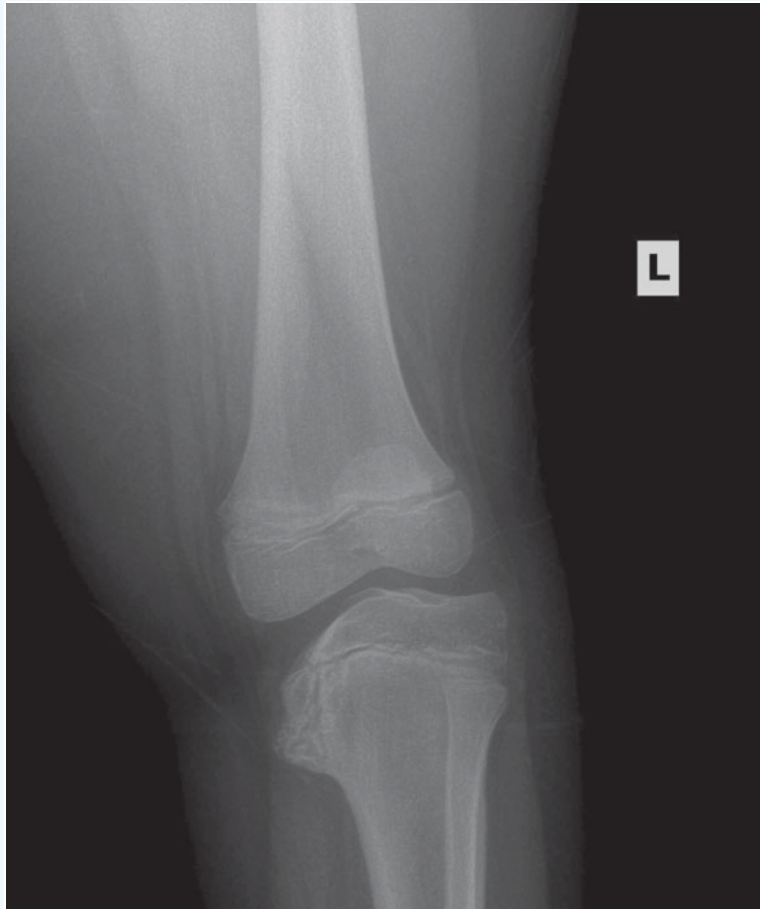




**Editor's Note:** While the images presented here are authentic, the patient cases are hypothetical.

## 7-Year-Old With Knee Pain After Activity

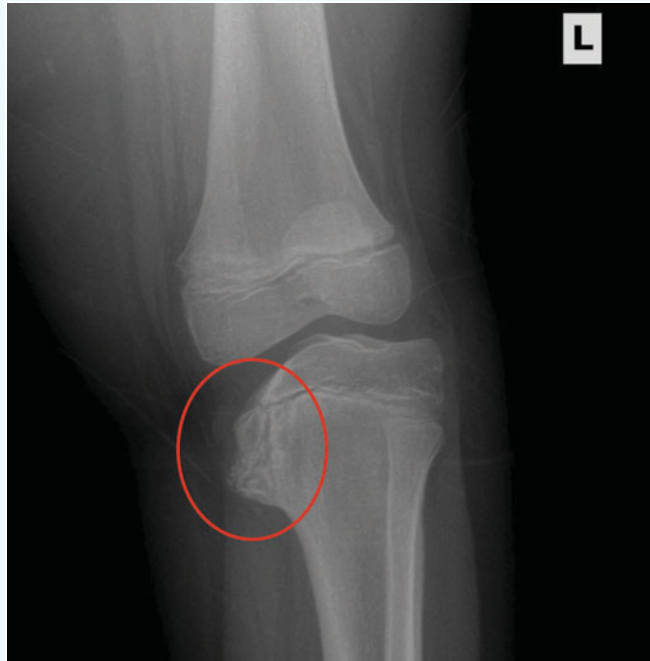


A 7-year-old male presents to the urgent-care clinic with left-knee pain that began after gym class and has gradually worsened over the past several weeks. The mother reports no significant trauma and notes that the pain improves with rest. Physical examination reveals a slightly overweight child with a visible bowing deformity just distal to the knee. The patient demonstrates a full range of motion and normal

knee strength, and no bony tenderness, effusion, or laxity is noted. An anteroposterior (AP) radiograph of the left knee is ordered to further evaluate the deformity.

