

PNEUMOMEDIASTINUM AND SUBSCUTANEOUS EMPHYSEMA COMPLICATING UNDERDIAGNOSED ASTHMA ATTACKS

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SUMMARY : Three asthmatic children with the history of recurrent episodes of cough whose asthma attacks were complicated by pneumomediastinum and subcutaneous emphysema, are discussed. These complications are considered to be related to the underdiagnosis and undertreatment of asthma. All the three patients responded very well to standart asthma treatment and were discharged in a short time.

Key Words : Asthma, Mediastinal Emphysema, Subcutaneous Emphysema, Undertreatment.

INTRODUCTION

Pneumomediastinum and subcutaneous emphysema are important complications of asthma in infants and children, have the hallmark of an emergency which because of their sudden and usually unexpected onset (1). In this report, three children with acute attacks of asthma complicated by pneumomediastinum and subcutaneous emphysema as a consequence of underdiagnosis and undertreatment are discussed.

CASE REPORTS

CASE 1 : A 3-year-old boy who had been suffering from cough for 1 week was admitted to the hospital because of onset of dyspnea and wheezing. He had been diagnosed as having bronchitis by a local physician for his frequent bouts of coughing when he was 1 year old and had been on antibiotic treatment for a week with the same diagnosis. His physical examination revealed perioral cyanosis, suprasternal and intercostal retractions, and generalized sibilant rales over both lungs. Chest X-ray showed pneumomediastinum

(Fig. 1). Treatment with oxygen, intravenous fluids, bronchodilator, and steroid led to rapid clinical improvement and hospital discharge on the

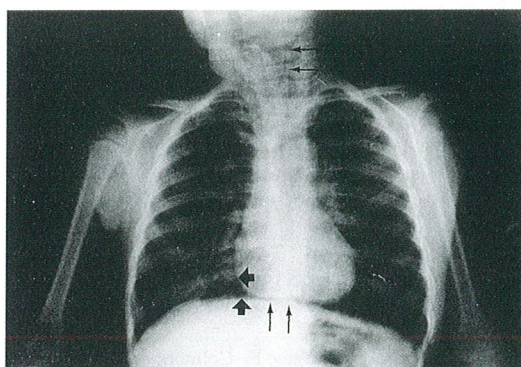


Fig - 1 : Frontal radiograph shows radiolucent streaks of the air in the right paracardiac area and cardiophrenic sulcus (thick arrows). "Continuous diaphragm sign" is visible (arrows). Free air also extends into the soft tissue of the neck (arrows).

fifth day. The patient was treated with prophylactic asthmatic therapy and he needed bronchodilator therapy once during a viral infection in the 6 months of follow-up.

CASE 2 : A 4-year-old boy was referred to our hospital for progressive dyspnea. He had been treated with antibiotic, expectorant, and teofilin for fever (38.5°C), dyspnea, and bilateral generalized expiratory ronchus at a local hospital, based on a diagnosis of pneumonia for 1 week. Although mild wheezing had accompanied his colds since he was 1 year old, he had been suffering from night cough for 1 year, and had a strong family history of asthma, he had never been diagnosed as having bronchial asthma. On admission, he was quite dyspneic with perioral cyanosis, intercostal retractions, and expiratory wheezing. On physical examination, his neck was enlarged, his anterior neck and axilla were crepitant bilaterally, and generalized sibilant rales were heard over both lungs. Chest X-ray showed mediastinal and subcutaneous air with paracardiac infiltration of the right lung (Fig. 2).

Treatment with oxygen, intravenous fluids, bronchodilator, steroid, and antibiotic resulted in prompt clinical recovery. The crepitus in the neck and axilla diminished after 6 days, and he was discharged home following prophylactic asthma therapy. He was hospitalized for a severe asthma-

tic attack after 3 months.

