



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 email the relevant materials and presenting information to [editor@jucm.com](mailto:editor@jucm.com).

## A 32-Year-Old Male with Thumb Pain After a Ski Fall

Figure 1.



### Case

The patient is a 32-year-old man who presents with pain in his left thumb after skiing. He reports that he took a fall, instinctively extending his left arm out to cushion the blow.

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

## THE RESOLUTION

Figure 2.

**Differential Diagnosis**

- Bennett fracture
- Epibasilar fracture
- Rolando fracture

**Diagnosis**

The x-ray shows a minimally displaced intraarticular fracture of the base of the first metacarpal, also known as a Bennett fracture.

**Learnings/What to Look for**

- Bennett fractures result from opposing traction forces by the anterior oblique ligament in combination with either axial loading onto a flexed thumb (eg, during a punch) or shearing force against the first web space (“motorcyclist thumb”)
- Trapeziometacarpal joint avulsion can manifest as soft tissue injury, but more commonly manifests as a fracture. Two-part intraarticular Bennett fracture dislocations are the most common
- Bennett fractures are associated with thumb collateral ligament injuries and fractures of the trapezium

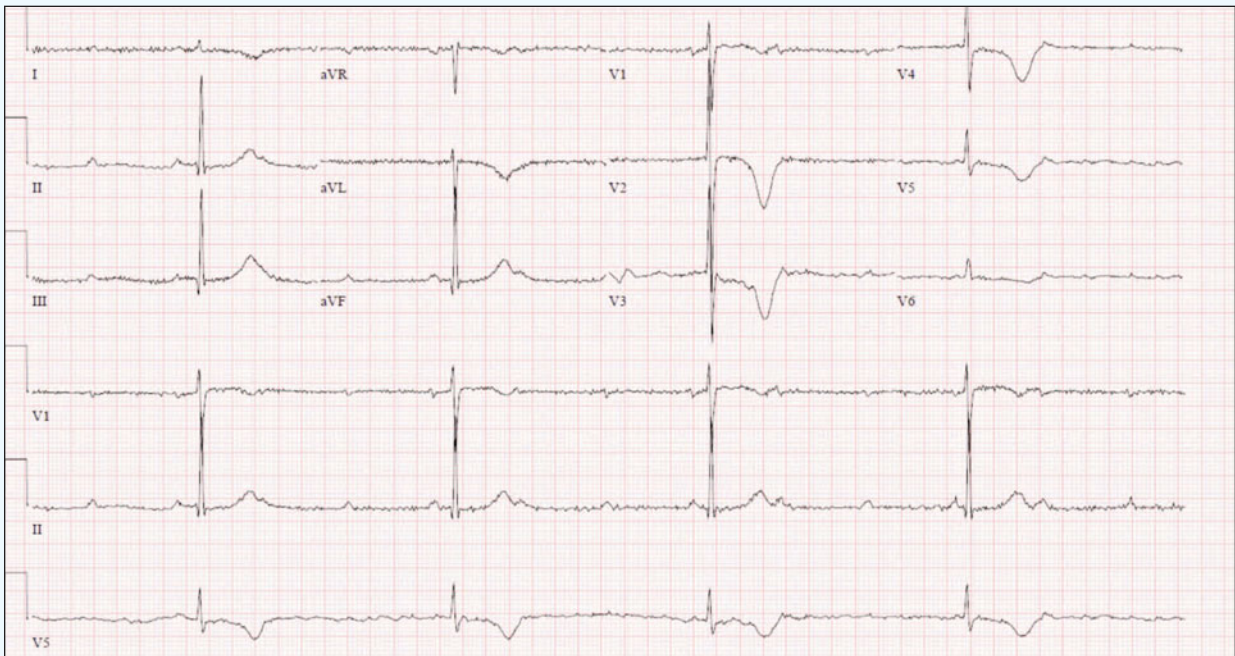
**Pearls for Urgent Care Management**

- Because of proximally and radially directed forces from multiple muscles, the larger radial-sided metacarpal fracture fragment is prone to proximal migration, while the ulnar-sided fracture fragment is anchored in place by the anterior oblique ligament attachment to the trapezium
- Closed reduction and thumb spica cast immobilization are effective in the treatment of Bennett fractures if the reduction can be maintained. This consists of thumb traction combined with metacarpal extension, pronation, and abduction
- If closed reduction is not possible, referral to an orthopedic surgeon is warranted. Operative repair typically consists of percutaneous pinning or open reduction with pins or interfragmentary screws

**Acknowledgment:** Images and case presented by Experity Teleradiology ([www.experityhealth.com/teleradiology](http://www.experityhealth.com/teleradiology)).



# A 60-Year-Old Woman with Hypertension, Diabetes, and Sudden Fatigue and Weakness



## Case

A 60-year-old female with a history of hypertension and diabetes presents to urgent care with fatigue and weakness for 1 day. Her son states she has not been able to get out of bed today because she's "too tired to walk." She denies any complaints of chest pain, nausea, vomiting, shortness of breath, or fever.

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

*(Case presented by Catherine Reynolds, MD, The University of Texas Health Science Center at Houston McGovern Medical School.)*

## THE RESOLUTION

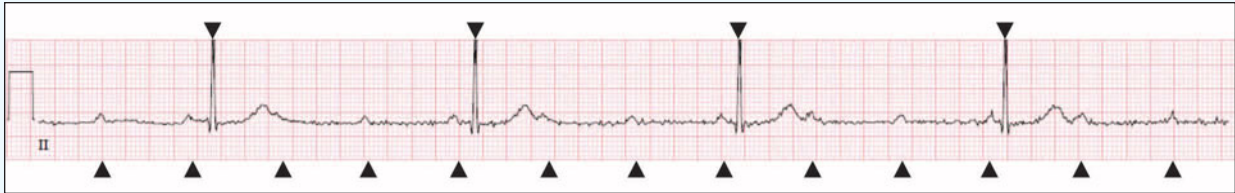


Figure 2. AV dissociation with completely independent ventricular (▼) and atrial (▲) rates.

