



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 35-Year-Old Male with a Soft Tissue Mass on His Finger



The patient is a 35-year-old male with a soft tissue mass in the mid index finger of his right hand. He reports that he noticed it only recently, and denies any other symptoms.

View the x-ray taken and consider what your diagnosis and next steps would be.



Differential Diagnosis

- Liposarcoma
- Nodular fasciitis
- Peripheral nerve sheath tumor
- Soft tissue mass with chronic bony erosive changes

Diagnosis

The image reveals a focal soft tissue prominence and increased soft tissue density on the radial aspect of the second digit, with a lucency of the adjacent middle phalanx and a well-defined sclerotic margin.

The correct diagnosis is soft tissue mass with chronic bony erosive changes without aggressive features.

Learnings/What to Look for

- Masses associated with bony erosion include glomus tumor, tendon sheath giant cell tumor, lipoma, and synovial sarcoma
- Gout can also produce adjacent erosions
- Glomus tumor tends to be painful

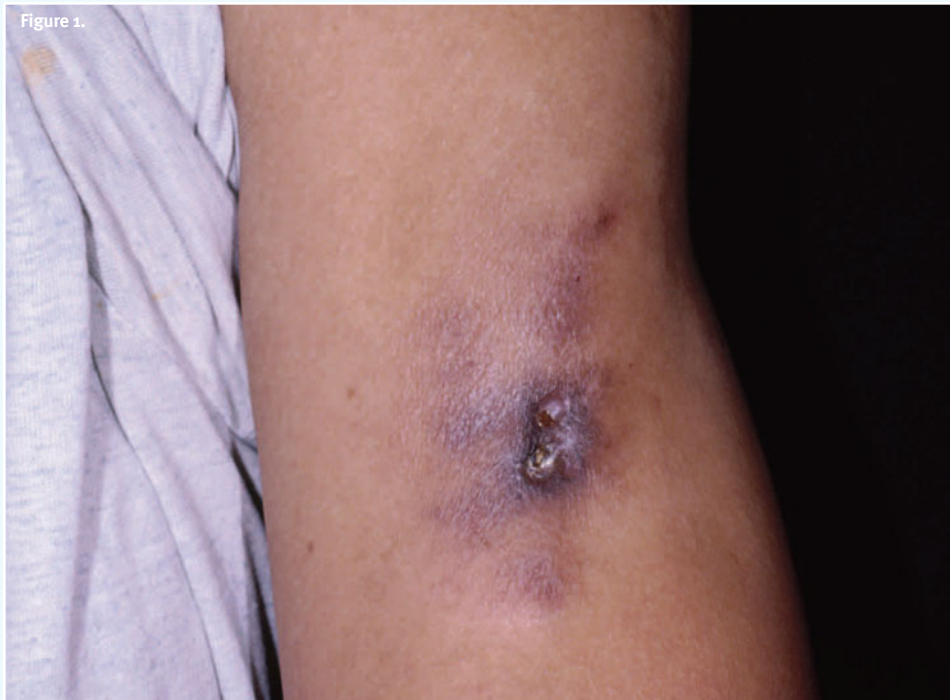
Pearls for Urgent Care Management

- Soft tissue tumors involving the hand are common and most often benign
- MRI is useful for further evaluation

Acknowledgment: Image and case presented by Experity Teleradiology (www.experity.com/teleradiology).



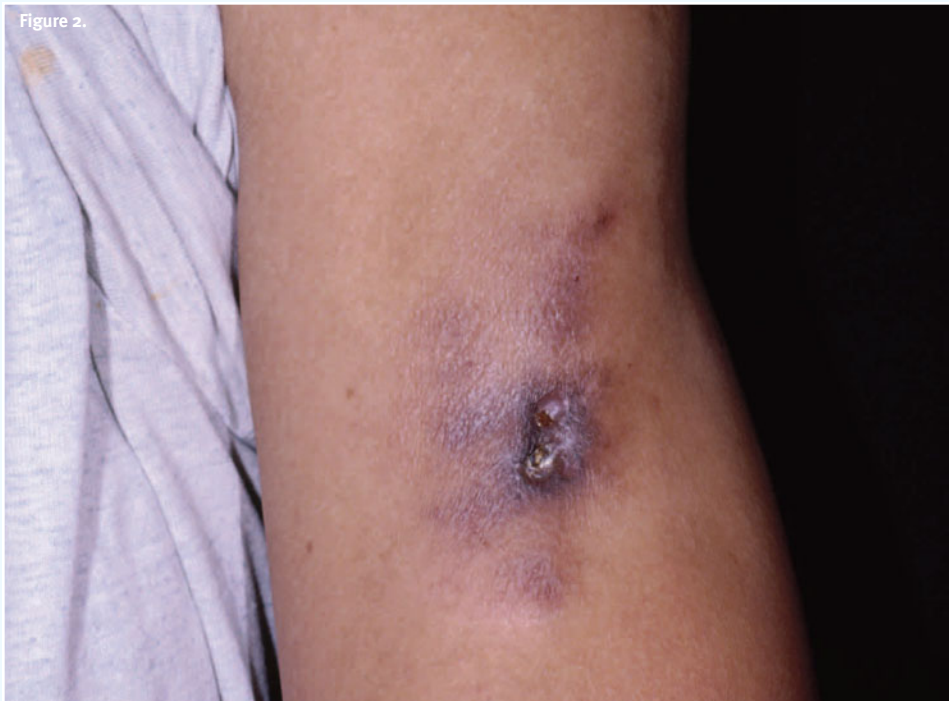
A 41-Year-Old Woman with a History of SLE and Sudden-Onset Sores on Her Limbs



A 41-year-old woman with a history of systemic lupus erythematosus presents for evaluation of painful areas that have developed on her upper, outer arms and lateral thighs over the past month. She reports that while the affected areas were initially smooth, some had begun to ul-

cerate. Her medications are non-contributory. On examination, there are tender violaceous plaques and nodules with central crusted ulcers.

