INSIGHTS IN IMAGES

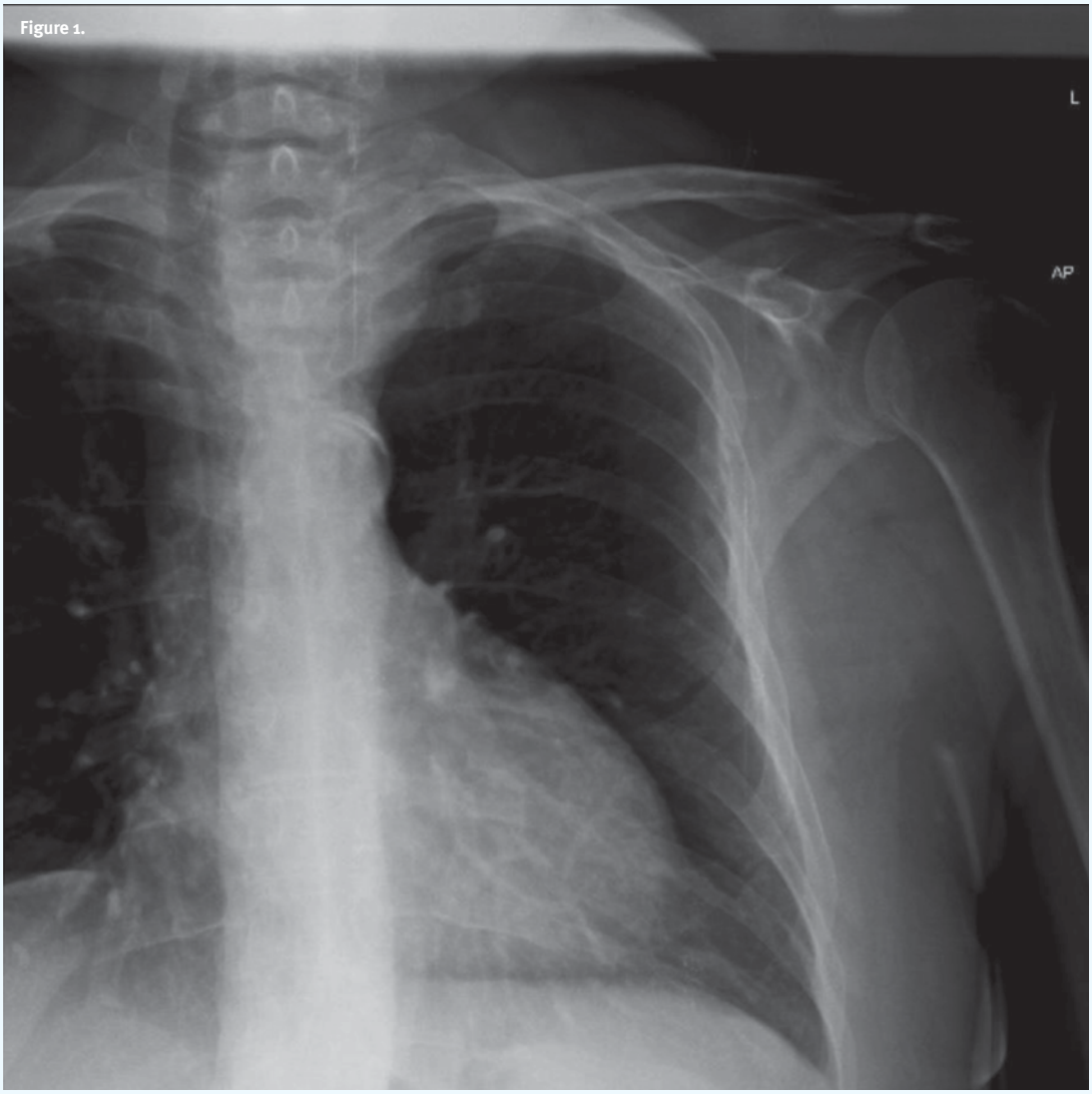
CLINICAL CHALLENGE: CASE 1

In each issue, *JUCM* will challenge your diagnostic acumen with a glimpse of x-rays, electrocardiograms, and photographs of conditions that real urgent care patients have presented with.

