

## Neck Swelling After Sneezing

K. Gowrinath<sup>1</sup>, M. Gayatri<sup>2</sup>, G. Lalitha Kumari<sup>2</sup> and V.H. Kishor<sup>2</sup>

Departments of Pulmonary Medicine<sup>1</sup> and Radiology and Imaging Sciences<sup>2</sup>, Narayana Medical College, Nellore, Andhra Pradesh, India

[Indian J Chest Dis Allied Sci 2012;54:251-253]

### CLINICAL SUMMARY

A 29-year-old, non-smoker male presented with a painless neck swelling with a sudden onset after a bout of violent sneezing two days ago. He had no other remarkable medical history except for seasonal allergic rhinitis for the past three years. He was referred for evaluation after being advised an antihistaminic drug for the relief of nasal symptoms. Bilateral crepitant swelling was found in the neck on physical examination.

### INVESTIGATIONS

All urine and blood examination reports were unremarkable. Radiographs of the neck (antero-posterior [AP] [Figure 1] and lateral views) showed subcutaneous emphysema. Chest radiograph (postero-anterior view) (Figure 2) showed radiolucent areas in the cervical and left paracardiac regions.



Figure 1. Radiograph of the neck (antero-posterior view) showing subcutaneous emphysema.

Cranial to caudal sections of computed tomography (CT) of the chest (Figure 3A and 3B) showed lucent areas within the anterior chest wall and in the mediastinum consistent with a diagnosis of

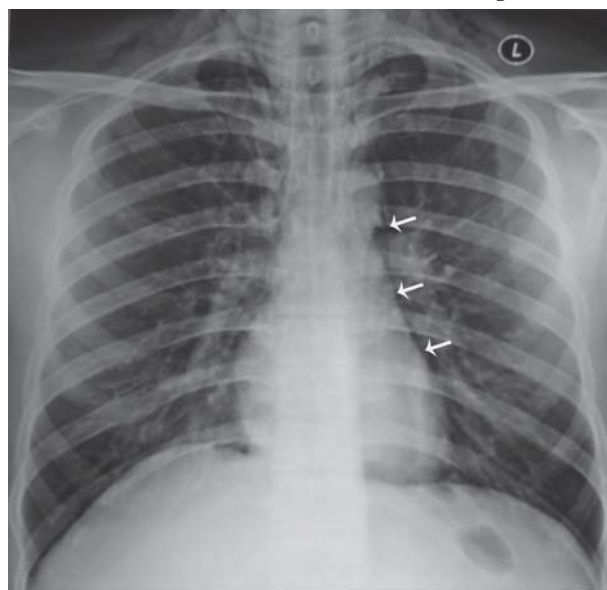


Figure 2. Chest radiograph (postero-anterior view) showing spontaneous pneumomediastinum (three arrows).

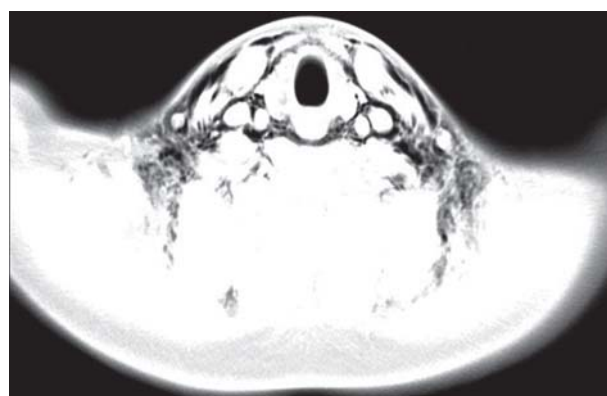
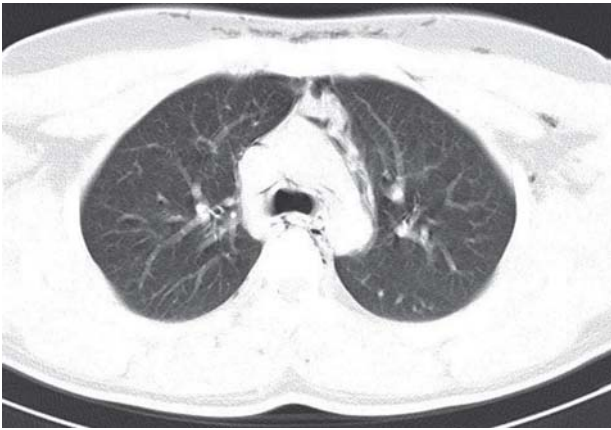


Figure 3A. Computed tomography at the root of neck showing subcutaneous emphysema and spontaneous pneumomediastinum air around the great vessels.

[Received: February 7, 2012; accepted after revision: July 5, 2012]

**Correspondence and reprint requests:** Dr K. Gowrinath, Professor and Head, Department of Pulmonary Medicine, Narayana Medical College, Nellore-524 003 (Andhra Pradesh), India; Phone: 91-861-2317964, Extn 318; Fax: 91-861-2311339; E-mail: drkgowrinath@gmail.com



**Figure 3B.** Computed tomography of chest showing subcutaneous emphysema and mediastinal air.

pneumomediastinum. Supplemental oxygen was administered and the patient was discharged after four days of observation and uneventful stay.

