PNEUMORRACHIS, 
SUBCUTANEOUS EMPHYSEMA, 
PNEUMOMEDIASTINUM AFTER 
CRISIS OF BRONCHIAL ASTHMA

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Patient: 12 years, male

Clinical History:

A case of pneumorrhahis (air within the spinal canal) resulting from crisis of bronchial asthma is presented. It was an incidental finding in a young patient.

Imaging Findings:

A 12 year old male of normal development with history of bronchial asthma, was referred to our hospital with the diagnosis of pneumomediastinum and subcutaneous emphysema seen on plain radiography. He reported having a cough, dyspnea, vomiting. At auscultation wet rales were heard and the patient developed hypoxemia. Also he presented pyramidal symptoms of the lower extremities. The patient reported no back pain and neurologic signs referable to the spine were seen. Physical examination revealed crepitus from the right anterior neck extending to the right clavicle level. The oral cavity and oropharynx appeared normal as did the larynx, including vocal cords and hypopharynx as seen on indirect laryngoscopy. Lung and heart sounds were also normal. A plain chest X-ray showed that air was present in the upper mediastinum; the findings for lung parechyma were normal (Fig. 1a, 1b). A CT scan demonstrated pneumomediastinum with subcutaneous emphysema and presence of air within the spinal canal throughout the thoracic spine (Fig. 1c, 1d, 1e). There was no evidence of pneumothorax. He recovered for 4 days where his condition gradually improved and was discharged from the hospital in stable condition a week after admission.

Discussion:

Spontaneous cervical, mediastinal emphysema and pneumorrhachis\textsuperscript{15,21,22} can result from different conditions with varying clinical importance depending on the cause\textsuperscript{2-8}. In most cases increased intrathoracic pressure has been reported and has been found, for example, in postoperative intensive care unit patients, labour\textsuperscript{12}, Valsalva-type maneuver\textsuperscript{13}, excessive phonation\textsuperscript{14,15}. In other cases pulmonary conditions such as asthma\textsuperscript{16}, pneumonia\textsuperscript{17}, bronchiolitis, respiratory distress, prolonged coughing as in whooping cough have been reported. Surgical tooth extraction\textsuperscript{18}, gastrointestinal tract surgery\textsuperscript{10}, proctocolectomy for ulcerative colitis\textsuperscript{9}, as an unusual complication of Crohn's disease\textsuperscript{19}, and as complication from endoscopic polypectomy\textsuperscript{20}, have been reported. Pneumorrhachis has also been reported due to traumatic pneumothorax and multiple thoracic fractures, direct dissection of a spontaneous pneumomediastinum, and after jejunal entrapment caused by a fracture dislocation of the lumbar spine\textsuperscript{1}. There have been reported some cases of cervical pneumorrhahis due to traumatic pneumocephalus\textsuperscript{2,3}. Some cases however are idiopathic. The posterior mediastinum communicates freely with the epidural space via the neural foramina. There are no fascial boundaries to prevent free air, in the mediastinum from dissecting between
the paraspinal soft tissues and along the nerve root sheath into the spinal canal in an extradural location. Our case was an incidental finding in a young boy with a history of bronchial asthma developed spontaneous pneumomediastinum accompanied by pneumorrhahis during an episode of cough with dyspnea (Fig. 1). Management must take into account the underlying disease process, though in most cases bed rest and analgesics are sufficient. Antibiotic therapy is not necessary unless the potential for infection exists. The patient must be cautioned against any form of coughing or straining which would increase intrathoracic pressure. We conclude that pneumorrhahis resulting from direct dissection of a spontaneous pneumomediastinum represents a benign occurrence and no treatment is required. 

**Differential Diagnosis List:** Pneumorrhahis after crisis of bronchial asthma.

**Final Diagnosis:** Pneumorrhahis after crisis of bronchial asthma.

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Pneumorrhachis associated with spontaneous pneumomediastinum
Description: Plain X-ray. Subcutaneous empyema. Origin:
Description: Plain X-ray. Pneumomediastinum. Origin:
Description: CT scan. Subcutaneous emphysema. Origin:

Description: CT scan. Axial section. Pneumomediastinum and subcutaneous emphysema. Origin:
Description: CT scan. Sagittal section. Pneumorrhachis and pneumomediastinum. Origin:

Description: CT scan. Subcutaneous emphysema. Origin: