

:  
 ,  
 X HRCT  
 , HRCT  
 : 2003 3  
 8 , 2 1 8 X 9  
 가 X HRCT . 2 HRCT,  
 : 8 6 , 4 HRCT . 8 X  
 (n=4), (n=1), (n=1) . HRCT  
 4 , HRCT  
 : HRCT  
 HRCT

1/3 , 6 70-  
 (1). 80% (reactive airway dysfunc-  
 (inhalation pneumonitis), (pulmonary tion syndrome, RADS) (4).  
 thromboembolism), (acute respiratory , 1985 Brook (5)  
 distress syndrome), (pneumonia), , 가 ,  
 (tracheobronchitis) (2). , ,  
 가  
 (3). ,  
 2001 9 11  
 가  
 가  
 (high  
 resolution computed tomography: HRCT)  
 HRCT

1  
 2  
 3

FEV<sub>1,0</sub>, FEF25 - 75% ,  
 FEV<sub>1,0</sub> 15% , FEF25 - 75% 35%

가

2003 3 27  
 가 27 가 , X HRCT  
 9 8 , 가 , 8 X  
 X , , HRCT 8 HRCT 1  
 11.1 (9.6 - 13.9) , HRCT 4 - channel MDCT (Lightspeed QX/i, GE Medical  
 Systems, Milwaukee, Wis, U.S.A.) . 1.25 mm  
 HRCT 4.2 X  
 HRCT 2

(allergic skin prick test), total Ig E, serum antimycoplasma  
 antibody  
 28 6 34  
 (Allegopharma, Reinbeck, Germany)

(MasterScreen , 8 , , 가  
 VIASYS Healthcare GmbH, Germany) FEV<sub>1,0</sub> , 5 , 2  
 FEF25 - 75% 1 ,  
 (Methacholine challenge test) (Exercise 1 , , 가 2  
 provocation test) . 가 2  
 (6).  
 FEV<sub>1,0</sub> 20%  
 , PC<sub>20</sub> < 8 mg/mL  
 가 가  
 , 가 1 FEV<sub>1,0</sub> 80%  
 85% , . 2

**Table 1.** Results of FEV<sub>1,0</sub>, Methacholine Challenge Test, and Exercise Provocation Test in Eight Patients Who Performed PFT

Tests	Pts							
	1	2	3	4	5	6	7	8
FEV <sub>1,0</sub> (%pred)	66.6	88.8	120	101	90.5	95.4	91.6	89.5
Methacholine challenge test (PC <sub>20</sub> < 8 mg/dL)	ND	+	-	-	-	-	+	+
Exercise provocation test	-	-	-	-	+	+	+	+

%pred : percentage of predicted, : decrease, + : positive, - : negative, ND : not done,  
 PC<sub>20</sub> : provocation concentration required to reduced FEV<sub>1,0</sub> by 20%

**Table 2.** Abnormal Findings in Eight Patients Who Performed HRCT Scan

HRCT	Pts							
	1	2	3	4	5	6	7	8
air trapping (n=4)	+	-	-	-	-	+	+	+
bronchial wall thickening (n=1)	+	-	-	-	-	-	-	-
parenchymal opacity (n=1)	+	-	-	-	-	-	-	-
airway hyperresponsiveness	+	+	-	-	+	+	+	+

+ : positive, - : negative

FEF25 - 75%가 65%  
 8 mg/mL  
 FEV<sub>1,0</sub>, FEF25 - 75%가 6

(Table 1).

X HRCT  
 X 8  
 8 4

(PC<sub>20</sub> <  
 8 3  
 15%, 35%

. HRCT  
 (Table 2), 가

(Fig. 1, 2). 1  
 (Fig. 2)가 HRCT

8 2  
 , HRCT

,

(Table 2).

