

Spontaneous Pneumomediastinum: Review of Two Cases

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Received: February 04, 2019; **Published:** February 22, 2019

DOI: 10.31080/ecprm.2019.08.00354

Abstract

Primary spontaneous mediastinum (SPM) is a rare condition that is often misdiagnosed. The hallmark presenting symptom is air in the mediastinum with no obvious precipitating factor. SPM masquerades as a more sinister disease of pulmonary, cardiac, or esophageal origin, but the condition is relatively benign. SPM has a higher incidence in young males, smokers, patients with lung disease, and drug abusers. In this case series, we discuss two patients who were diagnosed with SPM. We aim to increase clinical awareness and provide a diagnostic algorithm for the management of this condition.

Keywords: Primary Spontaneous Mediastinum (SPM); Pneumothorax; Pleural Effusion

Introduction

Spontaneous pneumomediastinum (SPM) is an uncommon condition defined as free air in the mediastinum of unknown etiology. The incidence of SPM has been estimated as 1/25,000 amongst those 5 - 34 years of age [1]. Typically, patients will present with acute chest pain, dyspnea, and subcutaneous emphysema coupled with otherwise unremarkable findings [2]. It is important to properly diagnose patients with SPM because the treatment for most healthy adults is supportive. These patients usually improve quickly and can be discharged within hours from the emergency department. Here we discuss two cases of SPM, their presentation, evaluation, and management.

Case Presentations

Patient 1

A 26 year old Australian woman presented to the emergency department with a chief complaint of progressively worsening chest pain and dyspnea after having disembarked from a 14-hour flight from Australia hours earlier. The patient was otherwise healthy with no other complaints. She had mild neck crepitus on exam but was otherwise unremarkable. Laboratory findings were unremarkable. CT angiogram of the chest was noted to have extensive pneumomediastinum (Figure 1) extending superiorly and causing subcutaneous emphysema of the neck (Figure 2). There was no evidence of pneumothorax or pleural effusion and esophagram was negative. The patient was discharged the same day from the emergency department following a successful PO challenge.



Figure 1: (Left) Computed Tomography Angiogram (CTA) confirming extensive pneumomediastinum

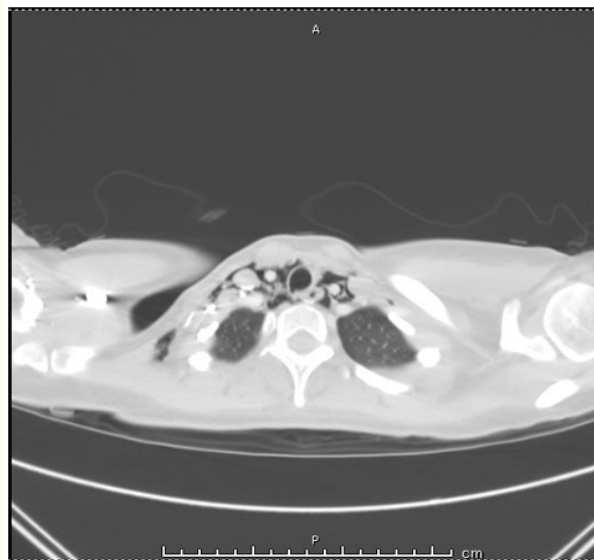


Figure 2: (Right) CTA confirming subcutaneous emphysema of the neck.

Patient 2

A 31 year old male presented to emergency department complaining of chest pain, worsening shortness of breath, and neck crepitus. The patient reported having played golf in the morning and having a high-pitched voice at the time of arrival to the ED. Physical exam was

only notable for neck crepitus. A CT chest revealed marked subcutaneous emphysema throughout the neck and soft tissues tracking to the right anterior shoulder with associated pneumomediastinum along the esophagus (Figure 3). There was no evidence of pleural effusion or pneumothorax. The patient was admitted to medicine service and was treated with analgesics and supportive care. The esophagram was negative for perforation. He was discharged home on hospital day two.

