Editor's Note: While the images presented here are authentic, the patient cases are hypothetical.

11-Year-Old With Heel Pain While Running

An 11-year-old male presents to urgent care complaining of bilateral heel pain, right worse than left. The patient denies recent trauma and reports experiencing increased pain when running. He has not tried any treatment and denies any history of similar episodes in the past.

Physical examination reveals bilateral pes planus and decreased dorsiflexion of the feet with weightbearing lunge against the wall. Pain is elicited with calcaneal compression test. The patient is noted to be favoring his right heel with barefoot gait. The Thompson's test is normal, pulses are normal, and his sensation is intact with brisk cap refill to bilateral toes. A right calcaneal x-ray is ordered.

Review the image 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).

THE RESOLUTION

Differential Diagnosis

- Calcaneal apophysitis
- Achilles tendonitis
- Retrocalcaneal bursitis
- Calcaneal stress fracture
- Painful heel pad syndrome (contusion)

Diagnosis

The correct diagnosis is calcaneal apophysitis, also known as Sever disease. Calcaneal apophysitis is characterized as the painful inflammation of the apophysis (growth plate) of the calcaneus, which is located at the insertion point of the Achilles tendon. It typically presents during periods of rapid growth combined with overuse, such as very active younger children and early adolescents that might have started a new activity or sport requiring running and/or jumping. It is more common in boys than in girls and is often bilateral. Calcaneal apophysitis is sometimes associated with high or low arches, over-pronation of the foot, and decreased flexibility in the calf.

What to Look For

- Sever disease is often diagnosed clinically based on clinical scenario.
- On x-ray, increased density and fragmentation of the calcaneal apophysis may be visible.
- The patient may walk with a limp, walk on their toes, and have difficulty running and jumping. Pain is worse when walking barefoot.
- The patient will likely exhibit pain upon squeezing both sides of the back of the heel.

Pearls for Urgent Care Management

- Bilateral use of 5 mm rigid heel cup or lift; eccentric calf strengthening and stretching exercises.
- Decreased participation in sports or activities that produce pain, gradually increase activity once pain has improved.
- Daily ice application for 20 minutes at a time and Non-steroidal anti-inflammatory drugs for pain management.
- Referral to physical therapy or sports medicine if no improvement after 4-8 weeks.

A 42-Year-Old With a Widespread Rash

A 42-year-old woman with widespread scaly lesions presents to urgent care. Superficial crusts and exfoliative plaques are seen on the face, neck, and chest. The patient reports that the lesions are painful, but she has no systemic symptoms. The rash emerged a couple of months prior. The patient has no recent history of travel or infections and is not currently on any medications. A skin biopsy and labs are ordered.

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).

THE RESOLUTION

Differential Diagnosis

- Erythrodermic psoriasis
- Pemphigus foliaceus
- Pemphigus vulgaris
- Subcorneal pustular dermatosis
- Dermatitis herpetiformis
- Bullous impetigo

Diagnosis

The correct diagnosis is pemphigus foliaceus, a rare autoimmune disease that causes blisters on the skin (but not the mucous membranes, as in pemphigus vulgaris). A skin biopsy with H&E staining shows damage (acantholysis) in the upper layer of the skin. Direct immunofluorescence (DIF) shows IgG and C3 deposits spread evenly throughout the skin layer. Blood tests using ELISA detect antibodies against a protein called desmoglein 1 (Dsg1). The main harmful antibodies are mostly of the IgG_4 type, and they target Dsg1, though other antibody types and targets may also be involved.

What to Look For

- Superficial blisters, crusted erosions, and scaling in a seborrheic distribution (ie, scalp, face, and upper trunk). Lesions usually start on the trunk and rarely involves the mucosa.
- Nikolsky sign will be present in active disease, elicited by lateral pressure with a thumb or finger to the perilesional, affected, or normal-appearing skin, resulting in visible separation of the upper epidermal layers from the lower layers.
- In individuals with darker skin tones, healing may be accompanied by hypo- or hyperpigmentation.

