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 email the relevant materials and presenting information to *editor@jucm.com*.

A 6-Year-Old Boy with Leg Pain After a Hard Impact

Figure 1.

Figure 2.

Case

The patient is a 6-year-old boy who was brought to your urgent care center by his parents with pain in his right leg. They explain that while playing with friends he tried to jump from one side of a concrete retaining wall to the other—and coming up short.

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

THE RESOLUTION

Figure 1.

Figure 2.

Differential Diagnosis

- Acute compartment syndrome
- Ankle fracture
- Cortical fracture
- Soft tissue ankle injury
- Greenstick fracture (incomplete fracture)

Diagnosis

The AP view shows a horizontal white line distal to the tibia. The lateral view illustrates a subtle cortical break posteriorly. This is an incomplete fracture.

Learnings/What to Look for

- Pediatric tibial shaft fractures are the third most common long bone fracture in children
- Boys experience this injury more often than girls
- Pediatric tibial shaft fracture patterns:
  1. Incomplete – Greenstick fracture of the tibia and/or fibula
  2. Complete – Complete fracture of the tibia with or without ipsilateral fibula fracture or plastic deformation
  3. Tibial spiral fracture (Toddler's fracture)—Nondisplaced spiral fracture of the tibia with intact fibula in a child under 2.5 years of age

Pearls for Urgent Care Management and Considerations for Transfer

- These fractures rarely displace, and can typically be managed nonoperatively with a long leg cast for 2 to 3 weeks, followed by another 2–3-week period in a short cast
- Patients can be casted on site or referred to an orthopedic specialist, depending on the clinician's experience and comfort level in treating younger patients with painful injuries

Acknowledgment: *Images and case provided by Teleradiology Specialists, www.teleradiologyspecialists.com.*

Multiple Findings Including STEMI, Low Voltage, and Type 2 AV Block in a 72-Year-Old Woman

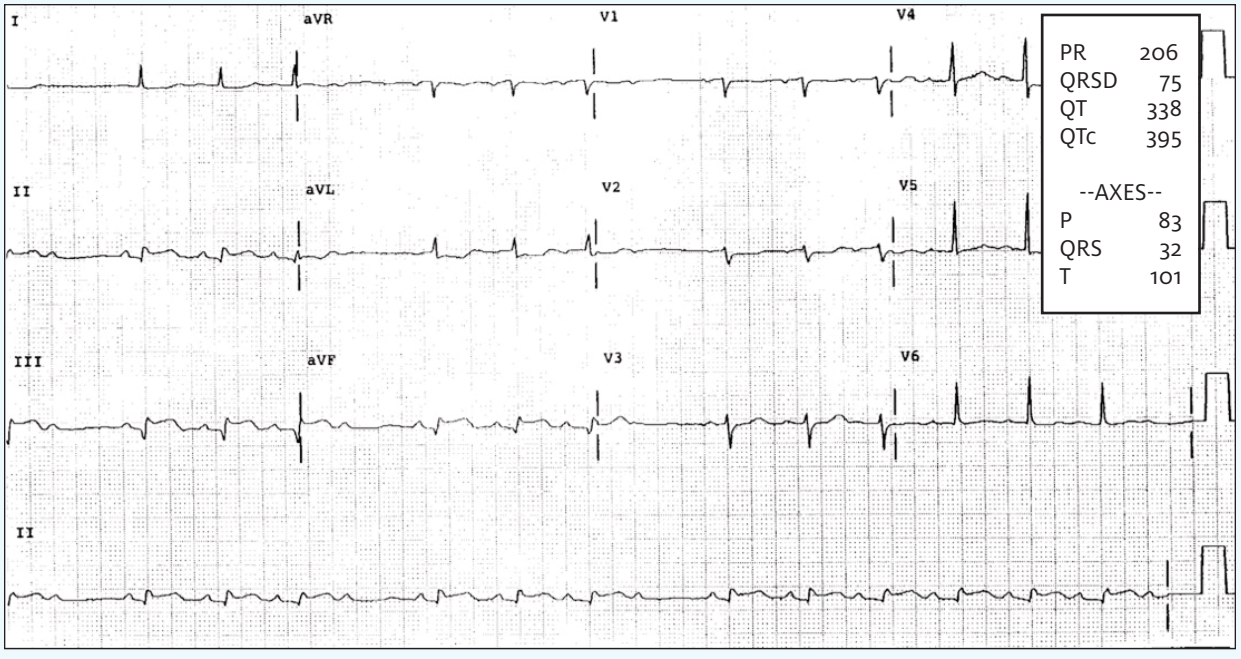

Figure 1.

