

**Case report**

**Patient with Pneumomediastinum and Air in the Spine**

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**Abstract**

Air in the epidural space of the spine in most cases is found in association with air in other body locations including pneumothorax, pneumomediastinum, pneumopericardium and subcutaneous emphysema. Most spontaneous cases resolve on their own. Here we present a 3 year old boy with pneumomediastinum and pneumorrhachis that resolved with supportive care.

**Key words:** Pneumorrhachis; Pneumomediastinum.

**Case Presentation**

The patient is a 3 year old boy who was referred to this hospital with complains of swelling of the face and neck. The patient presented with severe one sided (left) swelling of the face, neck and the chest with crepitations. He had cold symptoms since 3 weeks prior to admission which improved with subsequent resumption of dry severe coughs which led to sudden swelling of face and neck. He was using salbutamol inhaler at home. On physical exam BP was 110/70, PR 92, RR 22, SPO2 96%. He was alert and oriented. Swelling of left face and neck and crepitation of upper chest was notable. Lung exam showed diffuse bilateral wheezing. Cardiac exam was normal. Abdominal exam was normal. There was no clubbing, cyanosis or edema noted. Neurology exam was normal.

Spiral chest CT showed massive pneumomedi-

astinum and subcutaneous emphysema bilaterally and also air in the spinal canal. There was also atelectasis in left segment of right middle lobe. (Please see images at the end)

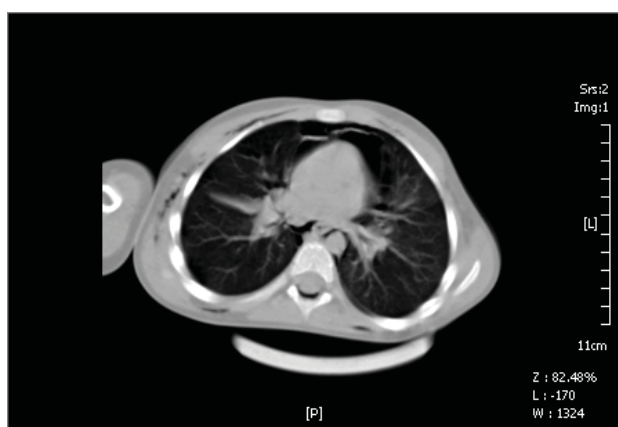
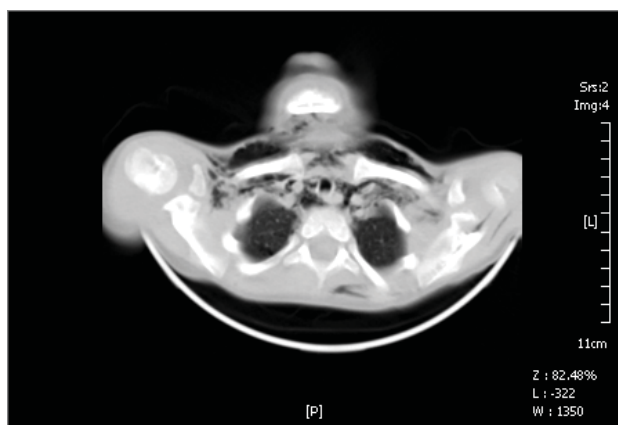
WBC was  $5.74 \times 10^3$  cell/MicroLit (N=43, L=43), Hb 13g/dl / MCV 76.3 and plt 361000. Renal function tests and electrolytes were normal (BUN 27, Cr 0.5mg/dl). ESR was 31 mm/hr. VBG was 7.45/PCO2 36/24.3. PCR for rhinovirus, RSV and influenza was negative.

The patient was treated with ceftriaxone, clindamycin, salbutamol spray and nebulizer and budesonide. He initially had mild increase in swelling of the face and neck which then started resolving and getting better during the hospital stay. He was discharged with resolution of symptoms with follow-up in a week with medications fluoxetine, nasonex and monteleukast.

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## Patient with Pneumomediastinum and Air in the Spine



Figures: 1, 2 & 3 Spiral chest CT showed massive pneumomediastinum and subcutaneous emphysema bilaterally and also air in the spinal canal; There was also atelectasis in left segment of right middle lobe.

### **Discussion**

Air in the spinal canal can be extra or intradural. It is found with air in other parts of the body most of the time. CT is diagnostic modality of choice. In a review, 71 related articles and 86 cases were reported.

External air in the spinal canal is usually benign. On the other hand, internal or intradural air is associated

with major trauma. In this review article, 13 cases were reported that occurred after severe coughing with bronchial asthma or acute bronchitis. Other etiologies noted were cardiopulmonary resuscitation, foreign body aspiration, physical exertion, inhalation of drugs of abuse, long periods of emesis in diabetic ketoacidosis. Traumatic cases included head, cervical, thoracic, abdominal and pelvic spinal injuries. Air can be localized to a special area or involve the whole spine. Differential diagnosis further included intraspinal gas secondary to degenerative, malignant, inflammatory and infectious diseases.<sup>1,2</sup>

Furthermore air in the spinal canal can be divided based on causes such as iatrogenic (for example surgery or anaesthesiological procedure), trauma and nontraumatic. Nontraumatic causes include spontaneous pneumothorax and pneumomediastinum. Air moves from the pleural cavity to the mediastinum, neuroforamina and the epidural space in the spine. Air in the epidural space of the spine in most cases is found in association with air in other body locations including pneumothorax, pneumomediastinum, pneumopericardium and subcutaneous emphysema.<sup>3-5</sup>

In a case report and review of the literature, authors divided causes of spontaneous pneumomediastinum and air in the spinal canal to 3 groups: 1) where there was underlying lung disease 2) there was another secondary causative factor 3) occurred spontaneously. It was amazing to determine a spontaneous pneumomediastinum in this child who had a first-time wheezing occurrence because it is rare in this young age group. Most cases of pneumorrhachis are iatrogenic or due to trauma. Secondary causes are hyperpnea, illegal drug inhalation, vomiting, coughing or air traveling. The authors noted 48 cases of spontaneous pneumomediastinum which also had pneumorrhachis, the latter resolved by itself in 98% of cases.<sup>6</sup>

Similar cases have been reported in the literature, were pneumorrhachis resolved without any intervention.<sup>6,7</sup>

In summary, Here we present a 3 year old boy with pneumomediastinum and pneumorrhachis after severe coughing that should be considered in the differential diagnosis.

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