### Differential Diagnosis

- Sinus bradycardia
- Second-degree atrioventricular (AV) block
- Third-degree AV block
- Hyperkalemia
- Beta-blocker toxicity

### Diagnosis

The ECG has an atrial rate of 80 bpm and a ventricular rate of 27 bpm. There are more P waves than QRS complexes, signifying the presence of an atrioventricular block. Both the P waves and the QRS complexes appear to be occurring regularly, but at different rates and with no relationship to each other.<sup>1</sup>

These findings support the ultimate diagnosis of a third-degree AV block, or complete heart block.

In complete heart block, the ECG will show complete atrioventricular dissociation. None of the atrial impulses are conducted to the ventricles, and perfusion is maintained only by a junctional or ventricular escape rhythm from an ectopic focus.

If the block is the result of a diseased atrioventricular node, a junctional focus emerges and produces a rate between 40 and 60 BPM. However, when infra-Hisian conduction disease exists (ie, below the bundle of His), the focus will be ventricular, and will be slower and less reliable.<sup>1,2</sup>

Because an escape rhythm may be transient, absent, or not generating enough cardiac output for perfusion, a third-degree AV block is life-threatening. It is typical for a patient with this condition to experience severe bradycardia and hypotension. If no escape rhythm is present, the patient will arrest due to cardiac standstill.

(A note about *isorhythmic complete heart block*: On initial inspection of this ECG, you may suspect the patient has a second-degree AV block, Mobitz type II, as it appears there is a P wave before each QRS complex, and the other beats have been “dropped.” If this were the case, however, we’d expect the PR interval to stay consistent throughout. On closer examination of this patient’s ECG, you’ll notice that the PR interval varies,

and in fact the apparent relationship between the P waves and QRS complexes is only by chance. This phenomenon is called *isorhythmic* complete heart block, and can be difficult to distinguish from a second-degree AV block, Mobitz type II. This patient was confirmed to have complete heart block via an electrophysiology study.)

### Learnings/What to Look for

- When an ECG has more P waves than QRS complexes, consider the presence of an atrioventricular block
- A third-degree AV block will have no discernible relationship between P waves and QRS complexes
- An isorhythmic complete heart block can be difficult to differentiate from a second-degree AV block, Mobitz type II, but both represent conduction disease that needs emergent intervention

### Pearls for Urgent Care Management

- Patients with third-degree AV block are at high risk of sudden cardiac death due to ventricular standstill, and should be immediately transferred for cardiac monitoring and insertion of a permanent pacemaker
- Patients with hemodynamically unstable bradycardia from an atrioventricular block should be transcutaneously paced and immediately transferred to an emergency department

### References

1. Knabben V, Chhabra L, Slane M. Third-Degree Atrioventricular Block. [Updated 2020 Aug 8]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; January 2020. Available at: <https://www.ncbi.nlm.nih.gov/books/NBK545199/>. Accessed January 10, 2021.
2. 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.

**Acknowledgment:** JUCM appreciates the assistance of ECG Stamped (www.ecgstamped.com) in sourcing content for electrocardiogram-based cases for Insights in Images each month.

ECG STAMPEDE



## A 7-Year-Old Girl with White Patches on Her Toenails



### Case

A mother brought her 7-year-old daughter to the pediatric urgent care center after noticing that several of the girl's toenails on each foot had white patches and appeared short and broken. They seemed to be lifting off the nail beds and looked thinner than usual.

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

## THE RESOLUTION

**Differential Diagnosis**

- Onychomycosis
- Nail psoriasis
- Subungual wart
- Nail candidiasis

**Diagnosis**

This patient was diagnosed with onychomycosis, a fungal infection of the nail (tinea unguium) caused by dermatophyte fungi and, less frequently, by nondermatophyte molds or yeasts.

Onychomycosis is more frequent in men and is commonly associated with concurrent tinea pedis. The prevalence of onychomycosis in children varies from 0.2% to 2.6% (mean 0.3%). The low prevalence in children compared with adults is thought to be due to children's fast nail-plate growth and their lower incidence of tinea pedis, compared with adults.

**Learnings/What to Look for**

- Predisposing factors include diabetes mellitus, peripheral vascular disease, immunosuppression, genetic predisposition, atopic dermatitis, psoriasis, Down syndrome, occlusive

footwear, obesity, malignancy, trauma, and older age

- Personal history of tinea pedis and/or contact with a household member with onychomycosis/tinea pedis are among the most common risk factors
- Toenails are more commonly affected than fingernails, and fingernail infection is typically preceded by or associated with toenail infection

**Pearls for Urgent Care Management**

- Topical antifungal applications are effective in theory, though penetrating the nail is challenging. Debridement or removing the infected part of the nail may be helpful
- Oral medications such as itraconazole, terbinafine, and fluconazole are effective but may require monitoring through blood tests and should be avoided in patients with liver disease
- Counsel parents to help children keep toenails short, to ensure shoes fit properly, and to encourage children to wash and dry their feet thoroughly
- With recurrence, families should be advised to consult a pediatric dermatologist

**Acknowledgment:** Images and case presented by VisualDx ([www.VisualDx.com/JUCM](http://www.VisualDx.com/JUCM)).