



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.

A 31-Year-Old with Cough and Decreased Breath Sounds



Case

The patient is 31-year-old woman who presents with new-onset cough and decreased breath sounds to the lower lobes.

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**

- COVID-19 infection
- Multifocal unilateral pneumonia
- Lymphomatoid granulomatosis
- Pulmonary alveolar proteinosis

Diagnosis

Patchy peripheral infiltrates are noted at the left lung periphery beginning in the left midlung and extending inferiorly to the left base. There are no definite infiltrates on the right.

This patient was diagnosed with multifocal unilateral pneumonia which may be bacterial, but could also represent an atypical viral infection such as COVID-19.

Learnings/What to Look for

- The only definitive diagnosis of COVID-19 remains viral testing. As imaging findings have significant overlap with other disease entities, chest x-ray can only serve as a supplement to clinical suspicion

Pearls for Urgent Care Management

- If clinical suspicion is high, recommendations are to forgo imaging and instead obtain viral testing

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



A 71-Year-Old with Diabetes and Discoloration of the Skin



Case

The patient is a 71-year-old female with type 2 diabetes who calls attention to a rash on her shins during an annual physical. The rash appears to be pink, atrophic scars surrounded by hyperpigmented patches. They have developed since her last physical. She denies discomfort but is concerned as to what could have caused them.

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

THE RESOLUTION

**Differential Diagnosis**

- Diabetic dermopathy
- Lichen planus
- Necrobiosis lipoidica
- Stasis dermatitis

Diagnosis

This patient was diagnosed with diabetic dermopathy, also known as shin spots. This is the most common cutaneous finding in patients with diabetes mellitus, presenting in up to half of diabetic patients.

Learnings/What to Look for

- While there is no clear variation of incidence between diabetic dermopathy in patients with noninsulin-dependent diabetes mellitus vs insulin-dependent diabetes mellitus, a correlation exists between presence of skin lesions and the presence of microangiopathic complications (retinal, neuropathic, and/or nephrogenic)

- Incidence increases with age (seen more often in patients older than 50 years of age)
- Although located bilaterally, the distribution of lesions is asymmetric in appearance
- Lesions do not itch or cause pain
- Poor long-term blood sugar control, which increases the risk of diabetic microangiopathic complications, is seen in diabetic dermopathy

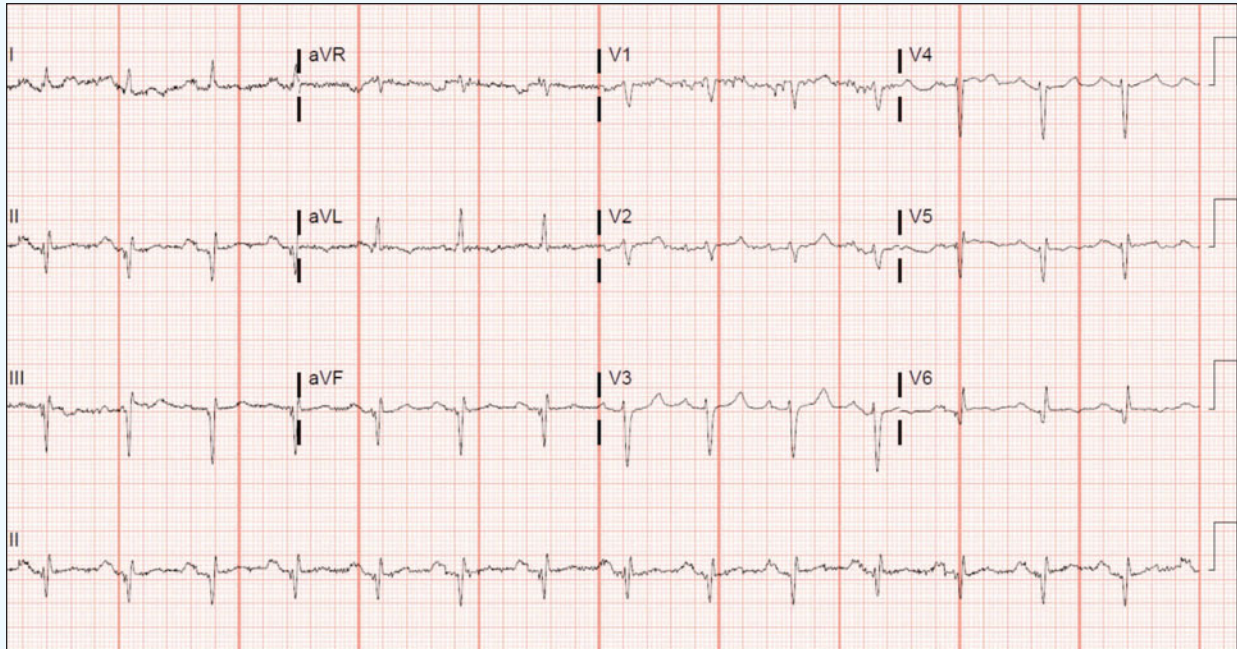
Pearls for Urgent Care Management

- Diabetic dermopathy is self-resolving, though lesions may take months or up to a year to resolve (or be “permanent”)
- Moisturizer may be recommended if patches are dry or scaly
- Patients should be counseled on maintaining adequate blood sugar testing and control

Acknowledgment: Images and case presented by VisualDx (www.VisualDx.com/JUCM).