CASE 3 : A 2-year-old boy was admitted to the hospital because of intense paroxysms of coughing for 2 days. He had been diagnosed as having pneumonia for four times and treated with antibiotics for these recurrent episodes of cough for 1 year. On admission, he was dyspneic with perioral cyanosis, and he had expiratory wheezing and sibilant rales over both lungs. Chest X-ray revealed pneumomediastinum. Treatment with oxygen, fluids, bronchodilator, and steroid led to prompt clinical improvement and hospital discharge on the fourth day. He has been given prophylactic asthma therapy and he had one more asthmatic attack during his follow-up period of 5 months.

DISCUSSION

Asthma is one of the most common of all chronic diseases of childhood with a considerable morbidity, often because it is either underdiagnosed or undertreated (2). In a report of 179 English children who had suffered at least 1 episode of wheezing since entry into school, the diagnosis of asthma was suggested to their parents in only 21 cases, despite the fact that a significant number of the children had four to 12 more episodes of wheezing per year (3). Also in a study in our country, Karadağ et al. (4) evaluated the rate of underdiagnosis and undertreatment among 1134 newly diagnosed asthmatic children. They found that it took a mean of 29.1 months to be diagnosed as asthma despite the fact that 45.5 % had recurrent asthma attack, 24.7% had the symptom of vigorous fits of coughing, and 48.4 % had nocturnal symptoms. The reason behind the inadequacy in the diagnosis of asthma in children is not clear, but it may stem from the fact that the young asthmatic child often presents with cough as the primary symptom rather than wheeze. In our patients, recurrent episodes of cough were the major complaints, too. This often leads to the diagnosis of bronchitis or pneumonia, especially since so many attacks in childhood are precipitated by viral infections and accompanied by fever (2). In our patients, the diagnosis of asthma was based on episodic cough and wheeze responsive to β_2 agonists, and / or persisting or recurring cough for at least 6 months without a history suggestive of another diagnosis. In the follow-up, patients were given prophylactic asthma therapy.

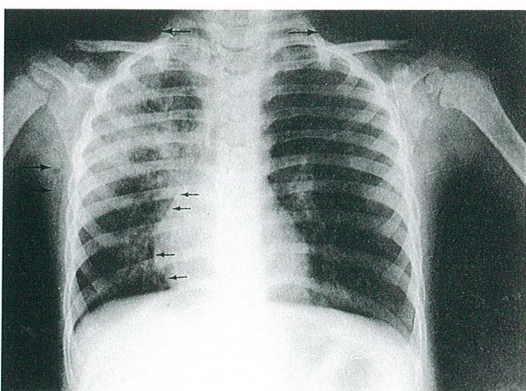


Fig - 2 : There is pneumonic infiltration in the upper zone of the right lung and right paracardiac region. Subcutaneous emphysema involving the soft tissue of the neck, right axilla, and supraclavicular area is evident (arrows), as well as the hyperinflation of the right lung, mediastinal shift to the left and linear radiolucency of the free air in the right paracardiac region (small arrows).

The first definitive case of childhood asthma complicated by subcutaneous emphysema was reported in 1850, although signs and symptoms of subcutaneous emphysema were recognized by Laennec as early as 1819 (5). The etiology of the pneumomediastinum is most likely a rupture of a small alveolus with tracking of air along perivascular adventitial planes to the mediastinum, then cephalad into the planes of the neck (6). Also, pneumonia accompanying asthma in the second case might be a predisposing factor for the development of pneumomediastinum. Undoubtedly, the major contributing factor for the development of such complications in our patients is the delay in the proper asthma treatment. Diagnosis of pneumomediastinum in young asthmatic children is not always easy as they are not often able to complain about chest pain, which is a significant clinical sign in adults. Pneumomediastinum and subcutaneous emphysema are benign complications if properly diagnosed and treated. Effective asthma therapy reduces alveolar overinflation, stopping the flow air into the mediastinum and permitting the absorption of mediastinal and subcutaneous air over the ensuing 5 to 7 days (7). Our patients also responded very well to standard asthma treatment.

Although reports of these complications have occurred over the past 140 years, we want to emphasize the fact that these complications may often be encountered unless asthma is diagnosed properly and the appropriate therapy given.

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