If you would like to submit a case for consideration, please e-mail the relevant materials and presenting information to editor@jucm.com.

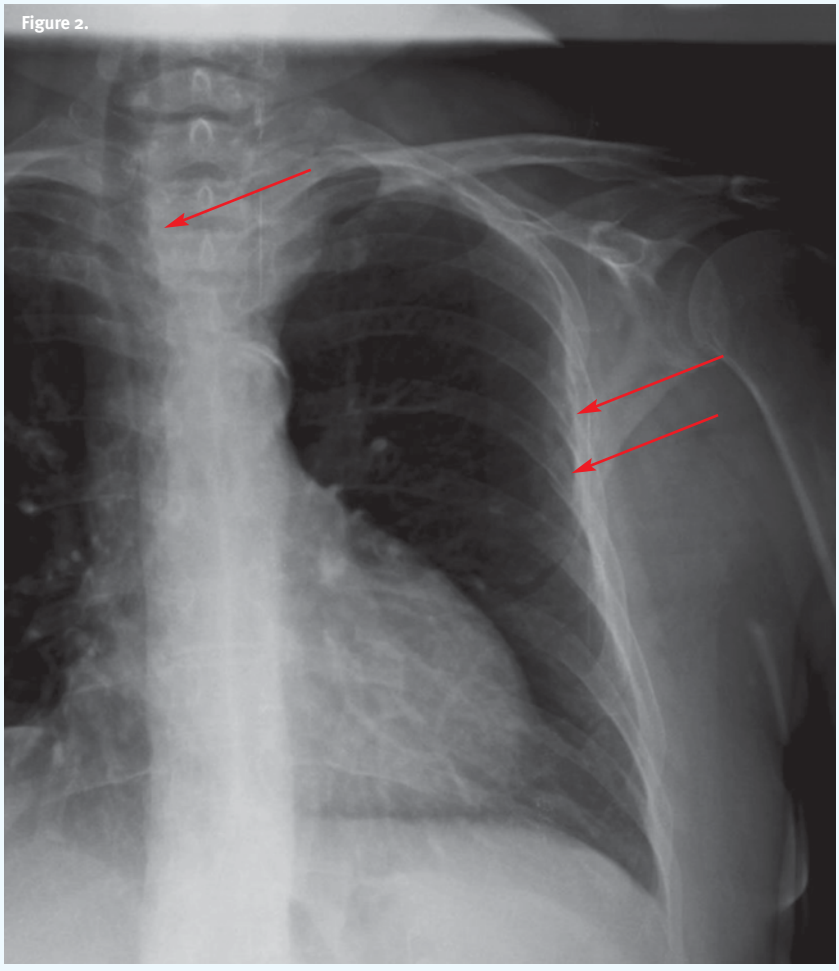
75 Year Old With Rib Pain

Figure 1.



A 75 year-old woman presents to urgent care following a fall in her home that day. An adult daughter explains that her mother has pain on her left side around her ribs.

View the image taken and consider what your diagnosis and next steps would be. Resolution of the case is described on the following page.



Differential Diagnosis

- Left-sided rib fractures
- Rightward tracheal deviation
- Left-sided pneumothorax
- Left sided hemothorax

Diagnosis

The imaging reveals multiple left-sided rib fractures and rightward tracheal deviation. The tracheal deviation is concerning for underlying mass of the upper mediastinum. Common causes for tracheal deviation include aberrant right subclavian artery, bronchogenic cyst, double aortic arch, duplication cyst, esophageal carcinoma, lymphadenopathy, middle mediastinal lesion, neurenteric cyst, right aortic arch, thyroid mass, and tracheal cyst. Complications from rib fractures include pneumothorax and hemothorax, neither of which are present in this image.

What to Look For

- Normal tracheal alignment should occur directly in front of the cervical spine on the PA view of a chest x-ray
- Rib fractures appears as "jumps" along the smooth edge borders of the rib bone

Pearls for Urgent Care Management

- Tracheal deviation requires further evaluation to understand the underlying etiology, including advanced imaging such as a CT scan
- Rib fractures heal with time and pain management
- Patients with rib fractures should be encouraged to do deep breathing or incentive spirometry to minimize risk of complications

Acknowledgement: Images and case provided by Experity Teleradiology (www.experityhealth.com/teleradiology).