A 57-Year-Old Female with Cardiological History and Shortness of Breath



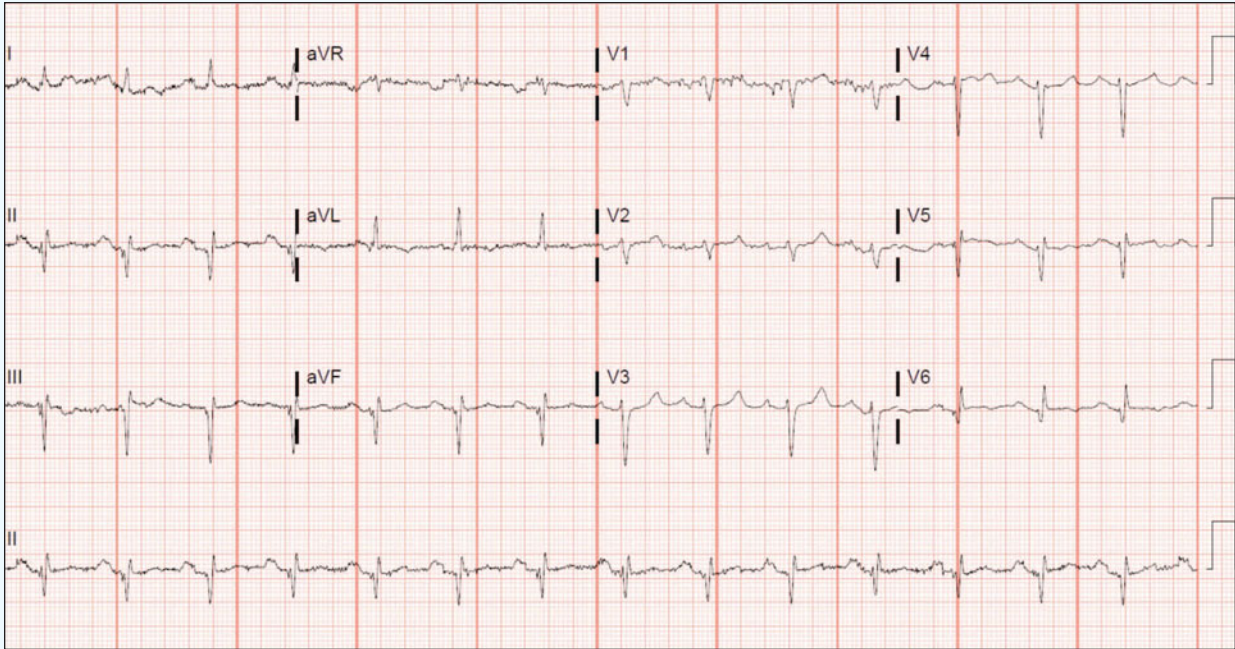
The patient is a 57-year-old female with a history of coronary artery disease, congestive heart failure, and left ventricular thrombus on warfarin who presents with shortness of breath. She denies any bleeding, bruising, dark-colored stools, chest pain, fever, cough, or leg pain.

On evaluation, the patient's vital signs are normal. She is breathing comfortably and speaking in complete sentences.

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 Tom Fadial, MD, The University of Texas Health Science Center at Houston.)

THE RESOLUTION



What Does This ECG Show?

- Acute inferior STEMI
- Left axis deviation (LAD)
- Left bundle branch block
- Left ventricular hypertrophy
- Paced rhythm

Diagnosis

The ECG reveals a sinus rhythm at a rate of 84 beats per minute. There is left axis deviation, first-degree AV block, and a narrow QRS and normal QT interval. There are no signs of acute ischemia. The diagnosis is left axis deviation (LAD).

Learnings/What to Look for

The QRS axis describes the direction of the vector of ventricular depolarization and normally lies between -30° and $+90^\circ$ or generally in the direction of lead II ($+60^\circ$). The QRS axis can be estimated using a quadrant method with lead I and aVF as the x and y axes, respectively. Begin by determining the predominant direction of the QRS complex in leads I and aVF (ie, mostly positive or mostly negative). Limb lead vectors are shown in **Figure 1**.

For example, along the x axis (using lead I), a mostly positive QRS complex points rightward. Along the y axis (using lead aVF), a mostly positive QRS complex points downward. Together, the combined forces point to the quadrant between 0° and $+90^\circ$.

