
Dysphonia and chest pain as presenting symptoms of pneumomediastinum

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ÖZET

Disfoni ve göğüs ağrısı semptomları ile kendini gösteren pnömomediastinum olgusu

Spontane pnömomediastinum (SPM) seyrek görülen ve mediastinal boşluğa havanın herhangi bir travma veya medikal girişime bağlı olmadan girmesiyle karakterize ve genelde selim olarak bilinen bir durumdur. Burada disfoni ve göğüs ağrısı ana şikayetleri ile acil servise başvuran 25 yaşında bir kadın hastayı anlatıyoruz. Yapılan boyun grafisi ve göğüs bilgisayarlı tomografisi pnömomediastinumunu gösterdi. Destekleyici tedavi ile hasta tamamen iyileşti. Bu olgu sunumunda, göğüs ağrısı ile konuşma sesindeki değişikliklerin bir arada bulunmasının ayırıcı tanısını ve SPM'nin klinik tanısındaki rolünü tartıştık.

Anahtar Kelimeler: Pnömomediastinum, disfoni, esrar.

SUMMARY

Dysphonia and chest pain as presenting symptoms of pneumomediastinum

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Spontaneous pneumomediastinum (SPM) is a rare but generally benign condition characterized by the presence of free air in the mediastinal space that is unrelated to trauma or medical procedure. We describe a case of a 25-years-old woman who presented to the emergency room with a chief complaint of dysphonia, and chest pain. An X-ray of the neck and computed tomography of the chest were performed and showed findings consistent with a pneumomediastinum. Supportive treatment led to an uneventful recovery. We discuss the differential diagnosis of the co-existing chest pain and dysphonia in the diagnosis of SPM.

Key Words: *Pneumomediastinum, dysphonia, marijuana.*

Spontaneous pneumomediastinum (SPM) is an uncommon condition characterized by the presence of free air in the mediastinum not caused by trauma or medical procedure. SPM occurs secondary to the rupture of alveoli and tracking of free air along peribronchial vascular sheaths towards the lung hilum and into the mediastinum.

The most common presenting symptoms are chest pain, cough, and dyspnea (1). Subcutaneous emphysema, and crepitations occurring with the heartbeat, the Hamman's sign, are more specific, but less common physical finding in a patient with SPM (2). We present a case of SPM causing dysphonia and chest pain secondary to prolonged Valsalva maneuvers during marijuana inhalation.

CASE REPORT

A previously healthy 25-years-old woman presented to the emergency room with a chief complaint of dysphonia and chest pain. She first noticed mild chest discomfort before falling asleep the night prior to presentation. The following morning she awoke with an intense pain in her upper chest and neck as well as a change in the pitch of her voice. She stated that her "voice sounded like someone else's"; taking a deep breath was painful but she denied any shortness of breath.

Upon questioning the patient admitted to marijuana use the night the pain began. It involved the inhalation of smoke and forceful holding of it in her lungs, with the pain developing soon thereafter. She admitted to recreational marijuana use in the past but denied using any other illicit drugs including cocaine. The patient denied any trauma to the chest or neck or any recent medical procedures.

A physical examination revealed a labile, young woman in mild distress, which appeared to be secondary to pain. The patient withdrew to attempts to palpate any area involving the neck or upper chest. Light palpation of the area from the anterior sub-mandibular region and moving inferiorly to the superior aspect of the xiphoid process elicited a pronounced pain reaction. The patient was not tachypneic and had good air movement in all lung fields. The cardiac exam revealed a regular rate and rhythm with no murmur, rub or gallop. Abdominal exam was benign. Extremities were warm with strong distal pulses.

An X-ray of the neck and computed tomography of the chest were performed and showed an area of lucency posterior and lateral to the trachea extending superiorly into the neck with an anterior displacement of the larynx, consistent with pneumomediastinum (Figure 1,2).

A urine drug screen came back positive for tetrahydrocannabinol. The patient was treated with ketorolac, which successfully tempered the pain. After overnight monitoring in the intensive care



Figure 1. Lateral radiograph of the neck. Radiographic lucency behind the larynx, consistent with air.



Figure 2. Computed tomography of the neck. Air pockets in several fascial planes within the neck.

unit for respiratory compromise the patient was discharged with complete resolution of the pain.