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](http://www.experityhealth.com/teleradiology)).*



### Differential Diagnosis

- Rickets
- Blount disease
- Pathologic asymmetric growth
- Skeletal dysplasia

### Diagnosis

The x-ray demonstrates a varus-aligned tibial shaft with a wedge-shaped, fragmented epiphysis. There is a sharp downward slope of the medial tibial physis, and adjacent metaphyseal depression is seen, accompanied by a medial beak-like spur. The correct diagnosis is Blount disease, a localized disturbance of growth in the medial aspect of the proximal tibial metaphysis and/or epiphysis that produces tibial varus, leg-length discrepancy, and articular incongruity. Two clinical variants exist. Infantile Blount disease is typically diagnosed before age four, presents bilaterally in approximately 80% of cases, and worsens after the onset of walking. Adolescent Blount disease is diagnosed later in childhood and may be unilateral or bilateral. Predisposing factors include obesity, African-American ethnicity, and early ambulation.

### What to Look For

- Assess for asymmetry: Asymmetric angular alignment of the lower extremities and/or focal angulation at the proximal tibia is often seen.
- Check degree of varus separation: With the child seated or supine, extend the knees and rotate the legs so that

the patellae face anteriorly; a distance exceeding 6 cm between the femoral condyles in this position is considered abnormal.

- Observe the child's gait: Observe while walking away from the examiner; assess foot and patellar progression angles and look for any lateral thrust of the tibia during ambulation.
- On x-ray, a sharp downward slope of the medial tibial physis is typical.

### Pearls for Urgent Care Management

- Do not dismiss as physiologic bowing if child >2 years or if asymmetric
- Refer to pediatric orthopedics promptly as bracing or surgery may be required
- Advise avoidance of high-impact activities until a specialist has evaluated the patient
- Document growth, age, and weight – Blount is more common in obese children and early walkers
- Provide anticipatory guidance emphasizing importance of follow-up imaging and ortho care to prevent progression
- Infantile Blount disease is often initially managed with bracing
- Adolescent Blount disease is typically treated with surgical intervention such as hemiepiphysiodesis or tibial osteotomy.



## 45-Year-Old Male With Arm Lesion, Headache, and Malaise



A 45-year-old male presents to urgent care with headache, malaise, and an arm lesion that appeared three days ago. He reports no recent travel but notes several mice in his New York City apartment. On examination he is febrile (39.4°C / 101°F) and dermatologic exam reveals an eschar lesion with surrounding erythema and adjacent erythematous papules on the arm. Numerous scattered papu-

lovesicles are also present on the trunk and forearms. Laboratory studies show mild leukopenia and thrombocytopenia.

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](http://www.VisualDx.com/jucm)).*



### Differential Diagnosis

- Eczema herpeticum
- Varicella
- Rickettsialpox
- Disseminated gonorrhea
- Cutaneous anthrax
- Mediterranean spotted fever

### Diagnosis

Rickettsialpox is an uncommon mite-borne infection caused by *Rickettsia akari*, transmitted to humans by the painless bite of the house mouse mite (*Liponyssoides sanguineus*). It typically occurs in urban settings, with an incubation period of 10–14 days, and has been reported among individuals experiencing homelessness and those who inject drugs.

