

EM CASE OF THE WEEK.

BROWARD HEALTH MEDICAL CENTER
DEPARTMENT OF EMERGENCY MEDICINE



Care Warriors

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A 62 year old homeless male with a history of chronic alcoholism and nicotine dependence is brought to the ED via EMS after a bystander witnessed the patient having a tonic clonic seizure outside of a grocery store. Per the patient, he is 24 hours without alcohol use. The patient is mildly febrile, tachycardic, restless, tremulous, and repeatedly vomiting. Vitals are as follows: BP 135/86 mmHg, 99.6°F oral temp., HR 109 bpm, and RR 20 bpm. His initial cardiac, pulmonary, and gastrointestinal exams are unremarkable. In the ED, he experiences two tonic clonic seizures within one hour, each lasting nearly 2 minutes. His GCS is 13 and his neurological exam is limited to due to his post-ictal state and resistance to cooperate; however, he displays no signs of head trauma or current focal neurological deficits. He is given Ativan 2mg IV every 15 minutes as needed for symptomatic control, along with an electrolyte drip. Routine labs, including toxicology, and a head CT are ordered.

Upon re-examination of the patient after his head CT, he states that he is "having some trouble breathing". Repeat pulmonary exam reveals decreased breath sounds in the right lung field. A stat chest x- ray is ordered. **What is found on the chest x ray?**

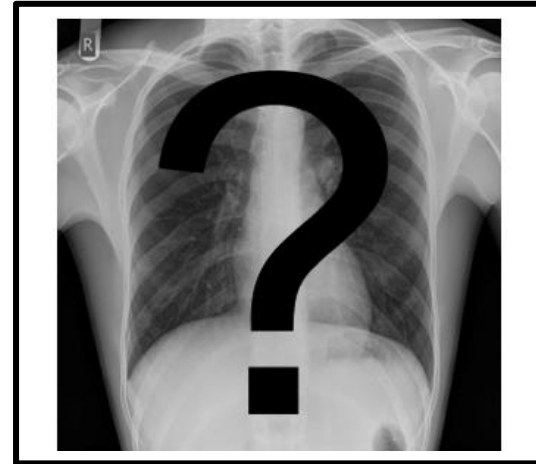


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- A. Lung mass
- B. Aspirated foreign body
- C. Pneumothorax
- D. Infiltrates suggestive of pneumonia

Alcohol withdrawal typically begins 6-24 hours after a person's last drink. Symptoms include tremors, diaphoresis, and vomiting. Withdrawal seizures are typically tonic-clonic, occurring within 6-48 hours of alcohol cessation.

Chronic alcoholism is associated with an increased risk for multiple diseases. Chest x-rays are recommended in alcoholics with an abnormal lung exam, chronic lung conditions, or sedated mental status.

EM Case of the Week is a weekly "pop quiz" for ED staff.

The goal is to educate all ED personnel by sharing common pearls and pitfalls involving the care of ED patients. We intend on providing better patient care through better education for our nurses and staff.

BROWARD HEALTH MEDICAL CENTER

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Warriors

The correct answer is C. Although unexpected, the chest x-ray, supported by decreased breath sounds in the right lung field, shows a pneumothorax!

Discussion:

A pneumothorax occurs when air accumulates within the pleural space. If this occurs without an identified precipitating event, it is referred to as a spontaneous pneumothorax, which may then be classified as either primary or secondary.

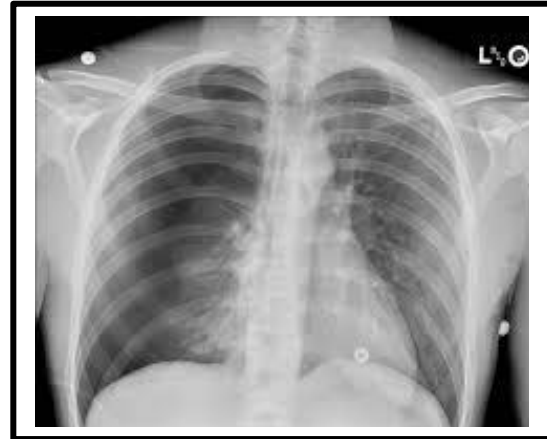
A **primary spontaneous pneumothorax** occurs in a patient with no prior identified lung disease, and cigarette smoking is a strong risk factor.

