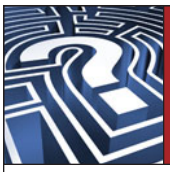
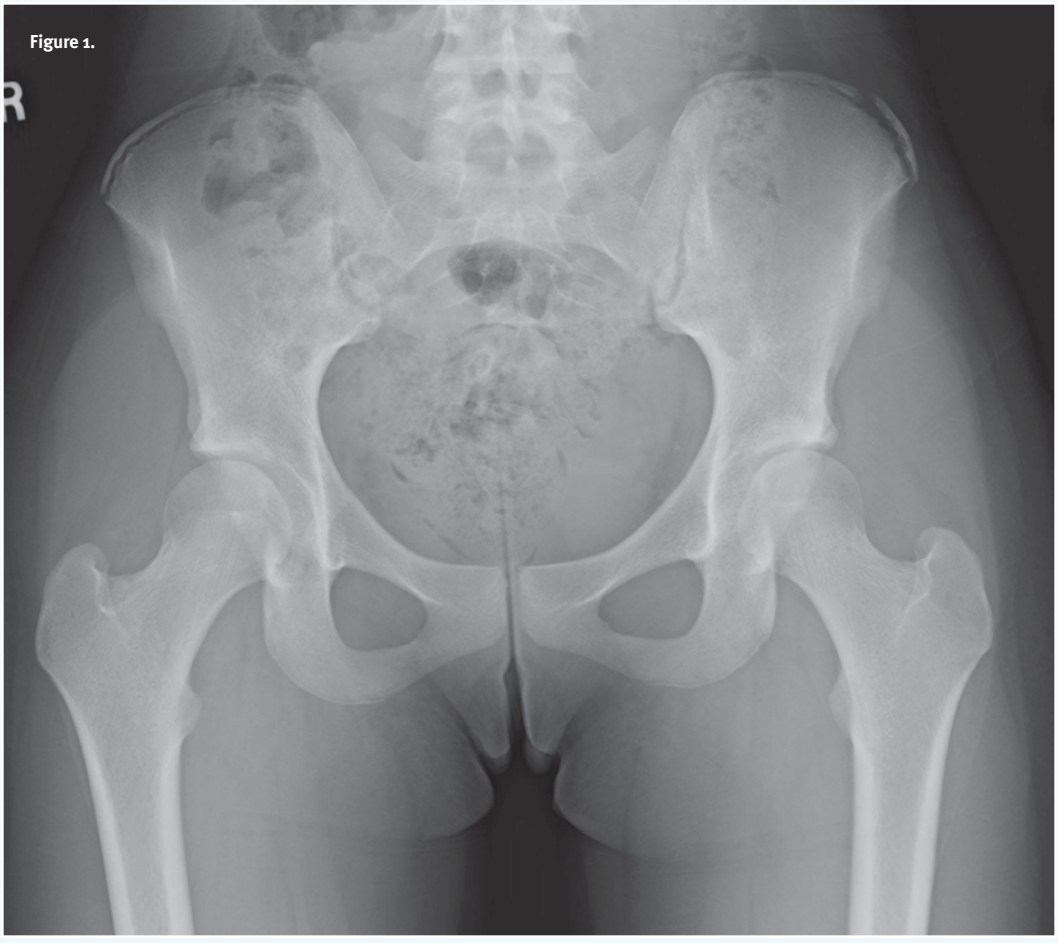


CLINICAL CHALLENGE: CASE 1

Challenge your diagnostic acumen: Study the following x-rays, electrocardiograms, and photographs and consider what your diagnosis might be in each case. While the images presented here are authentic, the patient cases are hypothetical. Readers are welcome to offer their own patient cases and images for consideration by contacting the editors at editor@jucm.com.

