INSIGHTS IN IMAGES

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.

35-Year-Old With Heel Pain After a Fall

Figure 1.

Figure 2.

A 35-year-old man presents to urgent care complaining of severe posterior heel pain. He works for a local roofing company and fell a few feet from a ladder, landing on a hard surface.

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

THE RESOLUTION

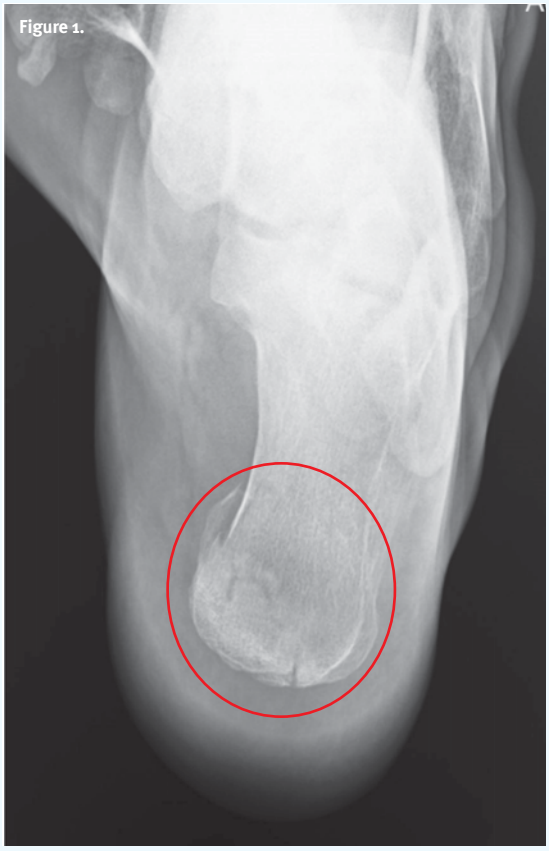
Figure 1.


Figure 2.

Differential Diagnosis

- Calcaneal spur
- Achilles tendon rupture
- Comminuted impacted posterior calcaneus fracture
- Heel bone contusion

Diagnosis

The patient was diagnosed with comminuted impacted posterior calcaneus fracture. The axial view image reveals a comminuted irregular cortical overlap of the posterior calcaneus, and the lateral view image reveals an oblique band of sclerosis of the posterior calcaneus.

What to Look For

- The mechanism of injury is most often heavy axial loading such as a big jump or fall
- Pain is usually severe, and patients are unable to bear weight on the heel
- The heel usually has tenderness to palpation, erythema, and swelling

Pearls for Urgent Care Management

- Initial management is with rest, ice, elevation, and pain management
- Extraarticular fractures generally heal well with conservative treatment
- Intraarticular fractures require surgical referral (podiatry or orthopedics)
- As this is the result of trauma, keep in mind other possible concomitant injuries

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

18-Year-Old With Painful, Eroded Lesions

Figure 1.

An 18-year-old man presented to urgent care with fever, pain in multiple joints, and a back rash that had been progressive for the last few weeks. On examination of the back, there were multiple painful erythematous and violaceous papules and nodules as well as several large pustules. Some of the lesions were eroded and crusted. The patient reported that he recently started an intensive bodybuilding regimen with a 3 month use of anabolic-androgenic steroid/testosterone prior to lesion presentation.

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

- Acne vulgaris
- Acne fulminans
- Folliculitis
- PAPA syndrome

Diagnosis

The correct diagnosis in this case is acne fulminans. Acne fulminans is a rare, highly inflammatory, immunologically induced form of acne that occurs most often in male patients between the ages of 13 and 22 years. While the pathogenesis of acne fulminans is not fully understood, the main inciting antigen is believed to be from *Cutibacterium* acnes (formerly known as *Propionibacterium* acnes). Risk factors include chronic, severe acne (mean duration of 2 years), isotretinoin use (usually in high doses), a positive family history, high testosterone levels, and history of anabolic steroid use.

What to Look For

- Lesions most commonly located on the trunk
- Lesions are large inflammatory nodules and friable plaques that may be associated with erosions, ulcers and hemorrhagic crusts
- Systemic symptoms may include fever, arthralgias, myalgias, fatigue, erythema nodosum and laboratory abnormalities

Pearls for Urgent Care Management

- Mainstays of treatment include several week course of prednisone and isotretinoin (for patients not on isotretinoin)
- If acne fulminans is caused by isotretinoin, discontinue isotretinoin
- If systemic symptoms are present, prednisone alone should be started initially
- Referral to dermatology should be considered