Pearls for Urgent Care Management

- Corticosteroids are the first-line treatment for both adult and pediatric cases. Prednisone or prednisolone (1.0-1.5 mg/kg/day in a single dose or divided into 2 doses) may be used for acute control, especially with more severe cases.
- Sun avoidance and sun-protection measures (eg, using sunscreens, wearing barrier clothing) should be instituted.
- If biopsy and lab testing is not available in urgent care, referral to dermatology is appropriate for diagnostics and ongoing management.

80-Year-Old With Substernal Chest Pain

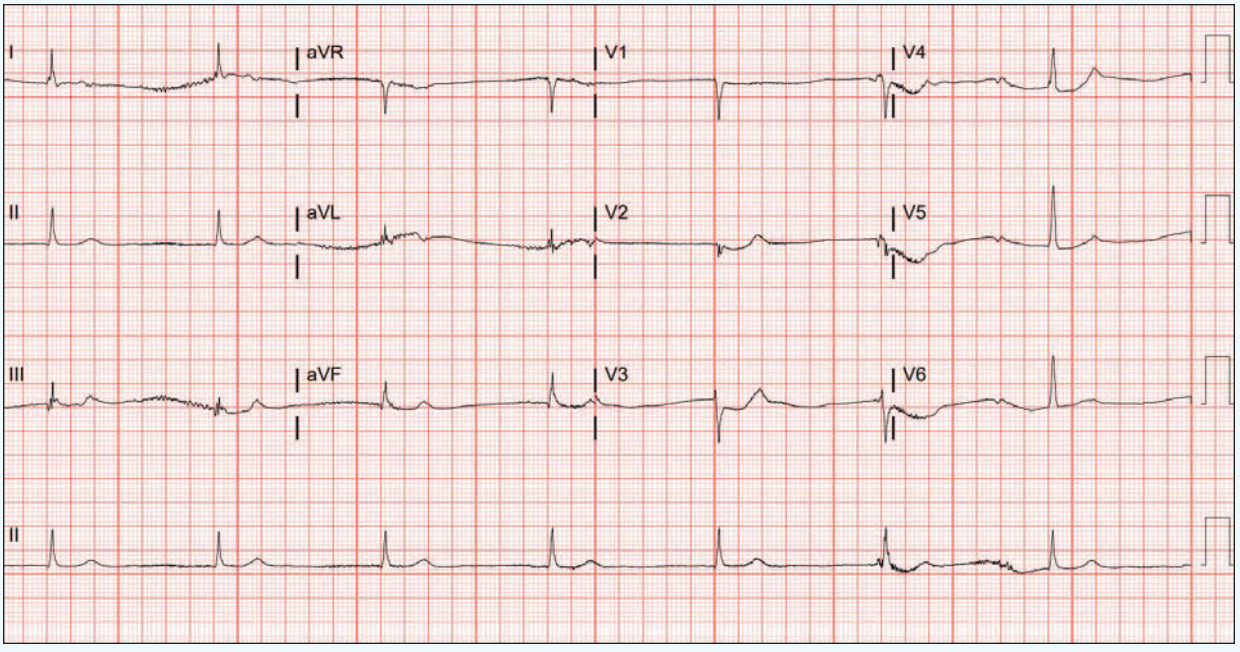

Figure 1: Initial ECG

An 80-year-old male with hypertension and hyperlipidemia presents to urgent care for 1 day of sharp, substernal chest pain radiating to his right arm with associated shortness of breath and diaphoresis. His wife notes that he is often nonadherent with his medications. An ECG is ordered.

