

A Rare Complication Seen In A Child With Asthma: Subcutaneous Emphysema Astımlı Bir Çocukta Görülen Nadir Bir Komplikasyon: Subkutan Amfizem

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ABSTRACT

Introduction: Isolated subcutaneous emphysema due to bronchial asthma is a rare disorder which is often seen with pneumomediastinum. Subcutaneous emphysema is often seen with asthma attacks. Besides it may be a self-limiting disorder, it may also be life threatening.

Case: In this article, we present subcutaneous emphysema without accompanied by pneumomediastinum that developed during an asthma attack in a child with asthma.

Conclusion: This case is presented because it is a rare complication of developing due to bronchial asthma.

Keywords: subcutaneous emphysema, asthma, child

ÖZET

Giriş: Bronşiyal astıma bağlı subkutan amfizemin izole olarak görülmesi nadirdir. Daha çok pnömomediastinumla birlikte görülmektedir. Subkutan amfizem astım atakları ile birlikte görülebilir. Kendi kendini sınırlayan bir patoloji olmasına rağmen bazen hayatı tehdit edebilir.

Olgu: Biz bu yazıda kliniğimizde bronşiyal astım tanısı ile takip edilen hastada astım atağı sırasında gelişen pnömomediastinumun eşlik etmediği izole ciltaltı amfizemli bir olguyu sunuyoruz.

Sonuç: Bu olgu bronşiyal astımın nadir gelişen bir komplikasyon olması nedeniyle sunulmuştur.

Anahtar Kelimeler: subkutan amfizem, astım, çocuk

INTRODUCTION

Subcutaneous emphysema is the collection of air and other gases under the skin. It is associated with pneumomediastinum (the existence of free air in the mediastinum) in a percentage of 32-92% (1). Isolated subcutaneous emphysema is a very rare condition itself. While evaluating the literature, mostly it has been mentioned with pneumomediastinum. Although seen rarely in childhood it is often developed as a complication of asthma attacks in incidence of 0,2-0,3% (2). It occurs during the first wheezing attack as well. Other etiological causes of subcutaneous emphysema are coughing, vomiting, valsalva maneuver, chronic obstructive lung disease, upper respiratory tract infections, exaggerated physical activity (1).

In this case, we present subcutaneous emphysema without accompanied by pneumomediastinum as it is a rarely seen complication. It developed in a patient during an attack of asthma who had been being followed at our clinic with diagnosis of asthma.

CASE REPORT

A 17 month female with complaining about coughing, breathing fastly and wheezing was admitted to our department. She had wheezing attacks since she was seven months old. She had flutikazon propionate 200 mcg/day therapy for 4 months. There was no evidence of allergy in her family history as well. The physical examination revealed that the patient had a heart rate of 140 beats per min. and respiratory rate of 50 per min. Her fever was 37 C degree and she had an oxygen saturation of 92% in a room air. She looked exhausted and had intercostal and subcostal retractions at the same time. Auscultation findings were extended expiratory time, common roncus heard bilaterally, crepitan roncus especially left sided. Other system examination was normal. Laboratory investigations showed the patient's hemoglobin was 12 gr/dL, white cell count was 11,800/mm³, platelet count was 411,000/mm³, C-reactive protein was 1,7 mg/dl. In her blood gases analysis, results were PH: 7,30, PaCO₂: 46 mmHg, PaO₂: 57 mmHg, HCO₃: 18,4 mmol/L, BE: -9,6.

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Paracardiac infiltration was noted in left side of her chest radiogram. Patient was treated with nebulized salbutamol, ipratropium bromide, nebulized steroid and iv ceftriaxone. On second day of admission, her respiratory distress was increased and in follow-up of the patient, subcutaneous emphysema was developed starting from left side of the chest and extending up to neck. The result of blood gases analysis was PH: 7,36, PaCO₂: 26mmHg, PaO₂: 64,3 mmHg, HCO₃: 14,9 mmol/L, BE: -8,4. Free air was determined on her left neck, clavicular area and axillary region on her chest x-ray (Figure 1). The patient was followed in intensive care unit for three days. After that the clinical findings were improved.



Figure 1. Air is seen tracking into the soft tissues of the left neck, clavicular area and axillary region.

DISCUSSION

Pneumomediastinum was initially described by Laennec in 1819, was further characterized in case series by Hamman in 1939 (3, 4). Subcutaneous emphysema is commonly associated with pneumomediastinum (1). In our country, previous case reports showed the combination of pneumomediastinum and subcutaneous emphysema (5, 6) but in our presented case, there was no evidence of pneumomediastinum on patient's chest x-ray and in her clinical findings. Although subcutaneous emphysema is usually seen during repeated attacks of asthma, it may be seen during first wheezing attack as well. In the study which was made by Asilsoy et al. (5), three case reports were represented.

3rd of these reports (4-year-old male patient) showed us subcutaneous emphysema which occurred in the first attack of the asthmatic patients.

The pathogenesis of pneumomediastinum was first proposed by Macklin in 1939. Spontaneous subcutaneous emphysema is thought to result from increased pressures in the lung that cause alveoli to rupture. In spontaneous subcutaneous emphysema, air travels from the ruptured alveoli into the interstitium and along the blood vessels of the lung into the mediastinum and from there into the tissues of the neck and head (1, 7). The air which is located in the subcutaneous tissue or mediastinum is not typically dangerous itself but it may lead to mass effect and increase the clinical signs and symptoms. The clinical signs and symptoms depend on the extension and severity of the air leak. In mild emphysema, there is no sign except crepitation but in severe cases; swelling of neck and face, difficulty in swallowing, stridor and chest pain can be developed. When it is with pneumomediastinum, Hamman sign (crunching, rasping sound synchronous with heartbeat) can be seen.

The air can travel from the mediastinum to the retroperitoneum, retropharyngeum and spinal trunk. If it pressures on the trachea, it may create a risk. The diagnosis is made both clinically and radiologically following the suspicion by the clinician. The chest x-ray and other advanced monitoring methods represent air density under the skin.

Subcutaneous emphysema itself does not usually need specific treatment. The vital signs should be monitored closely. Usually the air is reabsorbed within 15 days by the body and the long term complications are rarely seen. The incidence of recurrence is less than 5% (8). In our case, noninvasive mechanical ventilation was applied and subcutaneous emphysema regressed within three days.

Finally as seen in our presentation, since severe respiratory complications can develop during asthma attacks, patients should be followed closely.

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