1

가

HRCT

. HRCT

(Fig. 3)

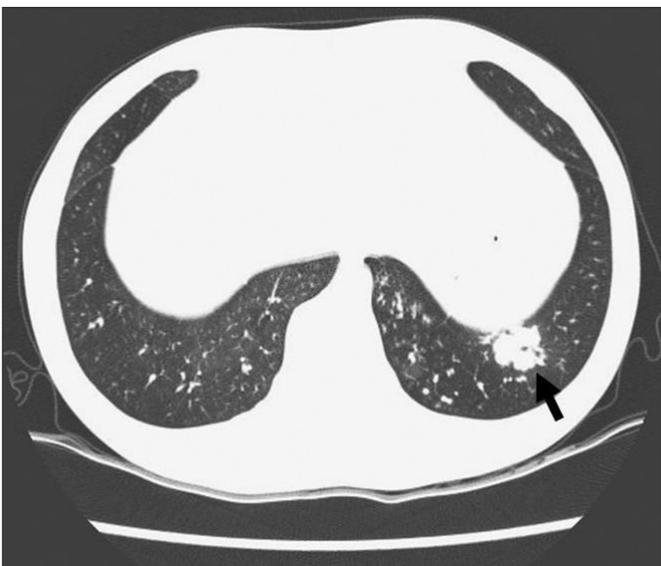


A

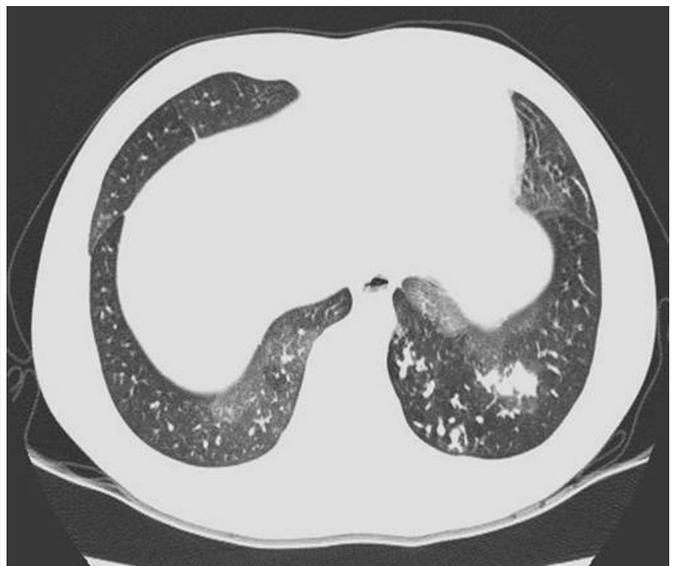


B

Fig. 1. Patient 6. A 12-year-old male presented with dyspnea and cough. There is no abnormal finding on full inspiratory phase HRCT scan (A), but noted multifocal air trapping in only full expiratory phase HRCT scan (B).