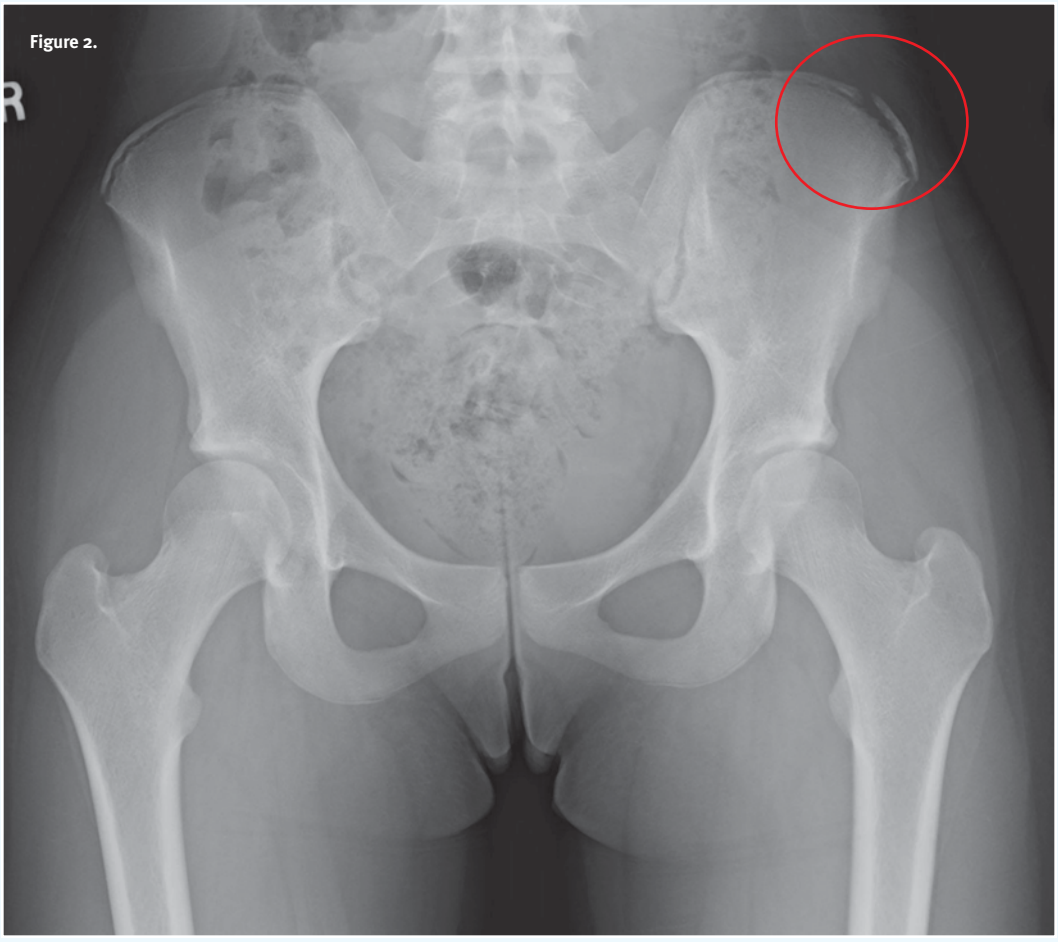
16-Year-Old With Hip Pain



A 16-year-old female presents to urgent care with her mother after soccer practice at school. She says she felt a "pop" in her left hip, immediately followed by posterior hip pain. Walking makes it worse, but resting makes the pain better. An x-ray is ordered.

Review the images and consider what your diagnosis and next steps would be. Resolution of the case is described on the following page.

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



Differential Diagnosis

- Avulsion fracture of the left iliac crest apophysis
- Sacroiliitis
- Labral tear

Diagnosis

This is a classic case of an avulsion fracture of the left iliac crest apophysis, as the x-ray shows a widening of the left iliac crest apophysis. Apophyseal cartilage is a weak point, and avulsion fractures at this site are caused by forceful contraction of the abdominal wall muscles usually while sprinting or jumping. The most common avulsion sites are the anterior superior iliac spine and the anterior inferior iliac spine.

What to Look For

- While an uncommon injury, most often occurs in young adolescent athletes
- Acute pain and tenderness will likely be present over the iliac crest
- Some with this injury may be unable to bear weight
- X-ray can help with the diagnosis, but in younger patients, the apophysis may still be radiolucent, making diagnosis more difficult

Pearls for Urgent Care Management

- Limit weight bearing if painful
- Limit flexion and rotational movement of the trunk
- Pain management includes ice and over-the-counter pain medications
- If significant displacement occurs, surgical intervention may be required

65-Year-Old With Finger Growth

Figure 1.

A 65-year-old woman presents to urgent care complaining of a growth that developed on her finger 2 months prior. She says it's not painful or itchy and has not grown since she first noticed it. On examination, a solitary, smooth, pinkish papule with a tiny central crust is seen on her distal interphalangeal joint on her left index finger. The patient has a history of osteoarthritis.

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

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

Figure 2.

