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Spontaneous Pneumomediastinum Presenting with Neck Swelling

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ABSTRACT

Spontaneous Pneumomediastinum (SPM) is a very rare condition with an incidence of 1/30.000 and 1/44.500, and mostly seen in young men. The present article reports a case of SPM with neck swelling in the Emergency Department (ED). A 24-year-old male patient with fever and swelling on both sides of his neck presented at the ED. Physical examination revealed swelling on both parotid glands, neck and facial area. The pulmonary examination revealed a swelling starting from the upper side of the chest and extending toward the neck region and palpation revealed crepitation from the upper wall of the chest to both temporal fossae. Linear air radiolucency was seen in the posteroanterior chest x-ray. A Cervico-Thoracic CT scan revealed "showed" diffuse bilateral and symmetrical emphysema. SPM was diagnosed. He was admitted to the Thoracic Surgery Department for treatment and follow-up. Emergency physicians should consider SPM in the differential diagnosis of patients presenting with neck swelling. It should not be forgotten that close patient follow-up is required due to the possibility of severe complications.

Keywords: emphysema, macklin effect, spontaneous pneumomediastinum, subcutaneous

BOYUN ŞİŞLİĞİ İLE BAŞVURAN SPONTAN PNÖMOMEDİASTİNUM

ÖZET

Spontan Pnömomediastinum (SPM) yaklaşık 1/30000 and 1/44500 arasında insidansa sahip çok nadir görülen bir durum olmakla beraber çoğunlukla genç erkeklerde görülür. Bu makalede Acil Servis'e boyunda şişlik şikayeti ile başvuran SPM olgusunu rapor ettik. 24 yaşında erkek hasta Acil Servis'e ateş ve boynun her iki tarafında şişlik şikayeti ile başvurdu. Fizik incelemede; her iki parotis bezi, boyun ve yüz bölgesinde şişlik tespit edildi. Akciğer muayenesinde; inspeksiyonda; göğüs üst yüzden başlayıp boyun bölgesine doğru devam eden şişlik ve palpasyonda göğüs üst duvarından başlayıp her iki temporal fossaya kadar krepitasyon alındı. Akciğer x-ray grafide radyolusens çizgiler görüldü. Servikotorasik bilgisayarlı tomografide, diffüz bilateral ve simetrik amfizem görüldü. SPM tanısı konuldu, tedavi ve takip amacıyla Göğüs Cerrahi'si Kliniği'ne yatırıldı. Acil servis hekimleri; boyunda şişlik şikayeti ile başvuran hastalarda ayırıcı tanıda mutlaka SPM'yi akla getirmelidir. Ciddi komplikasyonlar açısından hastaların yakın gözlem gerektiği unutulmamalıdır.

Anahtar sözcükler: Amfizem, macklin efekt, spontan pnömomediastinum, subkütanöz

Pneumomediastinum (PM), characterized by the presence of mediastinal air, is a condition with unknown precipitating factors (1,2). Spontaneous pneumomediastinum (SPM) is typically not associated with any underlying conditions or precipitating factors. SPM is a very rare condition with an incidence of 1/30.000 and 1/44.500, and mostly seen in young men (3). The most common symptoms include dyspnea, chest pain, dysphagia and odynophagia, neck swelling and pain are the most common initial symptoms of SPM (4). The present article reports a case of SPM with neck swelling in Emergency Department (DE).