### What to Look For

- **Primary lesion:** A 0.5–1 cm papule appears at the mite bite site, evolving into a vesicle with a violaceous or erythematous halo and forming a central black eschar (0.5–3 cm), resembling a cigarette burn.
- **Systemic symptoms:** Fever, headache, myalgia, and regional lymphadenopathy develop several days later. Photophobia, conjunctivitis, sore throat, and gastrointestinal symptoms may occur.
- **Rash:** A hallmark scattered papulovesicular eruption appears, with 2–10 mm lesions surrounded by erythe-

matous halos that crust and heal without scarring. The rash often spares the palms and soles but may involve mucous membranes. Rarely, a cellulitis-like rash or absence of rash occurs.

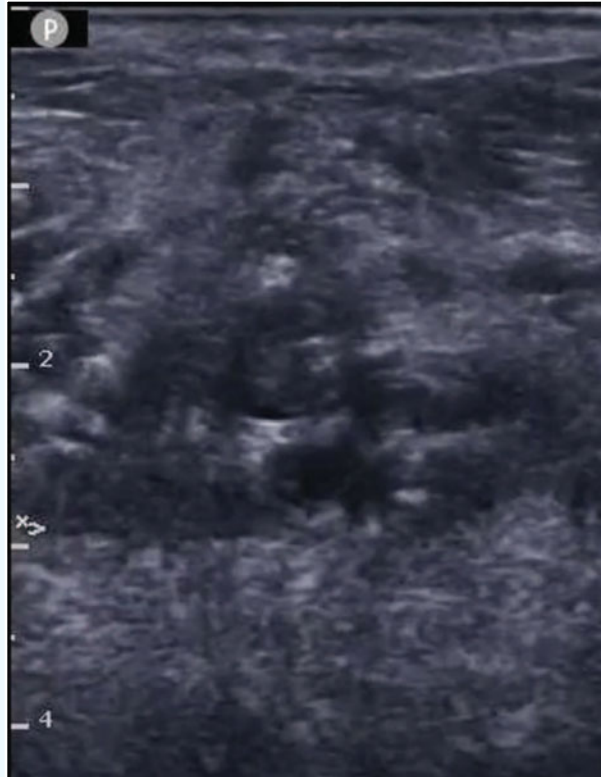
- **Laboratory findings:** Early leukopenia with relative lymphocytosis is common. Mild hepatitis may occur and resolves with treatment.
- **Skin tone variation:** On darker skin tones, erythema may appear subtle, violaceous, or gray. Bright light may aid detection of color changes. Postinflammatory hyperpigmentation may persist longer than in lighter skin.

### Pearls for Urgent Care Management

- Rickettsialpox is usually mild and self-limited, with symptoms lasting up to three weeks; early therapy may shorten illness duration.
- Diagnosis is clinical; biopsy confirmation is rarely feasible in urgent care.
- **Treatment:** Doxycycline 100 mg PO q12h for 5–7 days or until afebrile for 48 hours.
- Doxycycline remains the drug of choice for adults, children, and pregnant patients.



## 52-Year-Old With Calf Pain After Travel



A 52-year-old man presents to urgent care with a 2-day history of left calf pain, described as dull, non-radiating, and worsened by walking. He recently flew from Los Angeles to New York. His history includes hypertension managed with lisinopril. He denies fever, chest pain, shortness of breath, recent surgery, or prior clots.

He appears well and is hemodynamically stable. Exam reveals mild swelling and tenderness in the left calf and popliteal region without erythema or warmth. A Wells score

of 1 places him at moderate risk for deep vein thrombosis (DVT). Due to limited access to imaging, the provider performs a compression point-of-care ultrasound (POCUS) of the left lower extremity.

View the POCUS image above of the popliteal region during compression and consider the likely diagnosis and next steps. The resolution of the case is described on the following page.

*Case provided by Tatiana Havryliuk, MD, emergency physician in New York, New York, and founder of Hello Sono.*



### Differential Diagnosis

- Deep vein thrombosis (DVT)
- Baker cyst
- Ruptured Baker cyst
- Muscle strain
- Superficial vein thrombosis

### Diagnosis

POCUS reveals a non-compressible left popliteal vein (white circle) with hypoechoic intraluminal material, consistent with acute proximal DVT. The popliteal artery (red oval), located just beneath the vein, appears anechoic (black), as expected. Based on these findings, the patient was diagnosed with a DVT and started on rivaroxaban. Follow-up care was arranged.

