Management of Spontaneous Pneumothorax: A Case Study

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Objectives
Describe the signs and symptoms of spontaneous pneumothorax.
Discuss the management options for secondary spontaneous pneumothorax.
Discuss associated diagnoses with spontaneous pneumothorax.

Background
Primary spontaneous pneumothorax (PSP) in the adult population is 6-18 per 100,000. Data regarding spontaneous pneumothorax in the pediatric population is limited. There are no established guidelines for management of pediatric patients. Guidelines are extrapolated from adult data.

Signs and Symptoms of Spontaneous Pneumothorax
May occur at rest or with increase of V/Q mismatch.
Primary spontaneous pneumothorax is secondary to pleural irritation due to lung disease.
• Chest pain
• Shortness of breath
• Oxygen desaturation

Clinical Guidance
Family and patient counseling
• Blows found on CT – pneumothorax is secondary to increased risk of recurrence in the future
• Management options – clinical observation and serial chest X-Rays

Case Study: AN, 15 year old male
History: Previously healthy 15 year old male, occasional marijuana use, no reported tobacco use.

Symptoms: 3 day history of non-productive cough followed by pleuritic chest pain.
• Presented to an OSH for increased chest pain.
• OSH course: CXR demonstrated a large left sided pneumothorax. 28 French chest tube placed at OSH and transferred to Lurie Children’s.

Management at Lurie Children’s: Family counseled on possibility of blebs and offered chest CT as inpatient or outpatient.
• Family counseled that apical bleb resection may be indicated for ipsilateral pneumothorax or second, contralateral episode.

Inpatient chest CT: Several apical blebs (none with a diameter greater than 2 cm) identified bilateral, at least 7 on the right and at least 6 on the left. In addition to the blebs, a few prominent apical lines are identified in the right lung apex per CT report.

Taken to the OR on 5/16/2014 – bilateral thoracoscopic VATS bilateral apical bleb resection and pleurodesis.

Post-operatively: Had an air leak treated with chest tube suction. Right chest tube removed POD #2, left removed POD #3.
• CXR post-pull 5/20/2013: Tiny left apical pneumothorax.

Presented to the ED on 6/27/2013 for evaluation of sharp chest pain. CXR stable from discharge film.
• Present to the ED on 11/19/2013 for evaluation of left sided chest pain and pleuritic pain. CXR negative for pneumothorax.

Practice Pearls
A significant pneumothorax will require evacuation. Surgical intervention is usually indicated if the pneumothorax is found to be secondary.

A first episode of secondary spontaneous pneumothorax may not require surgical intervention if the family is opposed.
• The higher number of blebs, the higher the risk of rupture.

Families and patients may choose clinical observation, unilateral surgical intervention or bilateral intervention based on preference after receiving counseling.

Conditions Associated with Spontaneous Pneumothorax
• Male gender (65-81% are male)
• Tall and thin body habitus
• Marfan’s Disease
• Smoke inhalation/exposure (cannabis or tobacco)
• Remodeling of alveoli and increased risk of cystic lesions

References