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 Akshay Elagandhala, MD, UTHealth Houston

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

ECG STAMPEDE

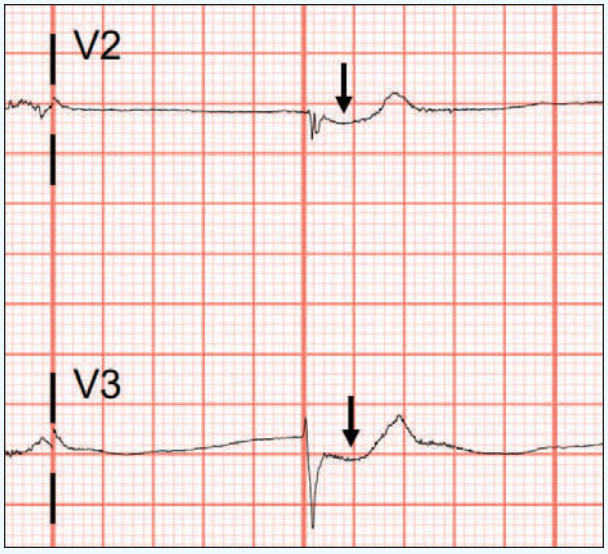

Figure 2: Focal ST-segment depressions in leads V2-V3 (arrows).

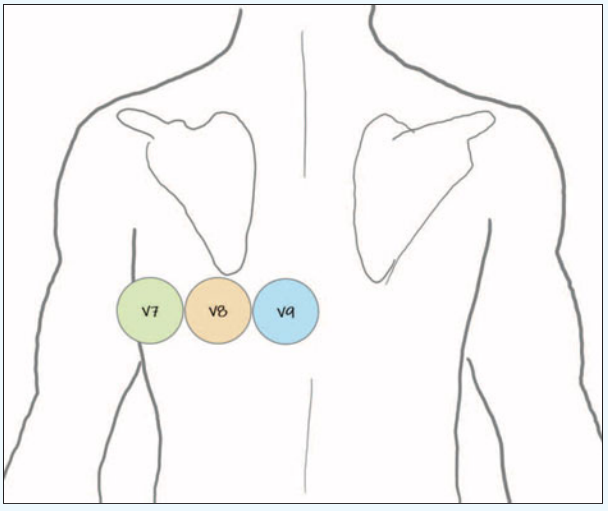

Figure 3: Placement of posterior leads.1 V4-6 are moved to the posterior chest wall, inferior to the scapula, and placed lateral to medial. These leads become V7-9.

Differential Diagnosis

- Second degree atrioventricular (AV) block (Mobitz type I) heart block
- Second degree AV block (Mobitz type II) heart block
- Posterior myocardial infarction (MI)
- deWinter T-waves
- Sinus bradycardia

Diagnosis

The correct diagnosis in this case is posterior myocardial infarction. The ECG shows a narrow complex, junctional bradycardia at a rate of 42. There are no discernible P waves (ruling out sinus bradycardia), and therefore no PR intervals (ruling out second degree AV block). There is focal ST-segment depression in V2 and V3, without ST-segment elevation elsewhere. The T-waves are not large in amplitude as expected with deWinter T-waves.

In the context of chest pain and anterior ST-segment depression, a posterior ECG should be performed on this patient by moving leads V4-V6 to the posterior chest wall, to better assess for posterior myocardial infarction **(Figure 3)**.