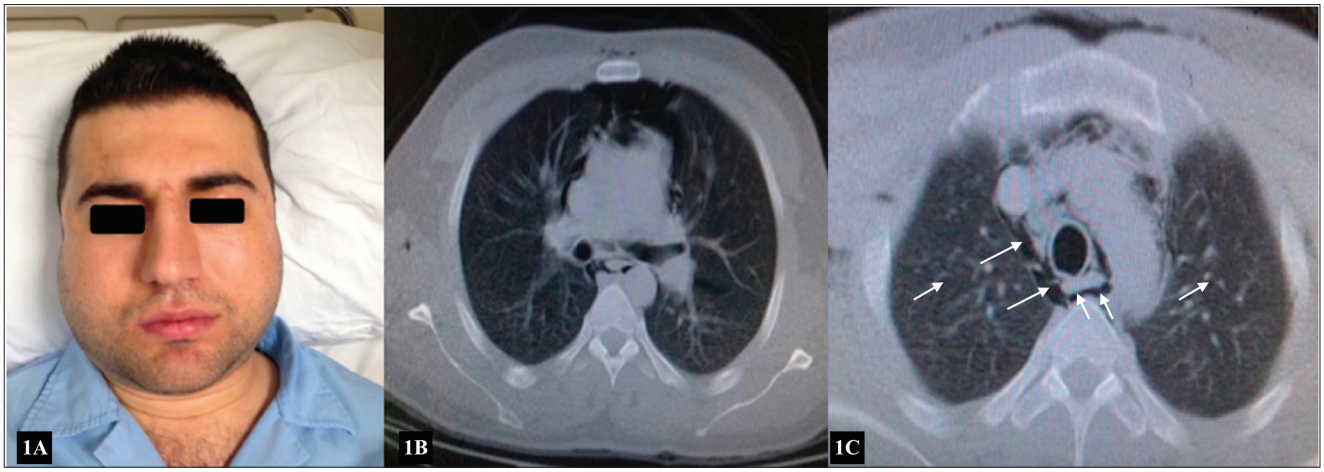

Figure 1. **A–C**.Soft tissue swelling on both parotid glands, neck and facial area (a). Free air was present around the mediastinal major vascular structures, trachea and main bronchi (b). Air lucencies were present around perihilar and peripheral lung area (The Macklin Effect) (c, white arrows).

Case report

a 24-year-old male patient with fever and swelling on both sides of his neck presented at the ED. He had neck swelling for approximately 12 hours and fever for the previous two hours. He had no history of smoking, alcohol consumption, chronic drug use, or pulmonary disease. He did not have chest pain, dyspnea, or chronic cough. He had no history of trauma prior to his arrival at the ED. His general state was good, he was conscious with full orientation and cooperation. Blood pressure was 140/89 mmHg, body temperature was 38.2°C and O_2 saturation was 98%. Physical examination revealed swelling on both parotid glands, neck and facial area (Figure 1a). There was no enlargement and or hyperemia of the uvula and tonsils. Examination of the neck revealed no lymphadenopathy, but there was a palpable subcutaneous emphysema. At the The pulmonary examination revealed a swelling starting from the upper side of the chest and extending toward the neck region and palpation revealed crepitation from the upper wall of the chest to both temporal fossae. Auscultation revealed bilateral rhonchi. Other physical examinations were normal. Linear air radiolucency was seen in the posteroanterior chest x-ray and also radiolucent lines and bands of air were seen in the lateral chest x-ray. A Cervico-Thoracic CT scan was requested for further examination and differential diagnoses. CT scan revealed, diffuse bilateral and symmetrical emphysema extending to the thorax, deep cervical planes and soft tissues of the neck. Free air was present around the mediastinal major vascular structures, trachea and main bronchi. Air lucencies were present around perihilar and peripheral lung area. (The Macklin Effect) (Figure 1b, c). He was admitted to the Thoracic Surgery Department for treatment and follow-up. After being followed-up under hemodynamic monitorization for 24 hours, the patient had no complication and was discharged having been prescribed painkillers and antibiotics. There was also no complication and or recurrence at during the six-month follow-up. Written informed consent was obtained from the patient who participated in this case.

Discussion

Spontaneous pPneumomediastinum (SPM) is a condition characterized by a leakage of air, unassociated with trauma, from the rupture of the alveolus, bronchus or esophagus across vascular sheaths and tissue planes into the mediastinum due to an increase in tracheal, bronchial, alveolar or esophageal pressure. The increased alveolar pressure leads to symptoms, such as chest pain and dyspnea, whereas the rising air advances through the subcutaneous layer of the neck and causes subcutaneous emphysema and neck swelling (5). According to Murayama et al. (6), the elevated alveolar pressure may cause the air to leak from the terminal alveoli and enter the pulmonary interstitial spaces, perivascular sheaths and mediastinum.

It is important to differentiate between SPM and PM at the emergency department. The non-spontaneous PM diagnosis is excluded through the Macklin effect, which refers to alveolar ruptures and pulmonary interstitial emphysema around the pulmonary peripheral vascular regions on helical CT (7). The presence of these symptoms and CT signs in the present case was suggestive of SPM.

