

## A Localized Hyperlucent Area Over Chest Radiograph

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### CASE HISTORY

A 12-year-old girl suffered from high fever and cough for a week. At admission, her respiratory rate was 40/min and breathing sound of left lung was decreased with rales. Chest radiograph showed whole white out of left lung with hyperlucent upper lobe (Fig. 1). The blood cell count showed as follows: WBC: 8300 (10<sup>3</sup>/mm<sup>3</sup>), seg: 77.1%, lym: 9.2%, Hb: 11.1 (g/l), plt: 209 (10<sup>3</sup>/mm<sup>3</sup>). The blood gas showed as follows: pH: 7.361, pO<sub>2</sub>: 30, pCO<sub>2</sub>: 39.1, HCO<sub>3</sub><sup>-</sup>: 22.3. The serological data showed as follows: CRP: 271.4, Mycoplasma Ab titer <1:4. Medication with Klaricid and Pansporin were administered initially. After 7 days' management, fever was subsided and chest radiograph showed improvement.

After discharge, exercise intolerance still bothered this patient. Further study was performed. Chest radiograph showed a localized hyperlucent area over left upper lobe (Fig. 2). Mycoplasma Ab titer was > 1:256 (2 weeks later). Pulmonary lung function test revealed a

mild restrictive ventilatory defect. Lung scan demonstrated a large lobar ventilation / perfusion matched defect in the left upper lung field (Fig. 3). HRCT revealed relatively slender lung marking and emphysema at left upper lobe (Fig. 4). The cardiac catheterization showed smaller distal branches of left upper pulmonary arteries. The fibroptic bronchoscopy showed normal mucosa over left upper lobe.

### QUESTIONS:

1. Describe the characteristics of the chest radiograph in Fig. 1.
2. Differential diagnosis of unilateral hyperlucent of the lung.
3. What infection would you think about?
4. How would you manage this patient ?
5. What complications should be considered ?

### ANSWERS:

1. The chest radiograph shows a localized hyperlucent

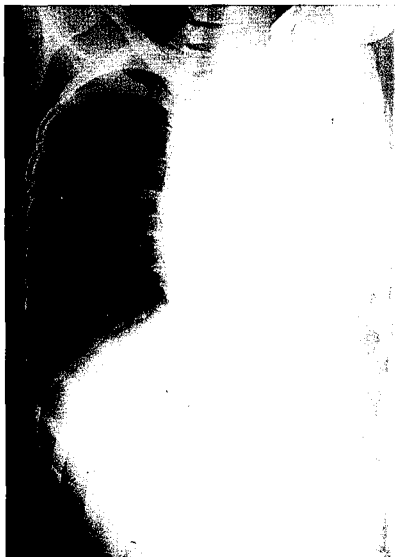


Fig. 1.

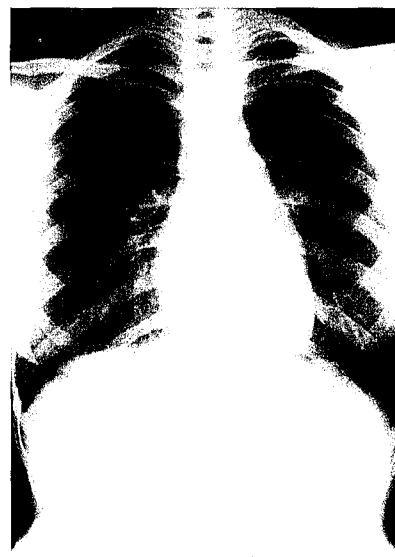


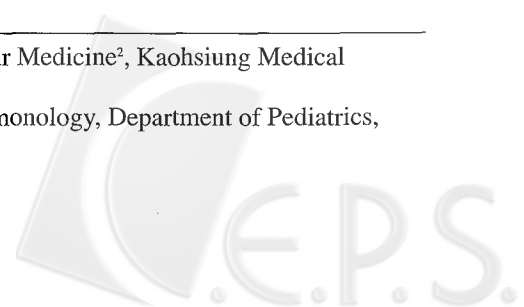
Fig. 2.

