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

# 12-Year-Old With Left Groin and Buttock Pain

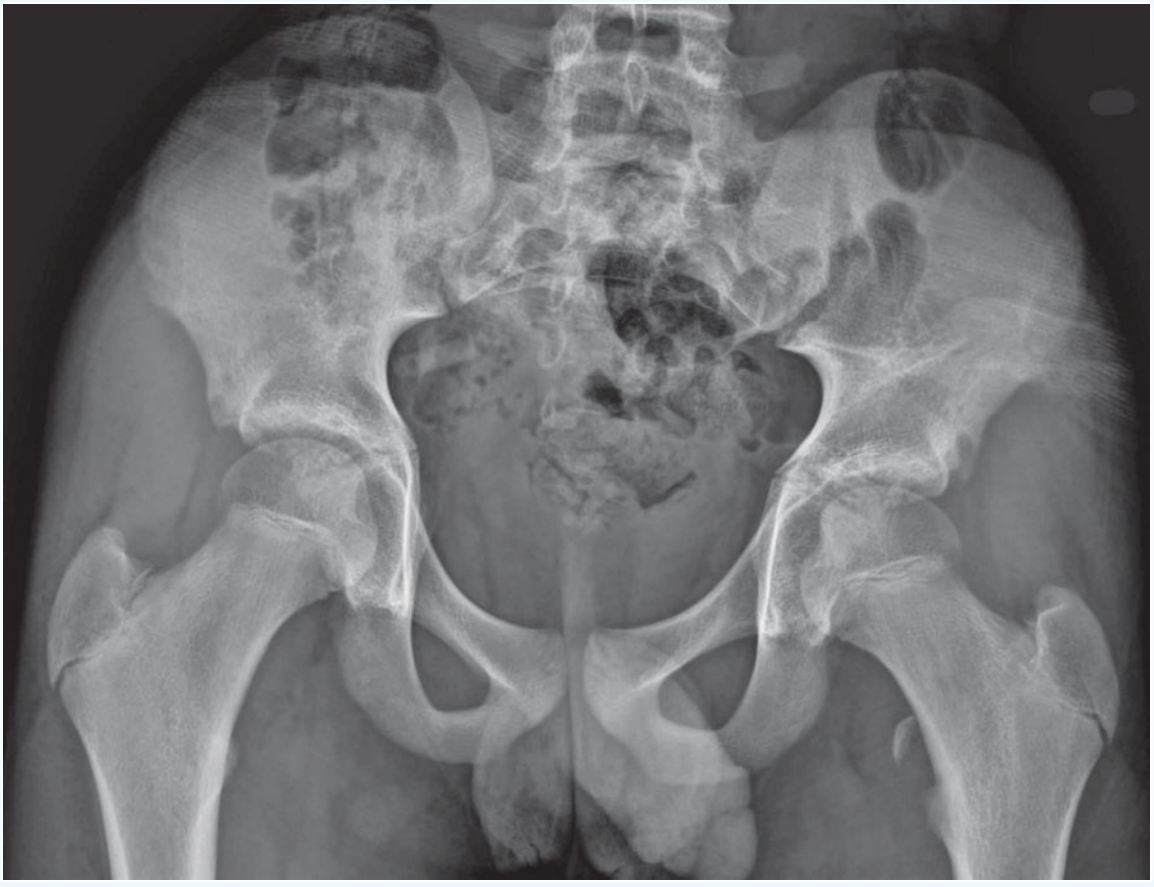

**Figure 1:** Initial X-ray

A 12-year-old male presents to urgent care with his mother for left groin and buttock pain with acute onset that occurred while running in a track meet earlier today. He reports that he felt a pop while running a sprint race and was subsequently unable to finish the race or bear weight on his left leg due to pain. He has no other past medical history and takes no medications. Physical exam reveals that he is afebrile with normal vital signs except for an elevated heart rate at 108 beats per minute. He is visibly uncomfortable at rest and passive flexion, and internal rotation of the hip elicit pain.