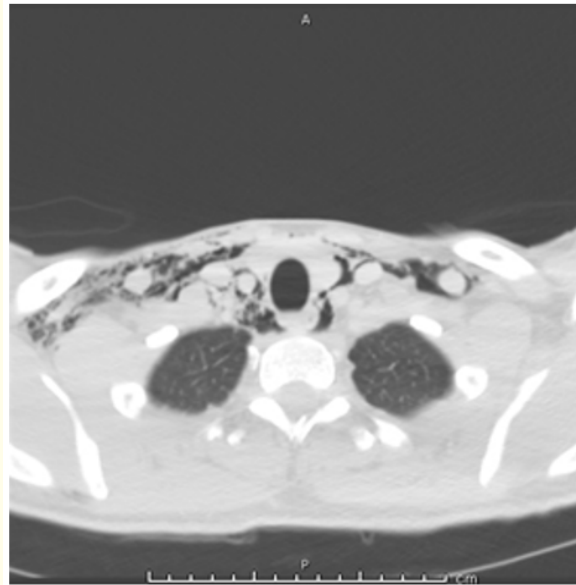


Figure 3: CT Chest with contrast confirming subcutaneous emphysema of the right shoulder.

Discussion

Free air in the mediastinum is a distinguishing feature of SPM, a benign, self-limiting condition. Macklin and Macklin hypothesized that the condition results from ruptured alveolar membranes allowing air to traverse broncho-vascular pathways ultimately escaping via the hilum into the mediastinal space. Air may also dissect hilar tissue planes in a cephalad direction, resulting in subcutaneous emphysema [2,4].

One of the first to define SPM, Louis Hamman deemed the audible movement of air between the anterior pericardium and chest wall on auscultation “Hamman’s crunch”. This finding was diagnostic when clinicians relied heavily on physical exam skills [2-4]. Today, we rely on X-Ray and CT to definitively diagnose SPM. Most patients present with symptoms to the emergency department and SPM is often discovered incidentally when ruling out more serious cardiopulmonary conditions. Below, we offer a diagnostic diagram to help in the treatment and management of SPM.

It is important to distinguish SPM symptoms from more serious conditions requiring immediate treatment. After the incidental diagnosis of SPM, it is critical to rule out suspected cases of esophageal perforation with an esophagram or CT esophagram. Typically, we reserve bronchoscopy and VATS blebectomy and pleurodesis for those patients with a persistent air leak after chest tube insertion for pneumothorax. Bronchoscopy may also be useful in cases with underlying lung disease (Figure 4). Additionally, evidence suggests esophageal perforation and pneumothorax are both infrequently present with SPM [2,5].