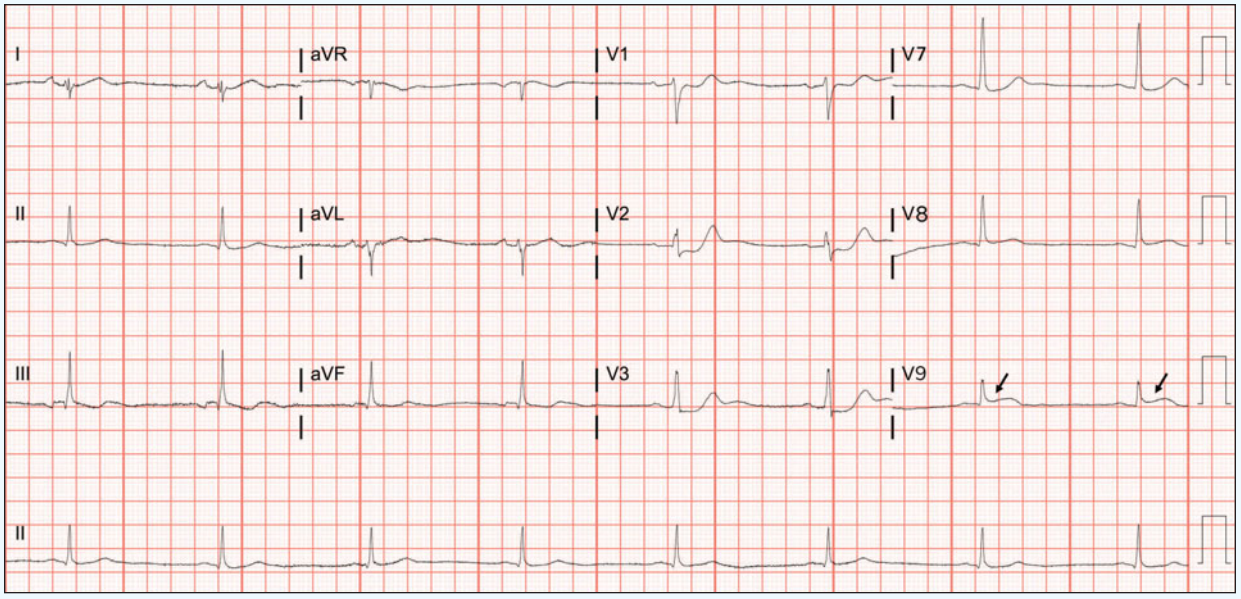

Figure 4: Posterior ECG revealing ST-segment elevation in V9 (arrows).

THE RESOLUTION

This patient was transferred to a percutaneous coronary intervention (PCI) center where an occluded proximal left circumflex was discovered and stented. The differential for ST-segment depression includes a broad range of conditions that can cause subendocardial (partial thickness) ischemia. The traditional 12-lead ECG does not contain leads that overly the posterior wall directly, therefore transmural infarction of the posterior wall is easily missed.[1–3] By moving leads V4-V6 to the posterior chest wall to become V7-V9, you can distinguish between anterior subendocardial ischemia and posterior transmural infarction. Posterior myocardial infarction will show ST-segment elevation in V7, V8, and/or V9. Patients with posterior myocardial infarction require emergent intervention. Activate emergency medical services (EMS) immediately for transfer to a PCI-capable facility.[4]

What to Look For

- Isolated posterior myocardial infarction is a rare finding, occurring in 3-7% of acute MI, and likely underdiagnosed.
- Focal ST-segment depressions in the anterior leads may represent a posterior myocardial infarction.
- Consider an ECG with posterior leads when anterior ST-segment depression is noted.

Pearls For Initial Management, Considerations For Transfer

- Perform an ECG with posterior leads if you note focal ST-depressions in leads V1-4. Remember to relabel V7-V9.
- Activate EMS immediately.
- Administer aspirin (162-325 mg).
- After EMS activation and aspirin administration, establish IV access if able.

References

1. Hähnle L, Viljoen C, Hoevelmann J, et al. Posterior infarction: a STEMI easily missed. *Cardiovasc J Afr*. 2020;31(6):331-334. doi:10.5830/CVJA-2020-059
2. García-Arias MR, Salinas-Ulloa CY, Maravilla-Jiménez LR, Pinales-Salas R. Isolated posterior acute myocardial infarction: the responsible for subtle changes in the electrocardiogram. *Arch Cardiol Mex*. 2024;94(1):115-119. doi:10.24875/ACM.22000287
3. Alsagaff MY, Amalia R, Dharmadjati BB, Appelman Y. Isolated posterior ST-elevation myocardial infarction: the necessity of routine 15-lead electrocardiography: a case series. *J Med Case Rep*. 2022;16(1). doi:10.1186/S13256-022-03570-W
4. Kontos MC, de Lemos JA, Deitelzweig SB, et al. 2022 ACC Expert Consensus Decision Pathway on the Evaluation and Disposition of Acute Chest Pain in the Emergency Department: A Report of the American College of Cardiology Solution Set Oversight Committee. *J Am Coll Cardiol*. 2022;80(20):1925-1960. doi:10.1016/J.JACC.2022.08.750