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

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

**Differential Diagnosis**

- Iliopsoas tear
- Lesser trochanter avulsion fracture
- Hip labrum tear
- Hip joint dislocation
- Proximal femur fracture
- Pelvic ring fracture

**Diagnosis**

Radiographic interpretation reveals an avulsion fracture of the left lesser trochanter with a displaced apophyseal fragment visible. The lesser trochanter lies on the posteromedial aspect of the proximal femur, inferior to the femoral neck, and is the insertion point for the iliopsoas which is primarily responsible for hip flexion. Isolated trochanteric fractures are typically avulsion fractures resulting from resisted hip flexion, leading to a strong contraction of the iliopsoas which avulses the lesser trochanter. These fractures occur most often in active adolescents and young adults involved in sports which include sprinting or jumping. In older adults, spontaneous avulsion is concerning for pathologic fracture caused by malignancy and is often considered a sign of metastasis until proven otherwise.

**What to Look For**

- History of involvement in sports including sprinting or jumping, patients will present with sudden groin pain and an antalgic gait.
- Lesser trochanteric fractures generally cause pain in the groin but also may present with knee or posterior thigh pain that is worse with hip flexion and rotation.
- On radiographs, look for fracture fragments displaced medially and superiorly to the lesser trochanter.

**Pearls For Urgent Care Management**

- Acute management includes rest and non-weight bearing with crutches for 3-4 weeks.
- Non-steroidal anti-inflammatory medications (NSAIDS) and acetaminophen are used for pain management.
- Lesser trochanteric avulsion fractures rarely require surgical intervention. Urgent orthopedic consultation is indicated if displacement is greater than 1 cm, if there is painful nonunion on follow-up imaging, or if the patient is a high-level athlete.
- Otherwise, non-urgent follow up with orthopedics is appropriate to monitor healing and evaluate for uncommon complications such as nonunion, ischiofemoral impingement and chronic hip flexor weakness. ■

# 39-Year-Old Male With Itchy Rash to Chest

A 39-year-old male presents to the local urgent care reporting an intensely itchy rash for the past 3 weeks that is getting gradually worse. The patient has a history of HIV infection, denies any recent travel or trauma, and is not taking any medications. Physical exam shows he is afebrile with normal vital signs. He has diffuse papular lesions to the trunk and arms ranging from pink to dark brown in color, some with notable excoriation. Laboratory examination shows mild leukocytosis and eosinophilia with a $CD_4$ count of 210 cells/$mm^3$.

View the image taken 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).*

**Differential Diagnosis**

- Bacterial folliculitis
- Eosinophilic folliculitis
- Seborrheic dermatitis
- *Pityrosporum* folliculitis
- Acne vulgaris
- Pruritic papular eruption
- Scabies

**Diagnosis**

The correct diagnosis is eosinophilic folliculitis (EF), a relatively common skin eruption in patients with advanced human immunodeficiency virus (HIV) disease. Since the advent of antiretroviral therapy (ART), EF has become less common. The etiology of EF is unclear, but may be related to immune dysregulation, possibly in association with an underlying infection or autoimmune response. EF is associated with low $CD_4$ counts (often below 250) and later-stage HIV disease. It is characterized by a pruritic skin eruption consisting of follicular papules or pustules, predominantly located on the scalp, face, neck, and upper chest. EF is a clinical diagnosis which can also be confirmed via skin biopsy; a 4 mm punch biopsy of an unexcoriated lesion is usually sufficient for histological confirmation.

**What To Look For**

- EF is characterized by recurrent, pruritic crops of discrete, erythematous, dome-shaped follicular papules and rare pustules, with a diameter of 3-5 mm.
- The most common areas of involvement are those with a high concentration of sebaceous glands: the scalp, neck, and upper trunk.
- Facial involvement is particularly common in female patients with EF.
- Intense and intractable pruritus is typical.
- Peripheral eosinophilia and elevated serum IgE are seen in about 25%-50% of patients with HIV-associated EF; these tests are not needed for diagnosis.
- Chronicity can lead to prurigo and protracted post-inflammatory hyperpigmentation, especially in patients with darker skin tones.