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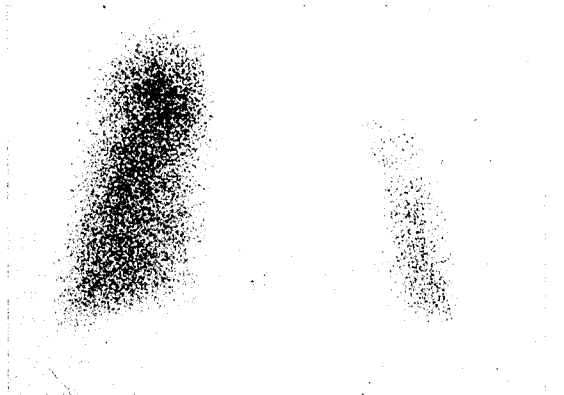


Fig. 3.

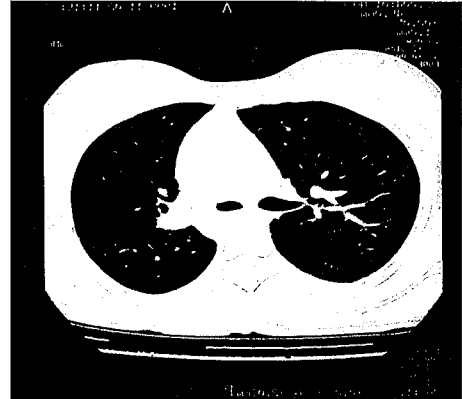


Fig. 4.

area over left upper lobe and white out over residual lung field.

2. Compensatory or obstructive emphysema (ex. foreign body, intrabronchial tumor, mucus plug), Pulmonary artery defect (ex. pulmonary artery hypoplasia, stenosis, agenesis or embolism), Hypoplasia or agenesis of lung, Swyer-James syndrome, Post lobectomy lung, Extrapulmonary cause (ex. mastectomy, congenital absence or atrophy of the pectoral muscle should be considered).
3. Mycoplasma, adenovirus, measles, pertusis, tuberculosis should be considered. And mycoplasma pneumonia was the final diagnosis for this patient.
4. For mycoplasma infection, erythromycin is the first choice. And the treatment of Swyer-James syndrome is conservative care.
5. Pleural effusion, secondary bacterial infection of lung, empyema, fulminant mycoplasma pneumoniae pneumonia are major complications of mycoplasma pneumonia.

## DISCUSSION

Swyer James syndrome (SJS), first described in 1953, is characterized by a hyperlucent lung or lobe.<sup>1</sup> It is usually of normal or small size, associated with air trapping and diminished pulmonary vasculature.<sup>2</sup> SJS is now considered a postinfection form of bronchiolitis obliterans and occurs following pulmonary infection in childhood by adenovirus, measles, pertusis, tuberculosis or mycoplasma.<sup>2,3</sup>

Clinically, patients suffering from SJS may be asymptomatic or complain of chronic and repeated respiratory infection, decreased exercise intolerance and hemoptysis.<sup>3</sup>

Chest radiographs show a hyperlucent lung or lobe,

usually of normal or small size, associated with air trapping and diminished pulmonary vasculature. Ventilation-perfusion scan of lung shows a matched ventilation-perfusion defect and considerable air trapping during the washout phase. CT displays a loss of lung volume with markedly diminished vasculature.<sup>4,5</sup>

The treatment of SJS is usually conservative.<sup>3</sup>

Finally, differential diagnosis is very important. Especially, compensatory or obstructive emphysema (ex. foreign body, intrabronchial tumor) or pulmonary artery defect (ex. pulmonary artery hypoplasia, stenosis, agenesis or embolism) must be ruled out. Cardiac catheterization and fibroptic bronchoscopy will help to diagnose.<sup>5,6</sup>

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