Differential Diagnosis

- Epidermoid cyst
- Ganglion cyst
- Glomus tumor
- Myxoid cyst

Diagnosis

The correct diagnosis in this case is a myxoid cyst—also known as a digital mucous cyst or pseudocyst. This is a ganglion cyst found on the distal interphalangeal joint of the finger or thumb, or less commonly, the toe. The cysts are believed to form from degeneration of connective tissue and often are associated with osteoarthritic joints. Skin biopsy histopathology will show a well-circumscribed superficial collection of dermal mucin without a true cyst lining. The overlying epidermis will be atrophic, hyperplastic or hyperkeratotic with a variable increase in fibroblasts and absent fibrous wall.

What to Look For

- Myxoid cysts are more prevalent in women between the ages of 40 and 70 years.
- They are typically 3-10 mm in size, most commonly affect the second and third digits.
- While most are solitary, cysts may possibly appear in multiples.
- They are not painful or itchy.

Pearls for Urgent Care Management

- Myxoid cysts are benign, so no treatment is indicated
- If myxoid cysts become unsightly, cumbersome or painful, treatment is surgical excision

CLINICAL CHALLENGE: CASE 3

74-Year-Old With Lightheadedness

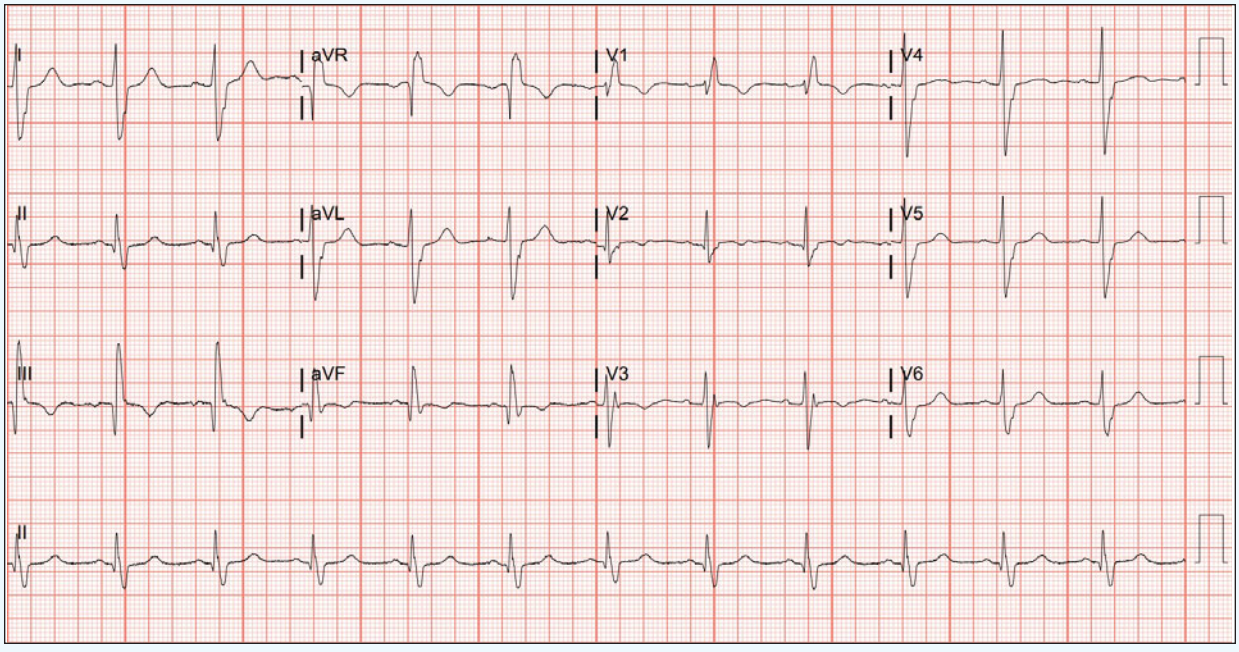


Figure 1: Initial ECG

A 74-year-old woman presents to urgent care with epistaxis, controlled on arrival. She is also complaining of lightheadedness and fatigue that's been going on for the past 2 weeks.

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 Adam M. Woods, MD, PGY3, Chief Resident, The University of Texas Health Science Center at Houston.