### Discussion

DVT diagnosis in the urgent care can be delayed by limited imaging access or slow turnaround times for D-dimer test, which can guide the need for imaging in low and moderate-risk patients.<sup>1</sup>

Proximal leg compression POCUS has been shown to have high sensitivity and correlation with formal vascular studies. For example, a study of hospitalist-performed POCUS showed 100% sensitivity and 95.8% specificity when compared to formal vascular scans.<sup>2</sup> An emergency department (ED) meta-analysis found 96% sensitivity and specificity for proximal leg compression POCUS.<sup>3</sup>

POCUS DVT scan typically includes compression of the proximal deep vasculature in 2 regions: the inguinal area

(assessing the common femoral vein at the saphenofemoral vein junction and at the confluence of deep femoral and superficial femoral veins) and the popliteal area (popliteal vein to the junction with calf veins), or 3 regions (adding an isolated femoral vein compression). It is referred to as a “2-point” or a “3-point” scan, depending on how many regions are included in the exam. A 3-point ultrasound may offer increased sensitivity for DVT in cases where an isolated femoral vein clot is present.<sup>4</sup>

POCUS not only improves diagnostic accuracy and efficiency but also impacts patient experience and cost of care. Patients report better quality of care when POCUS is used.<sup>5</sup> The average cost of an ED visit for a primary care-level concern is approximately \$2,000, while the 2025 Medicare global physician fee for a unilateral lower extremity vascular ultrasound is \$114.<sup>6,7</sup> Using POCUS in the clinic can thus result in over \$1,800 in savings per encounter by avoiding ED-based imaging and evaluation.

In this case, POCUS enabled rapid confirmation of a potentially life-threatening condition, facilitating same-day treatment initiation while avoiding ED transfer.

### What to Look For

- Noncompressible deep vein segment.
- Echogenic intraluminal material (not always seen).
- Anechoic cystic structure in the popliteal region (Baker cyst) as an alternate diagnosis.

### Pearls for Urgent Care Management

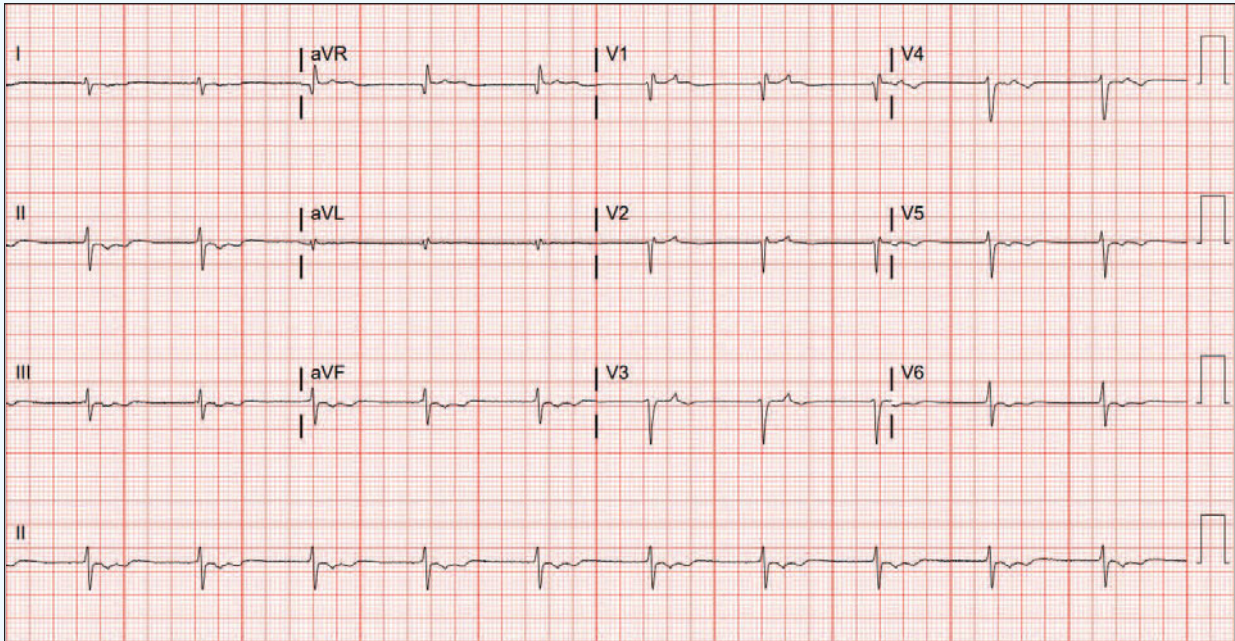
- For presentations concerning for a DVT, calculate the Wells score to risk-stratify.
- To diagnose DVT, use high-sensitivity D-dimer in conjunction with POCUS and avoid ED referrals.