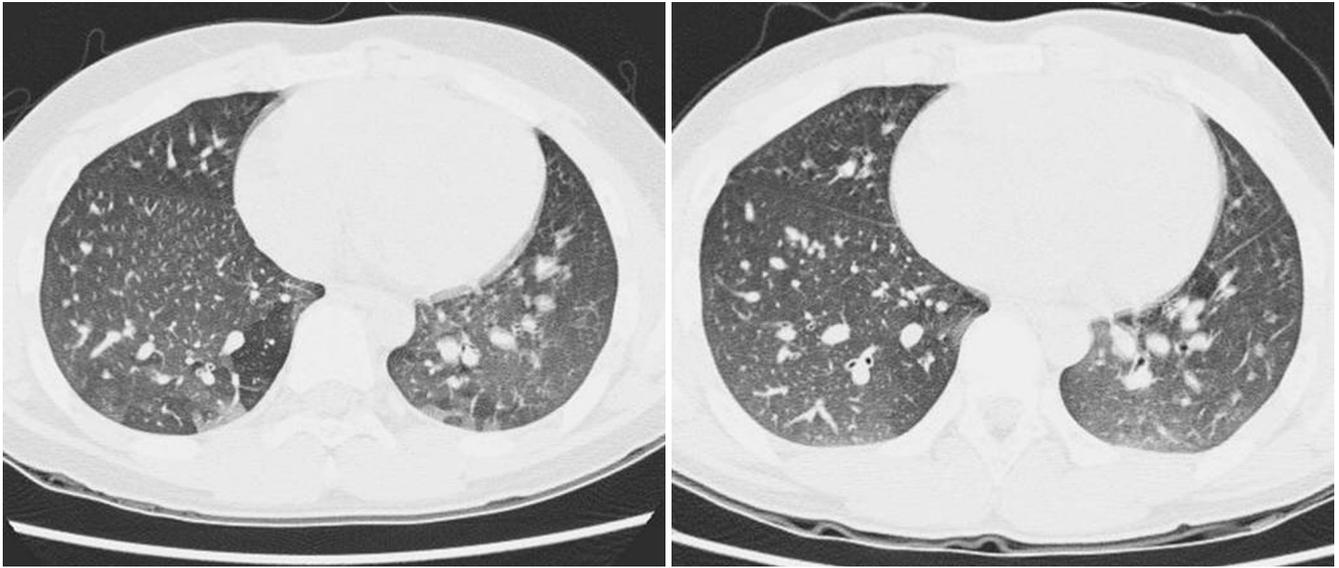


A



B

Fig. 2. Patient 1. A 13-year-old male presented with cough and sputum. On full inspiratory phase HRCT scan (A), there is a mass-like consolidation (arrow) in left lower lobe posterior basal segment. Also, air trapping in both lower lobes is noted on full expiratory phase HRCT scan (B).



**A** **B**  
**Fig 3.** Patient 8. A 9-year-old-male presented with dyspnea, cough, and hoarseness. Multifocal air trapping was shown on full expiratory HRCT scan (**A**) after eight months of exposure to irritant gas. The result of PFT of that time was positive. After 12 months of treatment (**B**), the extent of air trapping and the density of lungs were decreased, and the PFT was negative. Also, cough and dyspnea on exertion was improved.

가  
 (Occupational asthma)  
 (7).  
 가 (12).  
 4 HRCT 6 가  
 (toluene diisocyanate, TDI), (chlorine), (phosgene), (sulfuric acid), (smoke) Brooks (5) 가 가 HRCT  
 (8).  
 1994 1 가 2 가 X X  
 (9-11). 가 가  
 75% 가 가  
 가

가

2 HRCT

8

HRCT

1. : 2003;48:407-412
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## Chronic Complications of Inhalation Injury: Chest HRCT Findings and a Correlation with the Pulmonary Function Test in Reactive Airway Dysfunction Syndrome<sup>1</sup>

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**Purpose:** To evaluate the HRCT findings and to correlate the findings with the results of a pulmonary function test (PFT) in patients with reactive airway dysfunction syndrome (RADS).

**Materials and Methods:** On March 2003, a fire at a boarding house of primary school soccer players caused a multiple casualty disaster. After 8 months, nine boys that presented with chronic cough and dyspnea were treated, and were subjected to follow-up evaluations. Eight patients underwent a chest radiograph, HRCT, and a PFT. Two patients with severe symptoms received extended follow-up after 1 year. Two radiologists retrospectively reviewed the chest radiographs and the follow-up HRCT scans. We correlated the HRCT findings with the results of the PFT.

**Results:** Six patients with an inhalation injury were diagnosed with RADS. On the chest radiographs, eight patients showed no abnormal findings. On an HRCT scan, four patients showed abnormal findings. The abnormal findings were mosaic air trapping ( $n = 4$ ), bronchial wall thickening ( $n = 1$ ), and parenchymal consolidation ( $n = 1$ ). In all four patients that showed abnormal findings in the HRCT scan, abnormal results of the PFT were also seen. The two patients that received extended follow-up showed an improvement of the clinical symptoms, as seen by the PFT, and had a decreased extent and degree of mosaic air trapping, as seen on HRCT.

**Conclusion:** An HRCT scan is an essential modality for the diagnosis and follow-up of patients with RADS. Both a full expiratory and inspiratory HRCT scan must be performed for an accurate diagnosis.

**Index words :** Smoke inhalation injury  
Bronchial hyperreactivity  
Lung

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