

CT

CT 41

CT 8.7 ( $\pm 5.0$ )

7.5 ( $\pm 2.5$ ) 2

4

CT 54

31 (57.4%) (15), (10), (7),

(3), (3), (3), (1)

23 (42.6%)

32.0mm ( $\pm 13.9$ ) 7.9mm ( $\pm 4.8$ )

20.9mm ( $\pm 12.5$ ) 4.1mm ( $\pm 2.6$ ) 2 4 2

가 2 2

CT 57.4%

42.6%

가

## HRCT

(1).

( HRCT) 1993 5 1997 2

## HRCT

## HRCT

41

(2).

가

15 76

39 ( $\pm 13$ , :15, :76)

24 , 17

(28 ),

(7 )

(4 ),

1998 4 22

1998 12 15

(2 ) . 41 HRCT  
 54 . 1 1  
 6 1.3 ( ±0.9)  
 13 , 18 가 9  
 8 . 4.7  
 14.8 7.5 ( ±2.5) . HRCT  
 4.1 33.2 8.7 ( ±5.0)  
 가 6  
 12  
 HRCT  
 HRCT 가 HRCT  
 10 ( ±7)  
 HRCT 4 . 2  
 HRCT 8.5 ( ±3.5) . HRCT  
 SCT-5000T CT (Shimadzu Corporation, Kyoto, Japan)  
 120kVp, 160mmAs,  
 2mm, 2 , 10mm  
 bone algo-  
 rithm . Window level -280 HU, Window width  
 750 HU  
 HRCT lung window  
 , , , ,  
 HRCT ,

가  
 HRCT  
 HRCT 31 (57.4%)

Table 1. Averages of Largest Diameter of Cavities and Maximal Thickness of Wall of Cavities

	Largest Diameter	Maximal Thickness	Number
Total*	29.5	7.8	54
Cavity(-)*			
PreTx	27.3	7.7	31
Cavity(+)*			
PreTx	32.0	7.9	23
PostTx	20.9	4.1	

\*Average of largest diameter and maximal thickness before therapy.  
 \*Cavity(-) : Disappeared cavities after antituberculous therapy.  
 \*Cavity(+) : Persistent cavities after antituberculous therapy.  
 Tx : Treatment

Table 2. CT Findings of Outer Margin of Cavities

	Cavity(-) (n= 31) PreTx	Cavity(+ ) (n= 23) PreTx	PostTx
Smooth	15	16	18
Irregular	10	6	2
Partial Irregular	2		
Spiculated		1	3
GGO*	1		
Not defined	3		