---

### DIAGNOSIS

---

*Spontaneous pneumomediastinum with cervico-thoracic subcutaneous emphysema.*

---

### DISCUSSION

---

Sneeze or sternutation is a protective respiratory reflex caused by stimulation of the upper respiratory tract particularly nasal mucosa and is a prominent symptom of allergic or non-allergic rhinitis. A sneeze is forceful expulsion of air from the lungs through nose and mouth. The sudden increase in intrathoracic pressure during coughing or sneezing is a risk factor of alveolar overdistension and rupture (volutrauma). However, forceful contraction of expiratory muscles limit the expansion of lungs to their total lung capacity by splinting the chest wall and prevents volutrauma that may occur if it was increase causing alveolar volume disruption of alveolar walls.<sup>1</sup> The transient increase in intrapulmonary pressure during sneezing may also cause alveolar rupture (barotrauma). Malhotra and Wright<sup>2</sup> have shown experimentally that when chest wall is tightly bound, the alveoli can withstand a greater rise in intra-pulmonary pressure (upto 190 mmHg) than an unsplinted chest. Therefore, sneezing is mostly uneventful and complications like spontaneous pneumomediastinum are very rare. Microscopic alveolar rupture may occur following coughing, sneezing, vomiting and prolonged valsalva manoeuvre.<sup>3</sup> If a pressure gradient develops as a result of a sudden increase in the alveolar pressure or fall in the perivascular interstitial pressure, alveolar walls may be disrupted

at their bases and air may leak into the pulmonary interstitium and then into the mediastinum through the lung roots.<sup>4</sup> Air readily passes into the neck from the mediastinum as its deep fascial plane is continuous with many anatomical structures in the neck. A pneumothorax may be associated. In our case, the CT of neck and chest showed normal airway and lung parenchyma which suggested that the alveolar air leak was transient.

The clinical manifestations of spontaneous pneumomediastinum are variable and depend upon on the volume of air within the mediastinum. The patient may remain asymptomatic, as in our case, or may have symptoms, such as pleuritic chest pain and dyspnoea. Rarely, spontaneous pneumomediastinum may complicate sneezing when there is an associated upper respiratory tract infection<sup>5</sup> or as a result of any attempt to suppress sneezing by closing the nostrils.<sup>6</sup> Pre-existing upper airway anomalies like a laryngocele may lead to cervical subcutaneous emphysema and spontaneous pneumomediastinum following sneezing with resultant symptoms, such as odynophagia, neck pain and pre-tracheal tenderness.<sup>7</sup> The patient presented here is unique as painless neck swelling was the only clinical manifestation of spontaneous pneumomediastinum after sneezing.

Chest radiographs (PA and lateral views) are usually sufficient to diagnose spontaneous pneumomediastinum. The radiographic signs of spontaneous pneumomediastinum depends upon the projection of normal mediastinal anatomic structures outlined by air and include the thymic sail sign, ring around the artery sign, tubular artery sign, double bronchial wall sign, continuous diaphragm sign and the extra-pleural sign.<sup>8</sup> All signs may not be present in any one case. A CT can detect even a minimal spontaneous pneumomediastinum when the chest radiograph may be normal. The clinical course of spontaneous pneumomediastinum with subcutaneous emphysema is usually benign and the air is reabsorbed within two weeks.<sup>9</sup>

---

### REFERENCES

---

1. Pierson DJ. Alveolar rupture during mechanical ventilation: role of PEEP, peak airway pressure and distending volume. *Respir Care* 1988;33:472-83.
2. Malhotra MS, Wright HC. The effects of a raised intrapulmonary pressure on the lungs of fresh unchilled cadavers. *J Pathol Bacteriol* 1961;82:198-202.
3. Macia I, Moya J. Spontaneous pneumomediastinum: 41 cases. *Eur J Cardiovasc Surg* 2007;31:1110-4.
4. Macklin MT, Macklin CC. Malignant interstitial emphysema of the lungs and mediastinum as an important occult complication in many respiratory diseases and other conditions: an interpretation of the clinical literature in the light of laboratory experiment. *Medicine* 1944;23:281-358.

5. Dechambre S, d'Odemont JP, Cornelis, Fastrez J. Spontaneous pneumomediastinum after sneezing. *Ann Thorac Surg* 1995;60:145-7.
6. Tewfik MA, Al-Qahtani K, Payne RJ, Frenkiel S. Pneumomediastinum and cervicofacial emphysema following a nasally obstructed sneeze. *J Otolaryngol* 2006;35:355-7.
7. Souza R, Figueiredo C, Rocha AJ. Pneumomediastinum after sneezing. *Thorax* 2009;64:1104.
8. Zylak CM, Standen JR, Barnes GR, Zylak CJ. Pneumomediastinum revisited. *Radiographics* 2000;20:1043-57.
9. Takada K, Matsumoto S, Hiramatsu T, Kojima E, Watanabe H, Sizu M, *et al.* Management of spontaneous pneumomediastinum based on clinical experience of 25 cases. *Respir Dis* 2008;102:1329-34.

**Cipla**

Correct **Inhalation** technique

\*conditions apply

No Conditions Apply

**foracort 200 autohaler**

**Inhaler** technique simplified

with India's 1<sup>st</sup> Breath Actuated pMDI

now in **200** metered doses

**foracort autohaler**

**Pirfenex** tablets

**Pirfenidone 200 mg**  
**Restrains Pulmonary fibrosis**