Diagnosis, Treatment, and Management of Spontaneous

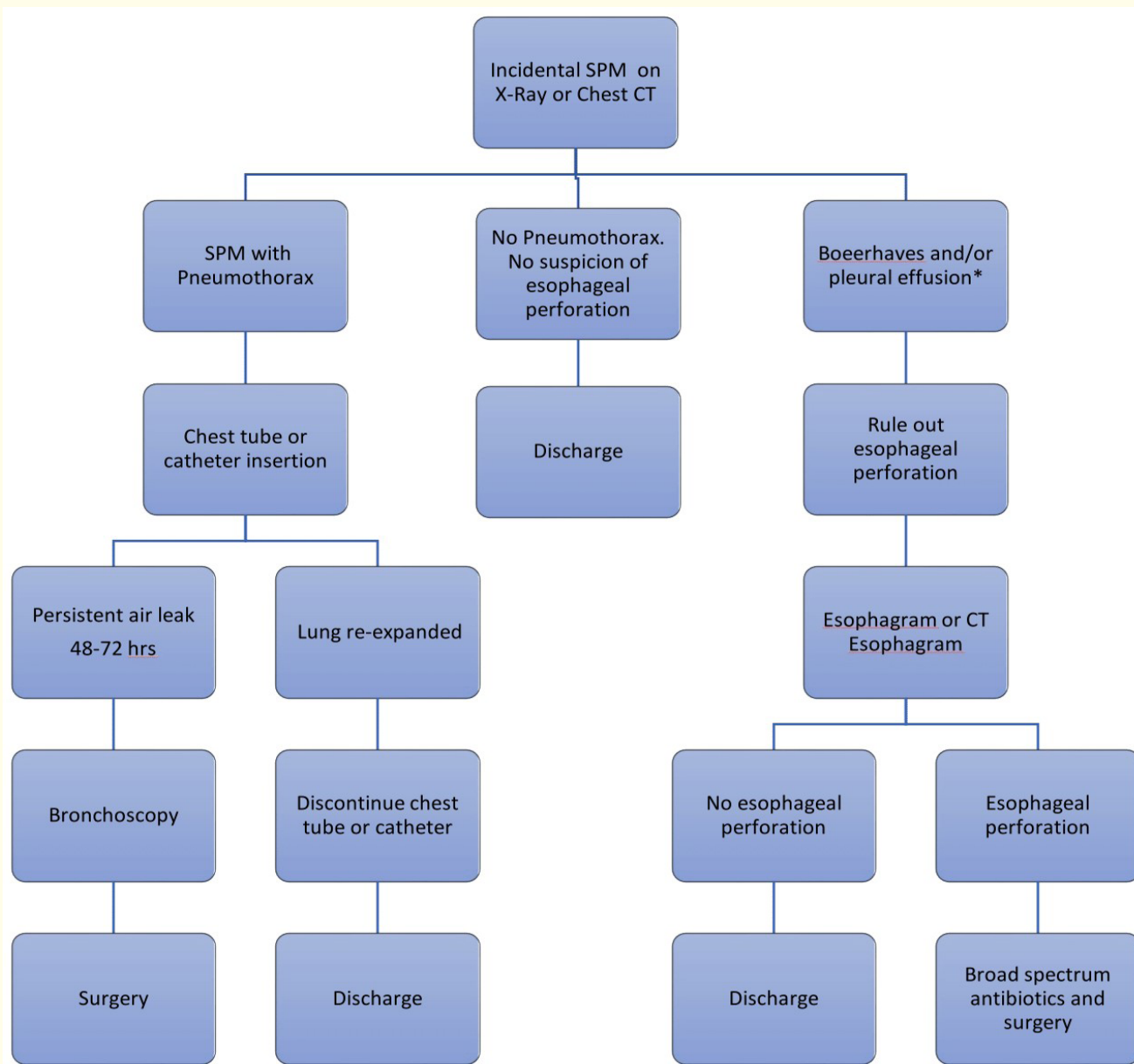


Figure 4: Algorithm for the treatment and management of SPM. If warranted, conservative treatment consists of analgesics, oxygen, and rest. *Mediastinitis may present as pleural effusion on CT Chest or X-Ray, tachycardia, elevated WBC count, and/or fever.

Most SPM cases are uncomplicated. Once cardiopulmonary stability is certain, conservative treatment is appropriate for most patients. Treatment consists of analgesics, rest, oxygen, and reduction of activities that may increase intrathoracic pressure.

Conclusion

Spontaneous pneumomediastinum is a rare condition characterized by free air in the mediastinal space of unknown cause in an otherwise healthy patient. Emphysema in the mediastinum and adjacent subcutaneous tissue planes on X-Ray, or CT, coupled with normal findings on esophagram are sufficient for diagnosis. Patients with underlying lung disease may also undergo bronchoscopy to rule out airway disturbance as the cause of persistent air leak. In the absence of severe illness, most patients can be managed on an outpatient basis.

Acknowledgements

Robert J. McKenna, MD for continuous mentorship.

Conflict of Interest

No financial conflict of interest exists to disclose.

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Volume 8 Issue 3 March 2019

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