\*GGO : Ground glass opacity.  
 Tx : Treatment

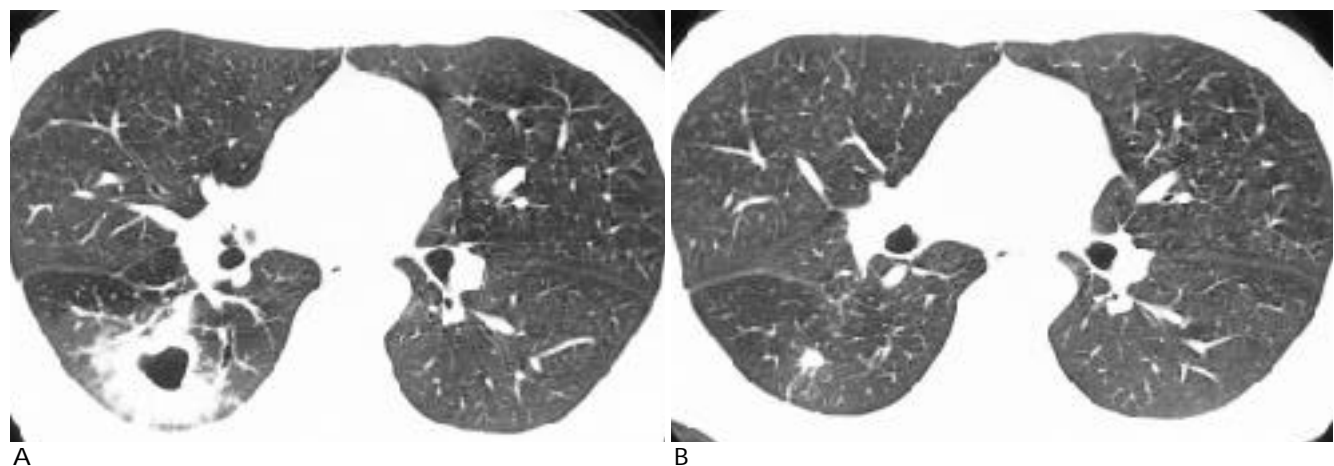


Fig. 1. Obliteration of the cavity on the follow-up HRCT after antituberculous therapy.  
 A. Initial HRCT shows a solitary cavity with smooth internal wall with adjacent centrilobular nodules in the superior segment of RLL  
 B. On the follow-up HRCT, the previous cavitory lesion is replaced by granuloma with spiculated margin.

23 (42.6%) . 7 , 3 , 3 ,  
 HRCT 54 1 , 3  
 29.5mm(  $\pm$  13.2), 7.8mm(  $\pm$  5.2) . (Fig. 1).  
 (n=31)  
 6mm 50mm 27.3mm 15 , 10 , 8 ,  
 2 - 23mm 7.7mm (Table 1). 6 가 ,  
 15 , 10 , 1 , 2  
 2 , 가 3 , 1 가 .  
 가 1 (Table 2). 2 4 2  
 (n=23) 가  
 32.0mm(  $\pm$  13.9, 5-65mm) , (Fig. 2), 2 HRCT  
 7.9mm(  $\pm$  4.8, 3.5-19mm) . 가 HRCT  
 가 16 , 6 , 1  
 20.9mm(  $\pm$  4.1mm(  $\pm$  18 ,  
 12.5, 7-43.5mm) ,  
 2.6, 1.2-10mm) .  
 2 , 3  
 HRCT 16 15 가 (3).  
 6 2 , 2 가  
 2 가 (4).  
 가 가 2 가 10cm (5) HRCT  
 가 가 가 3  
 (n=31)  
 15 , 10 , HRCT

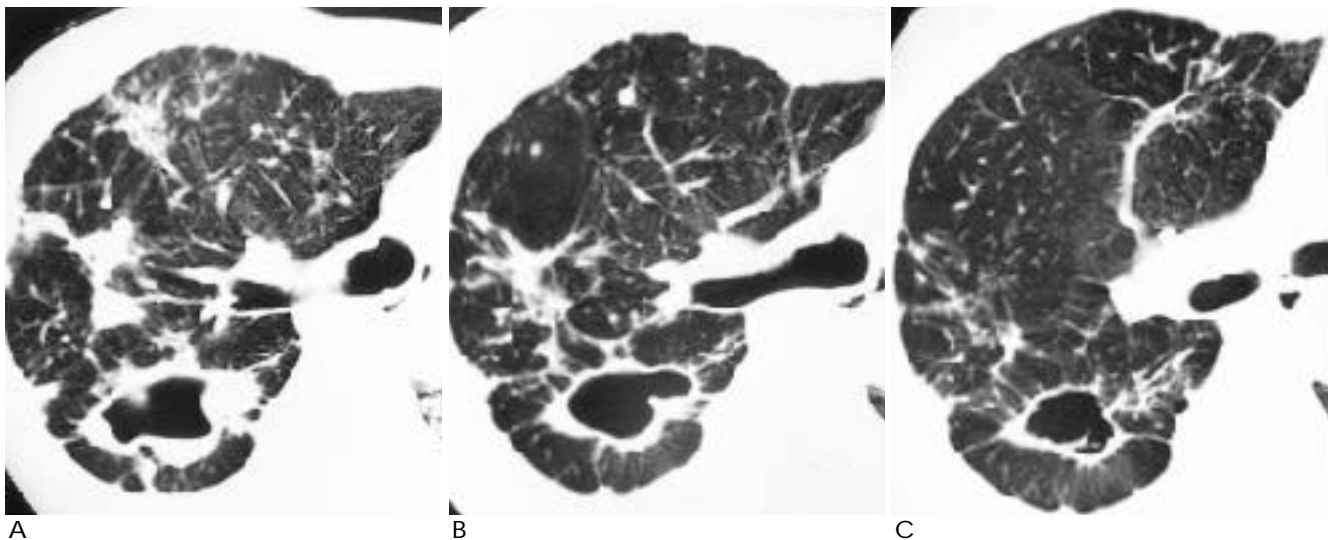


Fig. 2. The changes of the largest diameter and maximal wall thickness of cavities after antituberculous treatment.  
 A. Initial HRCT at subcarinal level reveals a solitary cavity with spiculated outer margin in RLL. There are also multiple centrilobular nodules as well as some consolidations and interlobular septal thickenings in RUL.  
 B. The first follow-up HRCT after 6 months shows thinning of the wall and decrement in the largest diameter of cavity.  
 C. The second follow-up HRCT after 15 months from initial study shows further decrement in wall thickness and maximal diameter with adjacent parenchymal fibrotic changes.

가

HRCT

. HRCT

57.4%

, 42.6%

가

HRCT

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## Changes of Tuberculous Cavities after Antituberculous Therapy : Analysis with High-Resolution CT<sup>1</sup>

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**Purpose :** To evaluate changes in tuberculous cavities, one of the major factors used to determine the activity of tuberculosis, by high-resolution CT(HRCT) in active pulmonary tuberculosis patients after antituberculous therapy.

**Materials & Methods :** The HRCT findings of 41 patients with active tuberculosis were analyzed with particular emphasis on the appearance of tuberculous cavities before and after therapy. We measured the largest diameter and maximal wall thickness of the cavities, as well as accompanying changes occurring during follow-up.

The mean interval between initial and follow-up study was 8.7 months(minimum:4.1, maximum:33.2;S.D.:  $\pm 5.0$ ) and the mean duration of antituberculous therapy was 7.5 months(minimum:4.7, maximum:14.8;S.D.:  $\pm 2.5$ ).

**Results :** Among 41 patients, 54 cavities were found on initial HRCT. Thirty one(57.4%) of these disappeared during follow up HRCT with residual changes such as residual fibrotic scar(n= 15), granuloma(10), paracicatrical emphysema(7), calcification(3), traction bronchiectasis(3), consolidation(3) and bullous emphysema(1). Twenty three of the cavities(42.6%) decreased in size and wall thickness, but did not disappear completely during follow-up examination. Mean largest diameter and maximal thickness of 23 cavities were 32.0mm( $\pm 13.9$ ) and 7.9mm( $\pm 4.8$ ) on initial HRCT, falling to 20.9mm( $\pm 12.5$ ) and 4.1mm( $\pm 2.6$ ), respectively, during follow-up HRCT. Among four patients who underwent a second follow-up, the largest diameter and maximal thickness of the cavities decreased continuously. In two patients, however, the cavities did not disappear, though in the other two they had disappeared by the time follow-up HRCT was performed a second time.

**Conclusion :** During follow-up HRCT after antituberculous therapy(mean duration of 7.5 months), 57.4%(31/54) of cavities were seen to have disappeared, with residual changes such as fibrotic scars, granulomas, paracicatrical emphysema and calcification ; 42.6% of the cavities still remained, however, with retractive and fibrotic change. Such fibrotic and retractive changes should not, therefore, be taken as indicative of active tuberculosis, especially in patients who have successfully completed their medication.

**Index words :** Lung, CT  
Tuberculosis

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