A **secondary spontaneous pneumothorax** occurs in a patient with a history of pre-existing lung disease.

A **traumatic pneumothorax** happens as a result of either penetrating or blunt trauma to the chest wall, often secondary to a rib fracture.

Physical exam findings for a pneumothorax include, on the affected side, absent or decreased breath sounds upon auscultation, hyper-resonance to percussion, decreased tactile fremitus, and asymmetrical chest rise. In the presence of a tension pneumothorax, a patient will have tracheal deviation along with these physical exam findings, and show signs of clinical decompensation such as hypotension.

This patient is a smoker that claims to have no history of lung disease, but is a poor historian with no established medical history. It is difficult to classify his pneumothorax as primary or secondary. In addition, the patient fell from standing height during his first seizure and has had multiple seizures in the ED, so a traumatic pneumothorax is possible.



Treatment of pneumothorax:

Treatment of pneumothorax depends on the type of pneumothorax.

For tension pneumothoraces, a patient typically requires supplemental oxygen and immediate needle decompression followed by chest tube placement.

For traumatic or spontaneous pneumothoraces in a hemodynamically stable patient, treatment depends on size and risk factors. All patients should receive supplemental oxygen to increase pleural reabsorption of air. If it is the patient's first pneumothorax and <15% of the lung space, the patient can be observed with repeat CXRs every 6 hours for 48 hours. If this shows no progression, the patient may be discharged. If recurrent or large pneumothorax, catheter aspiration or tube thoracostomy must be performed.

For this patient, a 14 Fr catheter is placed at the 2nd intercostal space midclavicular line. Repeat CXR shows resolving pneumothorax. Patient is admitted for management of alcohol withdrawal and observation with serial CXRs to confirm complete pneumothorax resolution.

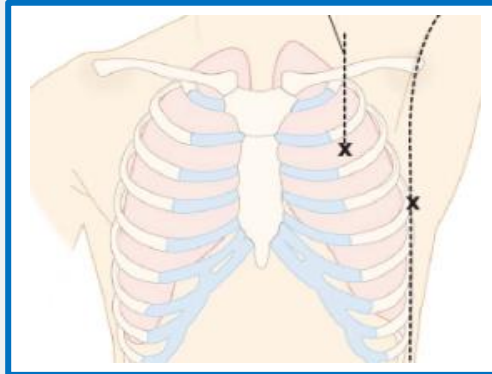
For a list of educational lectures, grand rounds, workshops, and didactics please visit BrowardER.com and click on the "Conference" link.

All are welcome to attend!

Insertion site options for catheter aspiration or tube thoracostomy:

- **5th intercostal space between the mid-axillary and anterior axillary line.** This method is commonly used for adults, and it is best when a standard 24 Fr chest tube must be placed to achieve resolution of the pneumothorax.
- **2nd intercostal space at the midclavicular line.** This method can be utilized when a patient has a clearly defined pneumothorax on radiography. A small catheter such as a 10- 14 Fr or pigtail catheter should be used. This method is preferred in children.

Level of suction: Begin on water seal. If pneumothorax does not resolve, adjust to -10cm of water. Using serial CXR, increase suction as needed for pneumothorax resolution. In addition, attaching a small bore catheter to a Heimlich valve may be sufficient.



Take Home Points

- **Treat the ENTIRE patient! Perform reassessments and listen to your patient. Don't have tunnel vision regarding their chief complaint!**
- **Because of this patient's history of chronic alcoholism, smoking, and recent seizures, a diagnosis of pneumonia or lung mass was high on the differential. This shows the importance of the CXR and a thorough exam.**
- **Pneumothorax should be suspected based upon physical exam findings and confirmed by CXR. Treatment involves supplemental oxygen, and depending on size of the pneumothorax and the patient's clinical condition, either observation with serial CXRs or catheter aspiration/tube thoracostomy.**



ABOUT THE AUTHOR

This month's case was written by Amanda Ruiz. Amanda is a 2nd year PA student from NSU Dr. Pallavi Patel College of Health Care Sciences. She did her emergency medicine rotation at BHMC in January 2019. Amanda plans on pursuing a career in Internal Medicine or Emergency Medicine after graduation.

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