Air! Places We Not Ought to See It: Incidentally Detected Spontaneous Pneumomediastinum Complicated by Cervical Emphysema on Positron Emission Tomography/Computed Tomography

Abstract

Spontaneous pneumomediastinum is a rare condition, characterized by the presence of air in the mediastinum without any apparent precipitating cause. It is mainly a radiological diagnosis. The onus of differentiating between secondary and spontaneous pneumomediastinum lies on a thorough workup. In addition to etiology, complications such as tension pneumomediastinum, cervical emphysema, and pneumorachis. When present, must be diagnosed promptly. Spontaneous pneumomediastinum is a benign condition which is usually managed conservatively. Although not routinely seen on positron emission tomography/computed tomography, when present, they must be picked up and reported accurately to guide appropriate management of the patient.

Keywords: *Cervical emphysema, incidental, paraneoplastic encephalitis, positron emission tomography/computed tomography, spontaneous pneumomediastinum*

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Spontaneous pneumomediastinum (SPM) is a rare condition characterized by the presence of free air in the mediastinum without any known precipitating cause(s).[1] Owing to the rarity of the disease, the available literature consists mainly of case series and some retrospective studies with one of them describing an estimated incidence of <1 in 44,000.[2] The pathophysiologic mechanism underlying the development of SPM involves activities that increase intra-alveolar pressure, such as intense coughing, crying, vomiting, and constipation. Physiologic pressure differences exist between the pleura, alveoli, and the mediastinum which aid in respiration. The existing pressure gradient leads to air from alveolar rupture to dissect along the bronchovascular structures to finally accumulate in the mediastinal space.[3] The condition was initially described by Laennec and further characterized by Hamman[1] who initially went on to describe the clinical features in a case series. SPM presents with vague symptoms, the most common being chest discomfort. Due to the wide range of cardiac and respiratory pathologies that present with similar symptoms, SPM is usually overlooked as a differential. The classic clinical triad is described by Hammam consists of pleuritic chest pain, dyspnea, and subcutaneous emphysema.[4] It is known to cause dyspnea in 49%, cough in 36%, neck pain in 36%, and dysphagia in 18% of the affected population.[5] SPM is typically a benign condition. The onus of differentiating between primary and secondary causes of pneumomediastinum such as trauma, gas-producing infection, and esophageal rupture which are all potentially fatal lies on radiological investigations like computed tomography (CT) scan.[6] Complications in SPM although rare; involves conversion into tension or malignant PM,[7] extension into surrounding structures such as pericardial space, retropharyngeal space, retroperitoneal space, and subcutaneous aspect of the neck, spinal canal.[8]

We describe the case of an incidentally detected pneumomediastinum complicated by cervical emphysema in a patient who presented to our department for a whole body 18F-FDG (fluoro-deoxy glucose) positron emission tomography/CT (PET/CT) scan as part of his work up for ruling out paraneoplastic encephalitis [Figure 1]. Due to the rarity of the disease,

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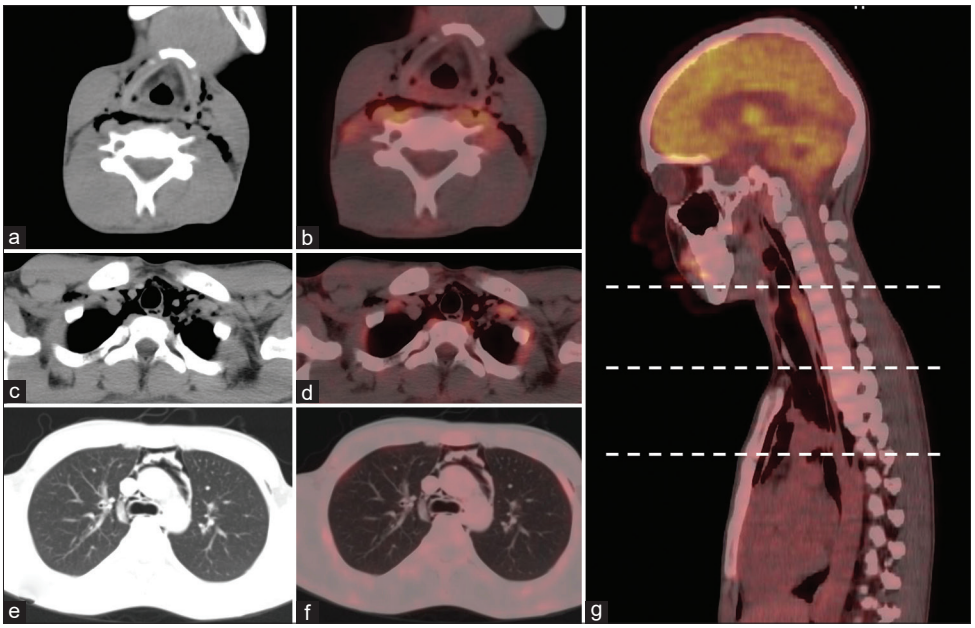

Figure 1: A 15-year-old boy presented with low-grade fever without chills, generalized tonic-clonic seizures, and gradual worsening of memory. The initial workup of the patient was inconclusive. The patient was then referred to the Department of Nuclear Medicine at our institute for a whole-body F-18 fluoro-deoxy-glucose positron emission tomography/computed tomography scan with a provisional diagnosis of paraneoplastic encephalitis. No evidence of any metabolically active lesion was noted anywhere in the body. However, air was incidentally detected in the mediastinum and neck spaces, suggestive of a spontaneous pneumomediastinum and cervical emphysema. (a-f) demonstrates axial sections of computed tomography and fused positron emission tomography/computed tomography at various levels as described in the sagittal section (g). (a and b) shows the presence of air outlining the thyroid cartilage and in the retropharyngeal location. (c and d) demonstrates the presence of air around the great vessels of heart. (e and f) Demonstrates the presence of air in the anterior mediastinum

pneumomediastinum is not routinely encountered on PET/CT. SPM if found during PET/CT studies must be appropriately identified and reported to guide further management of the patient.

Informed consent

Informed consent from the patient was obtained to be included in the study.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that name and initials will not be published and due efforts will be made to conceal the identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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