Our patient has a mostly positive QRS in lead I and a mostly negative QRS in lead aVF. The resultant vector points up and to

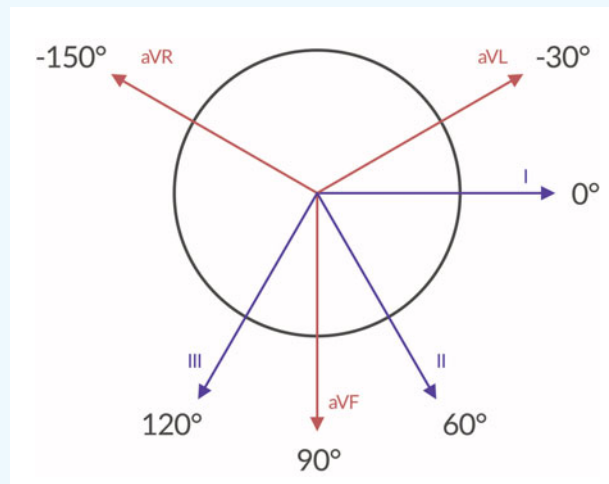


Figure 1. Limb lead vectors.

the right or left axis deviation. Each quadrant is named (see **Figure 2** and **Figure 3**) and has a differential diagnosis of possible etiologies. The possible causes of left axis deviation include:

1. Left ventricular hypertrophy
2. Left bundle branch block
3. Paced rhythm
4. Ventricular ectopy
5. Left anterior fascicular block
6. Ventricular pre-excitation

THE RESOLUTION

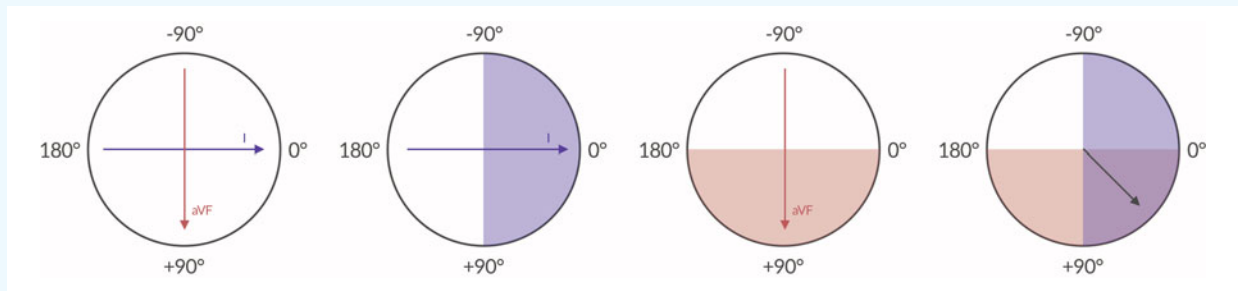


Figure 2. The quadrant method.

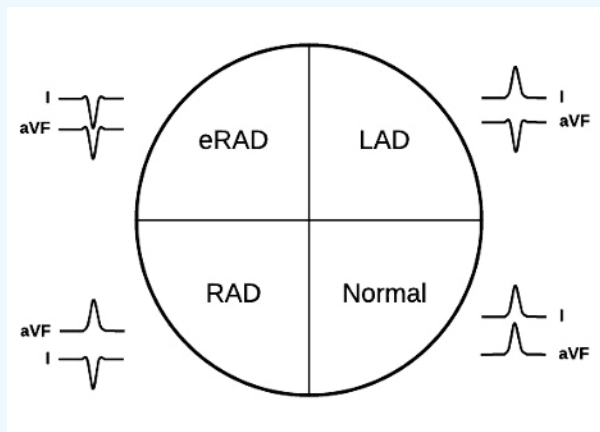


Figure 3. LAD, left axis deviation; RAD, right axis deviation; eRAD, extreme right axis deviation.

7. Prior inferior myocardial infarction (inferior Q waves)

Left axis deviation may be caused by more depolarizing myocardium drifting forces further leftward as in left ventricular hypertrophy. Mechanical processes altering the heart’s position such as pregnancy or ascites can similarly deflect forces leftward. Conduction abnormalities interrupting the propagation of ventricular contraction along the normal axis including left bundle branch block, left anterior fascicular block, and preexcitation

syndromes (like Wolk-Parkinson-White) can cause left axis deviation. Finally, a loss of viable myocardium, particularly involving the inferior wall, is a cause of left axis deviation. Our patient’s ECG shows large Q waves in the inferior leads (II, III, aVF), indicative of prior inferior myocardial infarction, causing a left axis deviation.

Pearls for Urgent Care Management

- The determination of QRS axis is a critical component of the systematic approach to ECG interpretation.
- An abnormal ECG axis is not independently pathologic but should prompt a hunt for the cause.
- Common causes of left axis deviation include:
 - Left ventricular hypertrophy
 - Blocks: left bundle branch block, left anterior fascicular block
 - Ventricular pre-excitation
 - Prior inferior myocardial infarction

References

1. Kashou AH, Basit H, Chhabra L. Electrical right and left axis deviation. [Updated 2021 Jan 24]. StatPearls. January 2021. Available at: <https://www.ncbi.nlm.nih.gov/books/NBK470532/>. Accessed August 3, 2021.

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