52 Year Old With a Lateral Nasal Growth


Figure 1.

A 52-year-old man presents to urgent care for a new growth on his nose. On examination, a smooth, faint pink papule with overlying scant telangiectasias was seen at the lateral nasal sidewall.

View the image taken and consider what your diagnosis and next steps would be. Resolution of the case is described on the next page.


Figure 2.

Differential Diagnosis
- Epidermoid cyst
- Lobular capillary hemangioma
- Nodular basal cell carcinoma
- Trichoepithelioma

Diagnosis
This patient was diagnosed with trichoepithelioma. As benign neoplasms derived from the hair follicles, trichoepitheliomas usually present as asymptomatic smooth, skin-colored papules or nodules on the central face and scalp. Most cases occur in adults over age 40. Histopathologic examination reveals reticular basaloid islands with peripheral palisading surrounded by fibroblasts and a cellular fibrotic stroma. Various genetic syndromes can be associated with trichoepitheliomas.

What to Look For
- Smooth, skin-colored papules most commonly on the cheeks, eyelids, and nose
- Papules are not painful or itchy and usually do not bleed

Pearls for Urgent Care Management
- Trichoepitheliomas are benign lesions
- Distinguishing these from malignant lesions requires a biopsy
- Treatment is surgical removal

Acknowledgment: Image and case presented by VisualDx (www.VisualDx.com/jucm).

66 Year Old With Weakness and Dyspnea

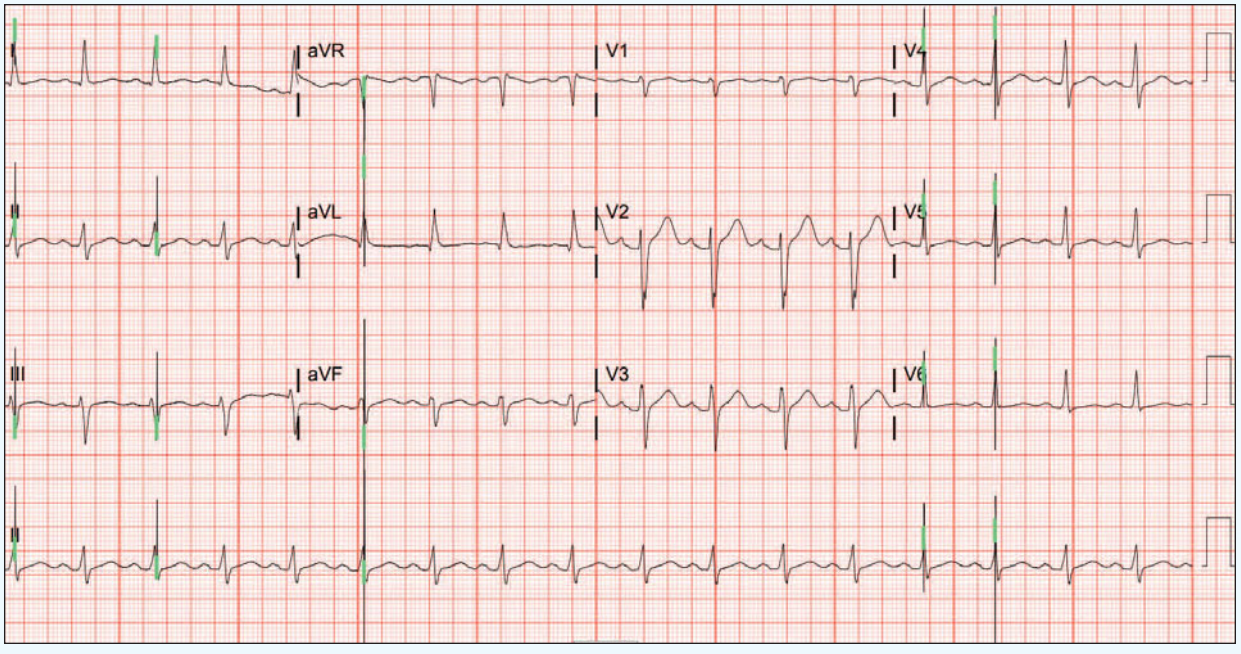


Figure 1: Initial ECG

A 66-year-old male presents in the urgent care, saying "it's hard to breathe." He's had weakness and dyspnea for one day. The patient has a medical history of diabetes, hypertension, and heart failure. The patient has a pacemaker. An ECG is obtained.

