics GP. Diagnosis of diseases of the chest, 3rd ed. Philadelphia: Saunder, 1989:1062-1068
 8. Nakamura M, Kanazawa M, Yamaguchi K, Akizuki M, Satoh S, Inada S. Pneumonia caused by varicella-zoster virus in patient with rheumatoid arthritis. *Nihon Kyobu Shikkan Gakki Zasshi* 1996; 43:610-615
 9. Shirai R, Sano K, Matsuyama S, et al. Varicella pneumonia in a healthy adult presenting with severe respiratory failure. *Intern Med* 1996;35:315-318
 10. Triebwasser JH, Harris RE, Bryant RE, Rhoades ER. Varicella pneumonia in adults. Report of seven cases and a review of literature. *Medicine* 1967;46:409-423
 11. Kim EA, Lee KS, Primack SL, et al. Viral pneumonias in adults: radiologic and pathologic findings. *Radiographics* 2002;22:137-149
 12. Esmonde TF, Herdman G, Anderson G. Chickenpox pneumonia: an association with pregnancy. *Thorax* 1989;44:812-815

High-Resolution CT Findings of Varicella-Zoster Pneumonia¹

Hye Jeung Choo, M.D., Kun-Il Kim, M.D., Ki-Nam Lee, M.D.²

¹*Department of Diagnostic Radiology, Busan National University Hospital*

²*Department of Diagnostic Radiology, College of Medicine, Dong-A University*

Purpose: To describe the high-resolution CT findings of varicella-zoster pneumonia.

Materials and Methods: Seven adult patients with clinically and serologically diagnosed varicella-zoster pneumonia underwent HRCT scanning. One had undergone a kidney transplant, and the others were immunocompetent. The HRCT findings were retrospectively analyzed by two radiologists in terms of the presence of a nodule, pneumonic consolidation, ground-glass attenuation and pleural effusion, and with regard to the number, size and distribution of nodules.

Results: HRCT findings of varicella pneumonia included nodule ($n=7$), consolidation ($n=3$), diffuse ground-glass attenuation ($n=1$) and pleural effusion ($n=1$). Nodules were mostly 2 - 10 mm in size, and multiple ($n=6$), and zonal predominancy was not apparent. One case in which HRCT demonstrated diffuse ground-glass opacity and slight bilateral pleural effusion involved a patient in whom complications of acute respiratory distress syndrome occurred.

Conclusion: When HRCT demonstrates the presence of nodules 2 - 10 mm in size multiple nodules, or nodule surrounded by ground-glass attenuation, or the coalescence of nodules and consolidation is observed in adults with chickenpox, the varicella-zoster pneumonia should be included in the differential diagnosis.

Index words : Lung, CT
Lung, infection
Viruses

Address reprint requests to : Kun-Il Kim, M.D., Department of Diagnostic Radiology, Busan National University Hospital.
1-10, Ami-dong, Seo-gu, Busan 602-739, Korea.
Tel. 82-51-240-7373 Fax. 82-51-244-7534