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

ECG STAMPEDE

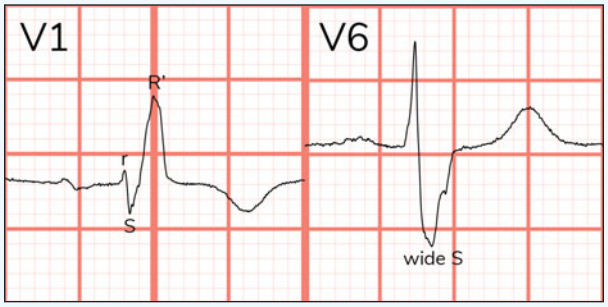


Figure 2: RBBB showing rSR' in V1 and wide S-wave in V6

Differential Diagnosis

- Ventricular ectopy/pacing/pre-excitation
- Acute/chronic lung disease
- Bifascicular block
- Hyperkalemia

Diagnosis

Bifascicular block (right bundle branch block + left posterior fascicular block) is the correct diagnosis in this case. The patient's ECG shows a normal sinus rhythm with a rate of 72 beats per minute. There is rightward axis deviation (QRS is positive in lead aVF and negative in lead I) with normal PR and QT intervals and a widened QRS (>120msec). There is no evidence of acute ischemia.

When investigating the etiology of the widened QRS, note the rSR' in the anterior precordial leads (V1, V2) and deep S-wave in the lateral leads (I, V5, V6). These findings suggest the presence of a right bundle branch block (RBBB) (**Figure 2**). A RBBB, however, is not expected to alter the axis. Causes of right axis deviation include: 1) lateral MI; 2) ventricular ectopy; 3) pre-excitation; 4) hyperkalemia; 5) acute or chronic lung disease; and 6) left posterior fascicular block. In this ECG, lack of findings to corroborate the other etiologies points toward another source of conduction disease—left posterior fascicular block.[1]

Normal conduction travels through the atrioventricular node, into the common bundle, and then divides into the left and right bundles. The left bundle is subdivided into anterior and posterior fascicles. Disruption of both fascicles produces a left bundle branch block (LBBB), but it is possible for a single fascicle to fail. A "bifascicular block" occurs when conduction fails in 2 out of 3 fascicles (RBBB + either LAFB or LPFB). Ventricular conduction is then reliant on the single remnant fascicle.

Left anterior fascicular blocks (LAFB) lead to leftward axis deviation while left posterior fascicular blocks (LPFB) lead to rightward/downward depolarization and subsequent right axis deviation.[2]

Our patient's ECG suggests bifascicular disease: Right bundle branch block (ie, RSR' in V1 and deep S-wave in I, V6) and a left posterior fascicular block (ie, right axis deviation, rS in leads I and aVL, qR in leads II, III, and aVF). It is important to note that while a left bundle branch block involves two fascicles, the term "bifascicular block" is reserved for the combination of a RBBB + either LAFB or LPFB.[1]

The significance of a bifascicular block depends on the clinical context. If this is an incidental finding, it is appropriate for outpatient follow up. These diseased conduction pathways are often due to underlying structural heart disease. Patients with ECG evidence of conduction disease should be viewed with a low threshold for evaluation or transfer. ECG evidence of a bifascicular block and history of syncope or palpitations is concerning for progression to intermittent complete heart block.[3]

The patient was ultimately discharged home with nasal saline for epistaxis and PCP/cardiology follow-up. No further emergent workup was indicated due to the lack of high-risk symptoms.

What to Look For

- The combination of a right bundle branch block with axis deviation suggests the presence of a concomitant fascicular block (either left anterior or posterior fascicular block).
- To diagnose a left posterior fascicular block, look for right axis deviation unexplained by an alternative diagnosis

Pearls for Management, Considerations for Transfer

- Incidental bifascicular blocks call for no further evaluation or therapy.
- Symptomatic patients (chest pain, syncope, palpitations) should be transferred for further workup and monitoring.

References

1. Kusumoto FM, Schoenfeld MH, Barrett C, et al. 2018 ACC/AHA/HRS Guideline on the Evaluation and Management of Patients with Bradycardia and Cardiac Conduction Delay: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the Heart Rhythm. *Circulation*. 2019;140(8):e382-e482. doi:10.1161/CIR.0000000000000628
2. Cooper B, Giordano J, Fadial T, Reynolds C. *ECG Stampede: Workbook*. 1st ed. Null Publishing Group; 2024.
3. Cooper BL, Giordano JA, Fadial TT, Reynolds CE. *ECG Stampede: A Case-Based Curriculum in Electrocardiography Triage*. 1st ed. (Cooper BL, ed.). Null Publishing Group; 2021.