The most common symptom presented in SPM is chest pain-associated dysphagia, the most common finding is subcutaneous emphysema, and the most common

etiological factor is the history of bronchial asthma (3). Conversely, the present case did not have any history of chest pain, dysphagia, or asthma. Nevertheless, subcutaneous emphysema was established. The body temperature was 38.2°C although there wasn't any infectious site to explain the fever. We should keep in mind that fever can be seen in SPM patients because fever may occur following cytokine release that is associated with air leak. However, mediastinal infectious disorders should be included in the differential diagnosis when fever is present.

Precipitating and predisposing factors of SPM have been described in the literature. Triggering factors were excluded!! such as the valsalva maneuver, vigorous vomiting or cough, giving birth, barotrauma (eg, scuba diving, flying), asthma and structural changes within the lung interstitium. Up to 32% to 66% of SPM cases have no identified precipitating factors (8,9). We were not able to identify any triggering factor in our examination.

Chest radiography Posterior-Anterior (PA) is sufficient for an initial diagnosis, but almost 30% of SPM patients are not diagnosed (10). As a result, the gold standard method for SPM diagnosis is thoracic CT. The present case was diagnosed using chest radiography; however, CT was performed to evaluate the accompanying symptoms, all potential factors causing mediastinal emphysema and additional injuries. Although SPM is a benign condition, the possibility of it becoming a tension pneumothorax and malignant PM, leading to fatal complications, should not be overlooked. Close monitorization for any increase in dyspnea and complications is required during observation. Prophylactic antibiotics can be administered for mediastinitis risk. The risk of recurrence is low. The subcutaneous and mediastinal air decreases within weeks through conservative treatment and close observation (3,11).

In the present case, antibiotherapy and conservative treatment was administered, and no complication or recurrence was observed. Emergency physicians should consider PM in the differential diagnosis of patients presenting with neck swelling. SPM and PM should be differentiated and it should not be forgotten that close patient follow-up is required due to the possibility of severe complications.

References

1. Okada M, Adachi H, Shibuya Y, Ishikawa S, Hamabe Y. Diagnosis and treatment of patients with spontaneous pneumomediastinum. Resp Invest 2014;52:36–40. [CrossRef]
2. Orton J, Collette E. Pneumomediastinum presenting as left periorbital subcutaneous emphysema. Am J Emerg Med 2015;33:1842.e1–2. [CrossRef]
3. Hogan F, McCullough C, Rahman A. Spontaneous pneumomediastinum: an important differential in acute chest pain. BMJ Case Rep 2014;2014. [CrossRef]
4. Huon LK, Chang YL, Wang PC, Chen PY. Head and neck manifestations of spontaneous pneumomediastinum. Otolaryngol Head Neck Surg 2012;146:53–7. [CrossRef]
5. Semedo FHMA, Silva RS, Pereira S, Alfaiate T, Costa T, Fernandez P, Pereira A. Spontaneous pneumomediastinum: case report. Revist Assoc Med Brasil (1992) 2012;58:355–7. [CrossRef]
6. Murayama S, Gibo S. Spontaneous pneumomediastinum and Macklin effect: Overview and appearance on computed tomography. W J Radiology 2014;6:850–4. [CrossRef]
7. Ho AS, Ahmed A, Huang JS, Menias CO, Bhalla S. Multidetector computed tomography of spontaneous versus secondary pneumomediastinum in 89 patients: can multidetector computed tomography be used to reliably distinguish between the 2 entities? J Thoracic Imag 2012;27:85–92. [CrossRef]
8. Lee CY, Wu CC, Lin CY. Etiologies of spontaneous pneumomediastinum in children of different ages. Pediatr Neonat 2009;50:190–5. [CrossRef]
9. Huon LK, Chang YL, Wang PC, Chen PY. Head and neck manifestations of spontaneous pneumomediastinum. Otolaryngology Head Neck Surg 2012;146:53–7. [CrossRef]
10. Kaneki T, Kubo K, Kawashima A, Koizumi T, Sekiguchi M, Sone S. Spontaneous pneumomediastinum in 33 patients: yield of chest computed tomography for the diagnosis of the mild type. Respiration 2000;67:408–11. [CrossRef]
11. Sun D, Chen F, Wang C. An unusual etiology of abdominal pain and spontaneous pneumomediastinum in a young adult. Am J Emerg Med 2014;32:947.e1–2. [CrossRef]