View the ECG captured above and consider what your diagnosis and next steps would be. Resolution of the case is described on the next page.

Case presented by Benjamin Cooper, MD, MEd, FACEP, The University of Texas Health Science Center at Houston, Department of Emergency Medicine

Figure 2: Failure-to-sense.

Differential Diagnosis

- Complete heart block
- Failure-to-sense
- Failure-to-pace
- Failure-to-capture
- Oversensing

Diagnosis

The diagnosis for this patient is failure-to-sense. The ECG reveals sinus tachycardia with a rate of 100 beats per minute. There are several pacemaker spikes occurring within the QRS complexes (vertical green bars), indicating failure-to-sense (**Figure 1**). This case was caused by a mechanically dislodged pacemaker. The patient was transferred to a capable facility, and the pacemaker was revised.

Failure-to-sense occurs when the pacemaker fails to sense native cardiac activity, which leads to asynchronous pacing. Pacing spikes can be seen just after the onset of the QRS complexes (**Figure 2**). It can be caused by a lead insulation break, new intrinsic bundle branch blocks, electrolyte abnormalities, and Class IC antiarrhythmics.[1,2]

Failure-to-pace occurs when the paced stimulus is not generated when expected. Pacemaker spikes are decreased or absent (**Figure 3**). It is usually caused by oversensing but can also be caused by lead fracture or insulation defect. Oversensing occurs when pacemaker activity is inhibited by inappropriately recognized non-cardiac activity (ie, skeletal muscle).[1,2] A pacemaker magnet placed over the pacemaker site on the chest wall will enable asynchronous pacing—a mode that paces without sensing—and can be a stabilizing temporary treatment.

Failure-to-capture occurs when the delivery of a pacing stimulus does not lead to myocardial depolarization (**Figure 4**). This can be caused by mechanical lead displacement or fracture, electrolyte abnormalities, and ischemia or infarction.[1,2]

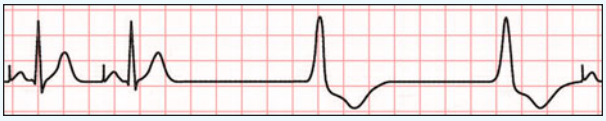


Figure 3: Failure-to-pace.

Figure 4: Failure-to-capture.

Complete heart block occurs when normal conduction between the atria and ventricles is disrupted, leading to atrioventricular dissociation (ie, the atria and ventricles act independently). Since every QRS complex is preceded by a P wave, the rhythm is sinus.

Patients diagnosed with pacemaker malfunctions should be transferred via ambulance to a hospital with an electrophysiologist on call.

What to Look For

Pacemaker malfunctions include failure-to-sense, failure-to-pace, and failure-to-capture. Look for pacemaker spikes in spurious locations. Pacemaker failures can be caused by mechanical lead disruption, electrolyte abnormalities, ischemia, or antiarrhythmics.

Pearls For Initial Management; Considerations For Transfer

- Patients with pacemaker failures should be immediately transferred to a center with an electrophysiologist on call
- A magnet placed on the chest wall over the pacemaker site will enable asynchronous mode and can be a helpful temporizing measure when oversensing occurs

References

1. Mulpuru SK, Madhavan M, McLeod CJ, Cha YM, Friedman PA. Cardiac Pacemakers: Function, Troubleshooting, and Management: Part 1 of a 2-Part Series. *J Am Coll Cardiol*. 2017;69(2):189-210. doi:10.1016/j.jacc.2016.10.061
2. Berberian JG, Levine BJ, Brady WJ. *EMRA EKG Guide*. 1st ed. Emergency Medicine Residents' Association; 2017.

Case courtesy of ECG Stampede (www.ecgstampede.com).

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