**Pearls for Urgent Care Management**

- ART management of HIV is the primary first-line therapy for EF. Subsequent rise in $CD_4$ count is often associated with improvement or resolution of symptoms.
- There are reports of EF flaring during the first 2 – 6 months of ART, consistent with immune reconstitution inflammatory syndrome (IRIS).
- Treatment of pruritus: High potency topical steroids (and lower potency formulations for lesions on the face) can be used for EF-associated pruritic. Oral antihistamines can also be prescribed, but these therapies neither suppress the development of new lesions nor fully control symptoms.
- Although oral glucocorticoids can improve HIV-associated EF, relapses are common within a few weeks after course completion and long-term treatment is associated with risk for serious side effects.
- For patients with recurrent symptoms not responding to treatment, a referral to dermatology is appropriate as phototherapy is often offered as a second-line therapy. ■

## CLINICAL IMAGE CHALLENGE
ECG

# 42-Year-Old With Altered Mental Status

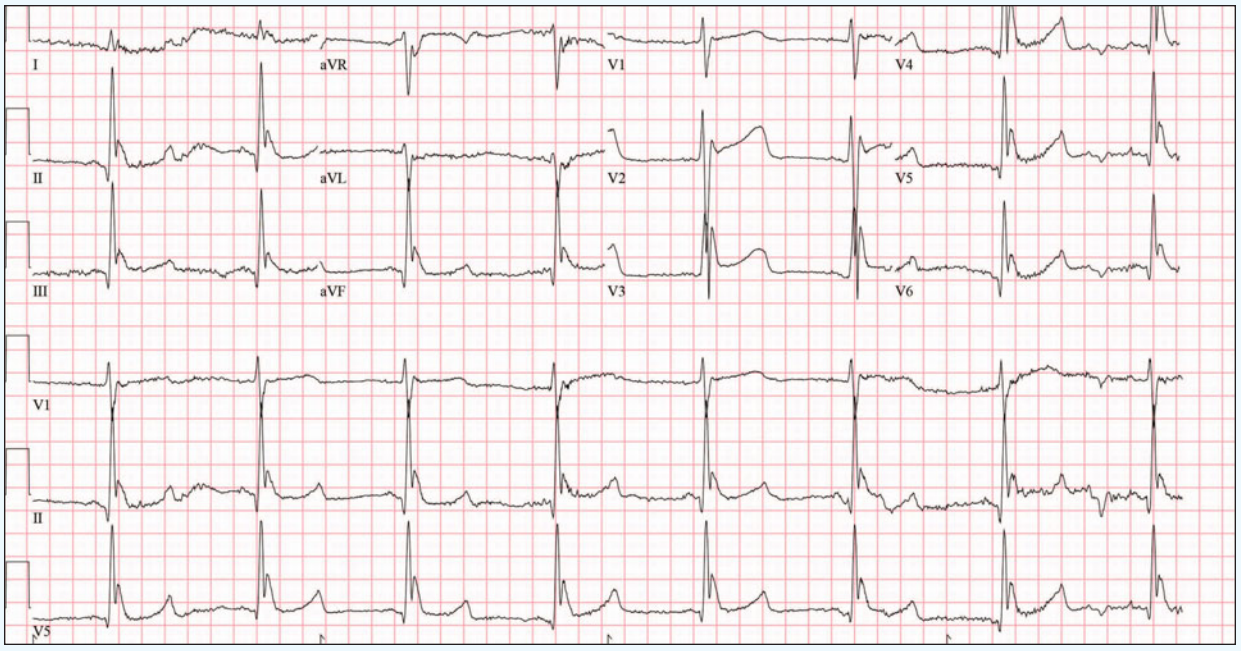


**Figure 1:** Initial ECG

The family of a 42-year-old male brings the patient to urgent care for altered mental status believing that they had arrived at an emergency department. His family found him on the floor at home with a non-functioning heater on a very cold day. He is bradycardic and ill-appearing. An ECG is obtained.

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

Case presented by Benjamin Cooper, MD, McGovern Medical School, The University of Texas Health Science Center at Houston, Department of Emergency Medicine.

