Journal of Pediatric Surgery (2007) 42, 1608–1611

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Journal of Pediatric Surgery

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Morgagni hernia mimicking pneumonia in Down syndrome

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Index words:
Morgagni hernia;
Down syndrome

Abstract Down syndrome patients are immunodeficient and commonly suffer from respiratory infections. Two children with Down syndrome were referred for evaluation of recurrent pneumonia accompanied by persistent infiltrate on chest radiographs. In both cases the radiographic abnormalities were actually found to be Morgagni hernia. When a child with Down syndrome has a persistent lower lobe infiltrate on chest radiograph, the possibility of a diaphragmatic defect should be entertained.

Children with Down syndrome (DS) are immunodeficient and therefore are predisposed to recurrent infections [1]. The most common are respiratory tract infections, which account for 45% of hospitalizations in children with DS [2]. The higher prevalence of airway abnormalities [3], gastroesophageal reflux [4], and cardiovascular disease [5] renders the respiratory tract of children with DS particularly vulnerable to infection. In addition, the generalized hypotonia and obesity, which are common in DS, may cause upper airway obstruction, which further increases the tendency to pulmonary morbidity [6,7]. Therefore, children with DS are frequently investigated because of recurrent and/or persistent respiratory symptoms.

We report 2 such children with a diagnosis of recurrent pneumonia and because of persistent radiographic findings were referred to our clinic for evaluation. Our investigations revealed that there was no disease of the respiratory tract, and the correct diagnosis was Morgagni hernia.

1. Case reports

1.1. Case 1

A boy aged 5 1/2 years with DS was referred to our clinic for evaluation of recurrent pneumonia. He was born at term after a normal pregnancy. A diagnosis of DS was made after delivery and was confirmed by chromosomal analysis. During infancy, he had recurrent upper respiratory tract infections that did not require hospitalization. Between the ages of 3 and 5 1/2 years, he had several bouts of fever,

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doi:10.1016/j.jpedsurg.2007.04.039

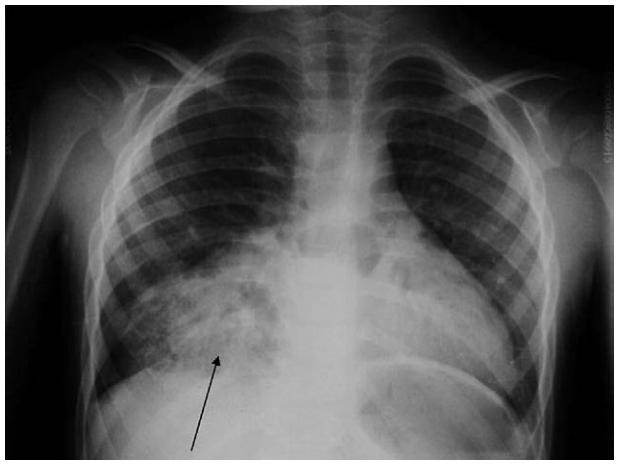

Fig. 1 Posterior-anterior chest radiograph shows a massive right lower lobe infiltrate.

which were treated as pneumonia. Chest radiographs were performed during 3 of these episodes. All were interpreted as showing a right lower lobe infiltrate, which in each case was treated with oral antibiotics. A chest film performed after the third episode, after completion of antibiotic treatment, and while clinically well, demonstrated the same radiographic finding (Fig. 1). He was then referred to our clinic for evaluation.

On physical examination, the child was without respiratory distress, had normal oxygen saturation, and had good air entry to both lungs. Based on the clinical and radiographic findings, we suspected a diaphragmatic defect and performed a barium swallow study. This revealed a right-sided Morgagni hernia containing small bowel and colon (Fig. 2). The hernia was surgically repaired. The operation was complicated by complete atelectasis of the left lung, which necessitated flexible bronchoscopy to provide pulmonary toilet. He was discharged 9 days after the operation with a normal chest x-ray and normal barium swallow study results. One year after the operation, the child is healthy and has been free of documented pneumonia.

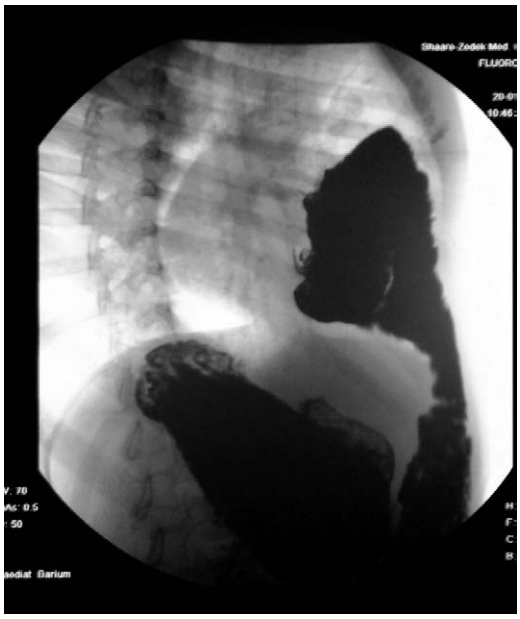

Fig. 2 Barium studies demonstrating the anterior hernia.

1.2. Case 2

A 13-month-old boy was referred to our clinic for evaluation of a persistent pulmonary infiltrate on his chest x-ray. He was born after 32 weeks of gestation by cesarean delivery because of fetal distress with a birth weight of 1.350 kg. Physical features and chromosomal analysis were consistent with DS. At the age of 10 months, he was hospitalized twice for respiratory distress, fever, and wheezing. On both occasions, chest radiographs revealed infiltrates in the right upper and lower lobes; and he was treated with parenteral antibiotics, bronchodilators, and inhaled steroids. Repeat chest radiographs demonstrated a persistent right pericardial opacity without other infiltrates (Fig. 3). He was then referred to our clinic for further investigation.

Our examination revealed mild respiratory distress with few diffuse wheezes. His oxygen saturation on room air was 96%. Echocardiography excluded a pericardial cyst. Computed tomographic (CT) scan of the chest was then performed and was interpreted as demonstrating eventration of the anterior segment of the right diaphragm. Because the eventration was not thought to play a role in his respiratory illnesses, surgical repair was not performed. At the age of 3 years, a chest radiograph performed as part of an evaluation of fever suggested the presence of a Morgagni hernia. A barium swallow study confirmed the diagnosis. The child underwent surgical repair, which was

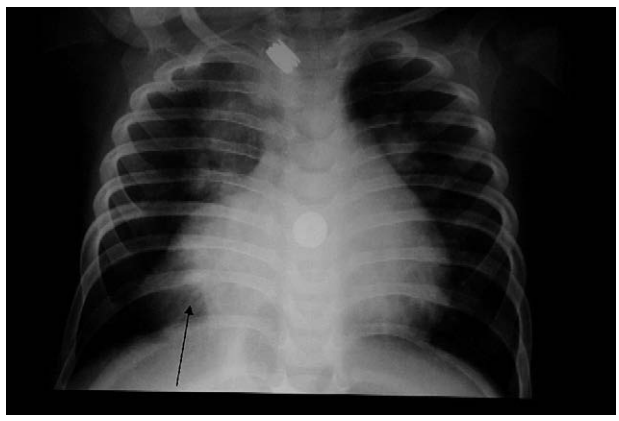

Fig. 3 Posterior-anterior chest radiograph shows right pericardial opacity suggesting a partial elevation of the right diaphragmatic leaflet.