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

42-Year-Old With Facial Pain and History of Hypertension

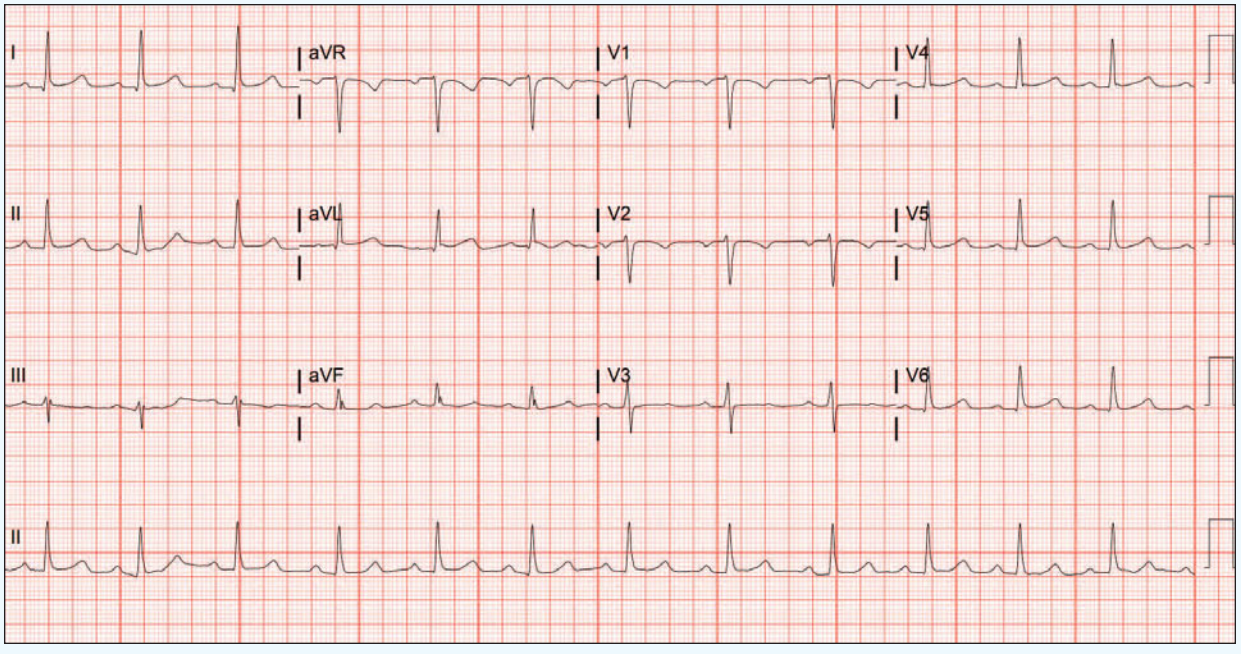

Figure 1: Initial ECG

A 42-year-old female with a history of hypertension presents with facial pain after being assaulted. The patient has pain over her right eye but denies any other injuries. She denies chest pain or shortness of breath but did complain of palpitations, so an ECG was obtained.

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

Case presented by Catherine Reynolds, MD, McGovern Medical School at UTHealth Houston.

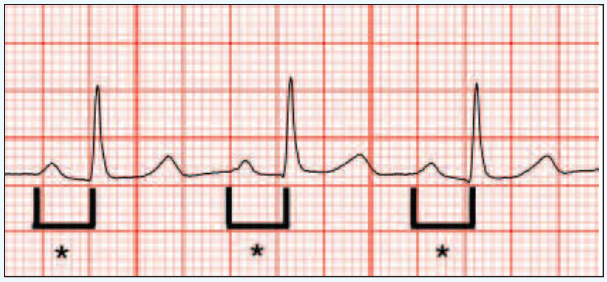

Figure 2: (*) indicate prolonged PR interval

Differential Diagnosis

- Junctional Tachycardia
- First Degree Atrioventricular (AV) Block
- Hyperkalemia
- Second Degree Atrioventricular Block
- Sinus Arrhythmia

Diagnosis

The diagnosis is first degree AV block. The ECG reveals a normal sinus rhythm with a rate of 72 beats per minute. The axis is normal. The PR interval is prolonged at 240 msec. There are no signs of ischemia.

First degree AV block is a condition caused by an abnormally slowed conduction from atria to ventricles through the AV node. This is diagnosed on an ECG with a PR interval greater than 200 msec and is considered "marked" when the PR interval exceeds 300 msec.[1] As seen in Figure 2, this interval is measured from start of the P wave to the beginning of the QRS complex. A normal PR interval is 120-200 msec.

First degree AV block can be caused by anything that slows the conduction from the atria to the ventricles. This includes AV nodal disease, enhanced vagal tone, ischemia such as inferior myocardial infarction, infection (eg, Lyme disease), inflammation, electrolyte abnormalities, and medications. Any medication that increases the refractory time of the AV node will slow the conduction through the AV node, such as calcium channel blockers, beta blockers, antiarrhythmics, and digoxin.[2]

In this patient's ECG, the conduction to the ventricles is clearly slowed, but every atrial impulse is transmitted to the ventricles, in contrast to second or third-degree AV block. There are no other electrocardiographic abnormalities, making electrolyte abnormalities unlikely, and the rhythm appears to be regular, making sinus arrhythmia less likely. Classically, first-degree AV block, in isolation, is benign and asymptomatic, with no need for treatment or follow-up. However, if first degree AV block is seen in combination with other conduction deficits (eg, fascicular and/or bundle branch block), the patient is at higher risk of developing complete heart block. Therefore, recognition of first-degree AV block should prompt a focused history, physical, review of the patient's medications, and comprehensive analysis of the ECG.

What to Look For

- First-degree AV block is diagnosed when the PR interval is longer than 200 msec and is often an incidental finding.
- In patients with first-degree AV block, look for additional signs of conduction delay on ECG and any other abnormalities such as ischemia or inferior myocardial infarction.

Pearls for Initial Management, Considerations For Transfer

- Typically, first-degree AV block is benign and requires no treatment or follow-up.
- If additional conduction deficits coexist, consider more advanced conduction system disease, assess hemodynamic status, and, if the clinical presentation warrants, consider transfer.

References

1. Ogunlade O, Akintomide AO, Ajayi OE, Eluwole OA. Marked First Degree Atrioventricular Block: an extremely prolonged PR interval associated with Atrioventricular Dissociation in a young Nigerian man with Pseudo-Pacemaker Syndrome: a case report. *BMC Res Notes*. 2014 Nov 4;7:781.
2. Oldroyd SH, Quintanilla Rodriguez BS, Makaryus AN. First-Degree Heart Block. [Updated 2023 Jan 19]. In: StatPearls. Treasure Island (FL): StatPearls Publishing; 2023 Jan. https://www.ncbi.nlm.nih.gov/books/NBK448164/

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

ECG STAMPEDE