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

ECG STAMPEDE

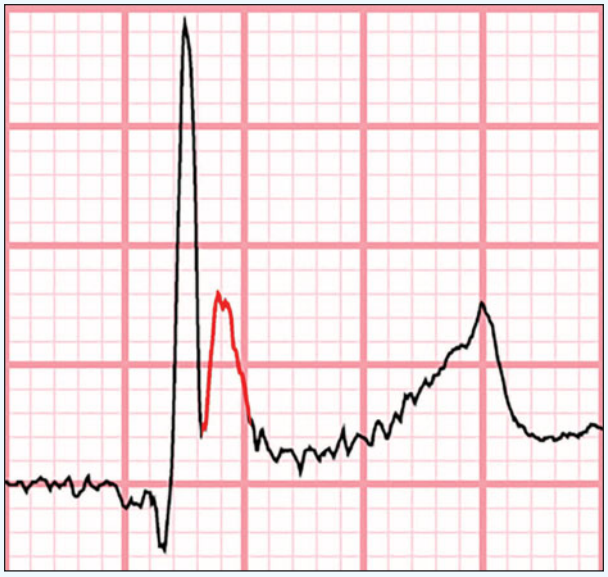

**Figure 2:** Osborn wave (red) in V5.

### Differential Diagnosis

- Slow atrial fibrillation
- ST-elevation myocardial infarction
- Hypercalcemia
- Osborn waves of hypothermia
- Junctional escape

### Diagnosis

The diagnosis in this case is sinus bradycardia with Osborn waves of hypothermia. The ECG reveals sinus bradycardia with a ventricular rate of 48 beats per minute. Prominent J-point elevations immediately following the QRS complexes are present, consistent with Osborn waves associated with hypothermia.

### Discussion

Electrocardiographic manifestations of hypothermia have been recognized for over a century and include sinoatrial exit block, PR and QT interval prolongation, QRS widening, ST-segment depression, and atrial and ventricular fibrillation. Osborn waves—upright J-point deflections immediately following the QRS complex—are more specific findings **(Figure 2)**.[1,2] These deflections may mimic ST-segment elevation and create the appearance of ST-segment concavity.

The electrocardiographic manifestations of hypothermia follow a predictable progression as core body temperature drops. These changes are fundamentally driven by the temperature-dependent slowing of myocardial conduction and repolarization. With mild hypothermia (32°–35°C), sinus bradycardia, shiver artifact (rapid, erratic, fine-to-coarse spikes that distort the isoelectric baseline), and interval prolongation (PR, QRS, and QT) are common. With moderate hypothermia (28°–32°C), sinus bradycardia frequently degenerates into atrial fibrillation, usually with a slow ventricular response. Osborn waves become distinctly visible and prominent, and shiver artifact often resolves. Severe hypothermia (< 28°C) is associated with ventricular dysrhythmia, high-grade atrioventricular blocks, and asystole.[3]

Although hypercalcemia can shorten the QT interval and produce J-point abnormalities that mimic Osborn waves, this ECG demonstrates distinct repolarization morphology clearly separate from the Osborn deflections.

This patient's core temperature was 27°C (81°F), and he was immediately transferred to an emergency department for further treatment.

### What To Look For

- Hypothermia manifests electrocardiographically via a predictable progression that includes sinus bradycardia, prolonged intervals, Osborn waves, slow atrial fibrillation, and ultimately degenerates into ventricular dysrhythmias and asystole.
- Osborn waves are upright J point deflections that immediately follow the QRS complex.

### Pearls For Initial Management, Considerations For Transfer

- Passive and active rewarming measures are the mainstays of treatment.
- Urgent care centers are not generally equipped to treat hypothermia severe enough to produce ECG findings; immediate transfer is warranted.
- Warm blankets and/or forced-air warming devices may be initiated while awaiting transfer.■

**References**

1. Doshi HH, Giudici MC. The EKG in hypothermia and hyperthermia. *J Electrocardiol*. 2015;48(2):203-209. doi:10.1016/j.jelectrocard.2014.12.001
2. Vassallo SU, Delaney KA, Hoffman RS, Slater W, Goldfrank LR. A prospective evaluation of the electrocardiographic manifestations of hypothermia. *Acad Emerg Med*. 1999;6(11):1121-1126. doi:10.1111/J.1553-2712.1999.TB00114.X
3. Okumura H, Okada N, Hamanaka K, Okada Y, Kitamura T, Matsuyama T. Electrocardiographic patterns of accidental hypothermia. *Am J Emerg Med*. 2025;90:210-213. doi:10.1016/j.ajem.2025.01.079