Case

The patient is a 72-year-old woman who presents with 2 hours of chest pain with associated diaphoresis. She has a remote history of breast cancer. No leg pain or swelling or history of pulmonary embolism.

On exam, you find her stated weight of 313 pounds is correct. In addition:

- **General**: Alert and oriented X 3, ambulatory
- **Lungs**: Clear to auscultation
- **Cardiovascular**: RRR without m/r/g, distant heart sounds
- **Abdomen**: Soft and NT without r/r/g
- **Ext**: Normal without swelling, pulses 2+ and equal X 4 extremities

An ECG is ordered, as seen above. Review the image and consider what your diagnosis and next steps would be. Resolution of the case is described on the next page.

THE RESOLUTION

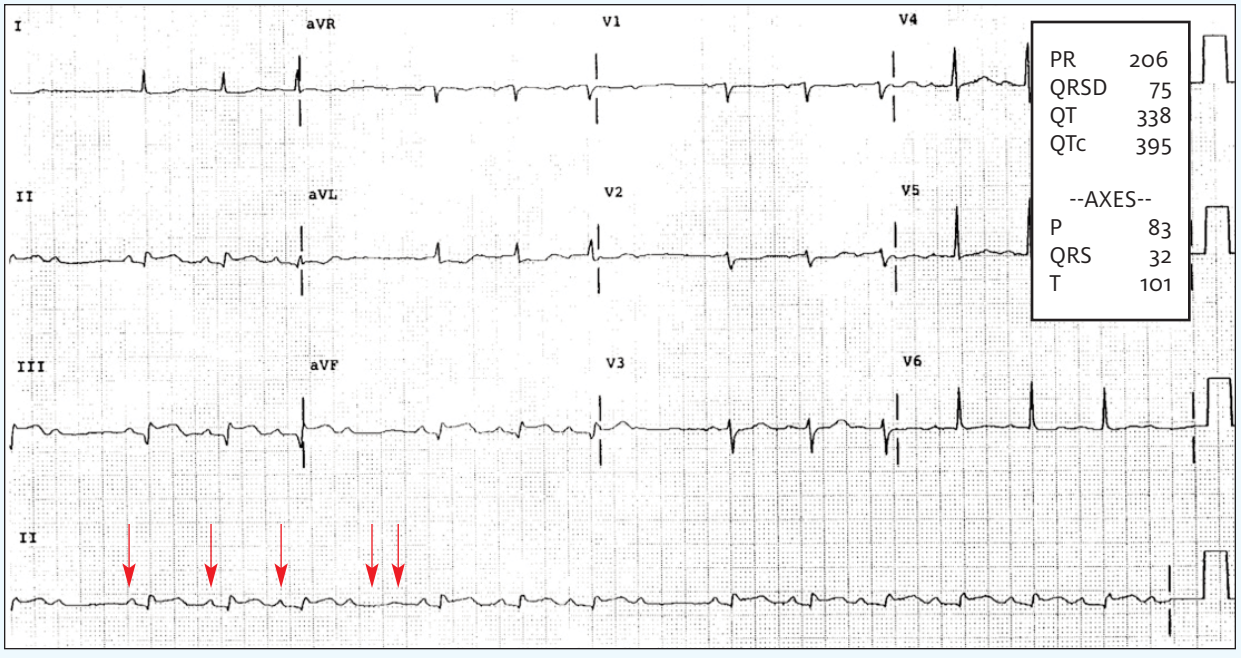

Figure 2.