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# 55-Year-Old With Lower Extremity Edema



**Figure 1:** Initial ECG

A 55-year-old male presents to urgent care with progressive dyspnea for 2 weeks associated with lower extremity edema. The patient is afebrile, slightly tachypneic, with bilateral lower extremity edema on exam. An ECG is ordered.

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](http://www.ecgstampede.com)).

ECG STAMPEDE



**Figure 2:** Leads V1 and II demonstrate retrograde atrial activity (▼ and ▲, respectively).

### Differential Diagnosis

- Atrial fibrillation
- Normal sinus rhythm
- Complete heart block with ventricular escape
- Junctional rhythm
- Paced rhythm

### Diagnosis

The diagnosis in this case is junctional rhythm. The ECG reveals regular and narrow QRS complexes with a ventricular rate of 60 beats per minute. There are no preceding P waves associated with the QRS complexes. Retrograde atrial activity can be seen immediately following the QRS complexes (**Figure 2**). There are no pacing spikes present to suggest a paced rhythm.

### Discussion

This is a junctional rhythm with retrograde atrial conduction. Notice the retrograde P' waves immediately following the QRS complexes (**Figure 2**). P waves conducted via normal, sinoatrial activity are negatively deflected in V1 and upright in the inferior leads (ie, depolarization occurs from superior to inferior); whereas retrograde conduction depolarizes the atria in the opposite direction, leading to upright P' waves in V1 and negatively deflected P' waves in the inferior leads (ie, depolarization occurs from inferior to superior).<sup>1</sup>

Under conditions of normal conduction, inferior pacemakers of the conduction system are suppressed by the most superior (and dominant) one – usually the sinoatrial node. When impulses from the dominant pacemaker fail to conduct distally or an ancillary pacemaker outpaces and usurps control, an “escape” rhythm results. When a superior pacemaker fails to generate impulses at a rate

faster than an inferior one, then the faster, more inferior, one will “escape.”<sup>2</sup>

In our case, the sinus node failed to generate a rate that outpaced the junction, which led to a junctional escape rhythm with associated retrograde atrial conduction. Retrograde conduction occurs when the signal wavefront (which originates at the junction) extends superiorly throughout the atria. The escape rhythm will subside once the sinus node accelerates and regains control; however, if the sinus node is diseased (as was the case here), it may never regain control. This patient was referred to a nearby cardiac care center, where he received a permanent pacemaker.

### What To Look For

- The atria normally depolarize from superior to inferior, creating negatively deflected P waves in V1 and positively deflected P waves in the inferior leads.
- Retrograde atrial conduction results in positively deflected P waves in V1 and negatively deflected P waves in the inferior leads.
- Inferior pacemakers will “escape” when a more superior pacemaker fails.

### Pearls For Initial Management, Considerations For Transfer

- Unless young, healthy, and asymptomatic, patients with junctional rhythms should be referred to a nearby emergency department.
- If available, place pacing pads on the patient while awaiting transport.

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