DISCUSSION

SPM is a rare, usually benign clinical condition characterized by the presence of free air in the mediastinal space that is unrelated to trauma or medical instrumentation. Straining against a closed glottis is one of the causes of alveolar rupture and the likely mechanism by which our patient developed a pneumomediastinum (3). This type of strain can be re-produced in activities requiring coughing, defecating, lifting of a heavy load, throwing a ball, or heavy vomiting (4,5). Inhalation drug use, with an individual performing a prolonged Valsalva maneuver to increase drug absorption by maximizing exposure time is a documented risk factor for pneumomediastinum (3).

The most common clinical findings of pneumomediastinum in a case series of 62 adults with SPM are chest pain (63%), cough (45%), and dyspnea (44%) (1). Neck pain and lightheadedness both occurred 18% of the time in these studies. The change in pitch of the voice is much less reported and discussed in the literature (6). It is secondary to the displacement (usually anterior) of the larynx by the air present between fascial planes, which results in shortening of the vocal cords. When accompanied by chest pain, the differential diagnosis of dysphonia is short and includes spontaneous and post-traumatic pneumomediastinum, retropharyngeal hematoma, thyroid malignancy, gastroesophageal reflux, surgical chest trauma, aortic aneurysm, and lung cancer (Table 1).

Table 1. Differential diagnosis of dysphonia and chest pain.

Vocal cord disorders

- Neuromuscular supply to the vocal cords
 - Aortic aneurysm (7)
 - Lung cancer (8)
 - Surgical trauma (8)
- Irritation/inflammation
 - GERD (9)

External compression of the vocal cords

- Pneumomediastinum
 - Spontaneous (6,10,11)
 - Post-traumatic (12)
- Thyroid tumor (13)
- Retropharyngeal hematoma (14)

Treatment of SPM is supportive. Basic radiographic analysis, pain control, supplemental oxygen and admission to the hospital for observation for respiratory compromise are typically recommended. In an absence of any primary cause of a pneumomediastinum such as infection, instrumentation, esophageal rupture or trauma, the prognosis for recovery is excellent and the recurrence unlikely (4).

REFERENCES

1. Iyer VN, Joshi AY, Ryu JH. Spontaneous pneumomediastinum: analysis of 62 consecutive adult patients. *Mayo Clin Proc* 2009; 84: 417-21.
2. Hamman L. Spontaneous mediastinal emphysema. *Bull Johns Hopkins Hosp* 1939; 64: 1-21.
3. Mattox KL. Pneumomediastinum in heroin and marijuana users. *Jacep* 1976; 5: 26-8.
4. Caceres M, Ali SZ, Braud R, Weiman D, Garrett HE Jr. Spontaneous pneumomediastinum: a comparative study and review of the literature. *Ann Thorac Surg* 2008; 86: 962-6.
5. Macia I, Moya J, Ramos R, et al. Spontaneous pneumomediastinum: 41 cases. *Eur J Cardiothorac Surg* 2007; 31: 1110-4.
6. Walsh-Kelly C, Kelly KJ. Dysphonia: An unusual presentation of spontaneous pneumomediastinum. *Pediatr Emerg Care* 1986; 2: 26-7.

7. Fernandez Gonzalez AL, Montero JA, Luna D, et al. Aortobronchial fistula secondary to chronic post-traumatic thoracic aneurysm. *Tex Heart Inst J* 1996; 23: 174-7.
8. Terris DJ, Arnstein DP, Nguyen HH. Contemporary evaluation of unilateral vocal cord paralysis. *Otolaryngol Head Neck Surg* 1992; 107: 84-90.
9. Ahuja V, Yencha MW, Lassen LF. Head and neck manifestations of gastroesophageal reflux disease. *Am Fam Physician* 1999; 60: 873-80, 885.
10. Mittak M, Satinsky I, Kretek J, Bednarikova E. Spontaneous pneumomediastinum. *Rozhl Chir* 2006; 85: 273-6.
11. Lee YJ, Jin SW, Jang SH, et al. A case of spontaneous pneumomediastinum and pneumopericardium in a young adult. *Korean J Intern Med* 2001; 16: 205-9.
12. Zemann W, Feichtinger M, Karcher H. Cervicofacial and mediastinal emphysema after crown preparation: a rare complication. *Int J Prosthodont* 2007; 20: 143-4.
13. Chiacchio S, Lorenzoni A, Boni G, et al. Anaplastic thyroid cancer: prevalence, diagnosis and treatment. *Minerva Endocrinol* 2008; 33: 341-57.
14. Munoz A, Fischbein NJ, de Vargas J, et al. Spontaneous retropharyngeal hematoma: diagnosis by mr imaging. *AJNR Am J Neuroradiol* 2001; 22: 1209-11.