Differential Diagnosis

- Atrial fibrillation, third-degree AVB
- Atrial flutter, second-degree AVB, acute anterior MI
- First-degree AVB, sinus bradycardia, acute lateral wall MI
- Second-degree AVB, Wellen's sign, atrial flutter
- Wenckebach second-degree AV block, acute inferior STEMI, low voltage

Diagnosis

The ECG shows the correct diagnosis to be Wenckebach second-degree AV block, acute inferior MI, and low voltage.

This case illustrates that there are often multiple findings on each ECG. Whereas a quick glance might suggest atrial fibrillation/flutter, a closer inspection would show that there are P waves preceding (almost) every QRS. A look at the "rhythm strip" (which is lead II at the bottom; see arrows) will reveal that there are p waves preceding each QRS, and each of these PR intervals sequentially lengthens then there is a dropped beat (double arrow). This is type 2 AV block (Wenckebach). However, there are other concerning changes on this ECG, including ST elevation in the inferior leads, II, III, and aVF, suggestive of acute inferior STEMI – notice that there are reciprocal changes also, namely ST depression in lead aVL making the ECG even more concerning for ischemia/infarction. Finally, the ECG is suggestive of low voltage, which can simply be from obesity or COPD, but could also be from a pericardial effusion or tamponade.

Learnings/What to Look for

- Having a "cookbook" approach to ECGs, including first assessing rate and rhythm, will avoid confusing an ECGT with a block or multifocal atrial tachycardia (MAT) from atrial fibrillation
- ST changes which are anatomically consistent leads (in this case in the inferior leads II, III, and aVF) should be assessed for elevation or depression
- "Low voltage" is defined as QRS amplitudes of <15 mm in the sum of leads I, II, and III, or 30 mm in the sum of leads V1, V2, and V2
- Low voltage may be from an increased AP diameter, such as in obesity or COPD, but may also be from something more serious such as a pericardial effusion/tamponade or severe hypothyroidism

Pearls for Urgent Care Management and Considerations for Transfer

- Patients with STEMI require emergent care in a facility with the ability to perform procedural catheterization
- Notify the EMS of a STEMI, consider starting an IV, attaching the patient to a monitor, and administering an aspirin
- Though a low-voltage ECG may be from body habitus (obesity) or increased AP diameter (COPD), if due to a pericardial tamponade, this may require emergent drainage; correlate with old ECG and clinical presentation

A 46-Year-Old Obese Man with a Painful Skin Lesion

Figure 1.

Case

The patients is an obese 46-year-old man who complains of a painful skin lesion located between folds of skin that were touching each other. He reports looking in the mirror at home and seeing the area was very red and erythematous. He also says sometimes it feels like a burning sensation on his skin. This was most evident after being outside in the hot, humid weather.

View the image 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

- Intertrigo
- Irritant contact dermatitis
- Candidiasis
- Stasis dermatitis

Diagnosis

This patient has intertrigo, a chronic inflammatory condition of approximating or opposing skin surfaces (intertriginous skin) such as the axillae, groin, inframammary folds, abdominal folds, and/or labiocrural folds. It is induced or exacerbated by any conditions causing increased heat, wetness, and friction and may be worse during hot or humid weather.

Learnings/What to Look for

- Intertrigo is often complicated by superficial skin infection with yeast or bacteria. In candidal intertrigo, the presence of outlying satellite papules and/or pustules is diagnostic
- Clinically, there is erythema and sometimes maceration, erosions, or fissuring
- The affected areas may itch or burn
- Intertrigo is most frequently seen in obese and/or diabetic patients
- Incontinence is a predisposing factor in intertrigo of the perineum and crural folds, and there is significant overlap with diaper dermatitis

Pearls for Urgent Care Management and Considerations for Transfer

- Mild cases of intertrigo can be treated by keeping the area dry and exposed to air
- Topical steroid cream may be necessary in more severe cases, or when exposing the area to air is not feasible
- Antifungal powder may be helpful in keeping the affected area dry

Acknowledgment: *Images courtesy of VisualDx (www.VisualDx.com/JUCM).*