View the photo taken and consider what your diagnosis and next steps would be.



Differential Diagnosis

- Lupus panniculitis
- Tumid lupus erythematosus
- Subcutaneous panniculitis-like T-cell lymphoma
- Morphea

Diagnosis

A skin biopsy reveals a lobular panniculitis with a lymphoplasmacytic infiltrate, hyalinizing fat necrosis, and lymphoid follicles. Laboratory examination revealed a positive antinuclear antibody (ANA) and an elevated erythrocyte sedimentation rate (ESR).

The correct diagnosis is lupus panniculitis, a rare subtype of chronic cutaneous lupus erythematosus with tender indurated subcutaneous nodules or plaques located most frequently on the face, proximal extremities, breasts, and buttocks, with or without overlying cutaneous changes.

Learnings/What to Look for

- Lupus panniculitis is sometimes termed *lupus profundus*
- It is likely caused by an autoimmune reaction in the deep dermis and adipose tissue. The first stage is active inflammation with painful nodules, followed by the second stage of subcutaneous atrophy, which can be cosmetically disfiguring
- Like SLE, lupus panniculitis occurs more commonly in women
- It develops in approximately 5% of patients with SLE but can occur as an isolated disease
- Cutaneous manifestations can develop years before or after the diagnosis of SLE
- It can be associated with overlying discoid lupus erythematosus (DLE) in approximately one-third of patients

Pearls for Urgent Care Management

- Treatment is aimed at reducing inflammation, including the use of anti-inflammatory drugs
- Corticosteroids may speed recovery
- Compression stockings may help relieve symptoms in the legs

Acknowledgment: Image and case presented by VisualDx (www.VisualDx.com/jucm).



A 70-Year-Old Male Who Presents in a Confused State

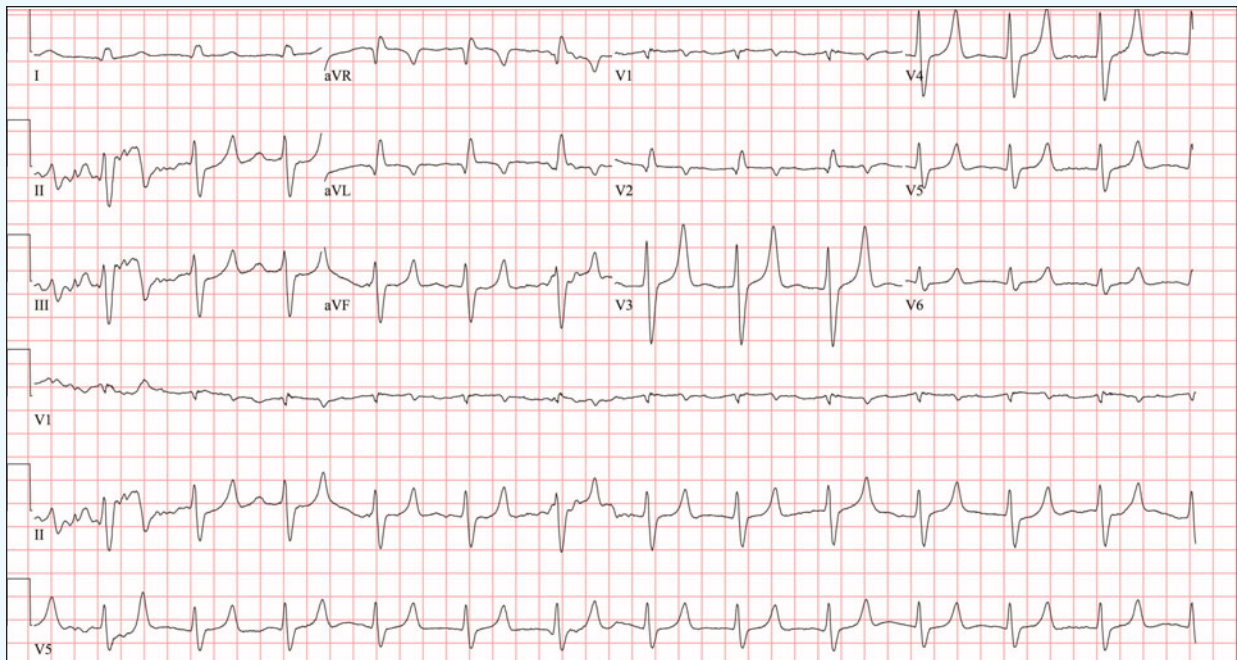


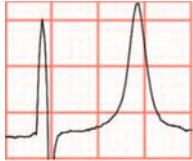
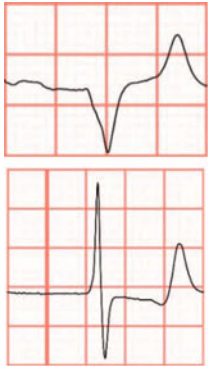
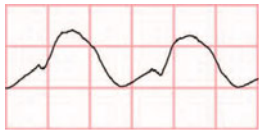
Figure 1. Initial ECG

A 70-year-old male presents to urgent care with confusion. On exam, the patient is tachypneic and is, indeed, confused but is able to follow commands.

View the initial 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 Benjamin Cooper, MD, MEd, FACEP, Department of Emergency Medicine, McGovern Medical School at UTHealth Houston.)

Table 1. Expected Electrocardiographic Changes with Given Serum Potassium Levels

Serum potassium ¹	Potential ECG changes	Morphology
5.5–6.5 mEq/L	<ul style="list-style-type: none"> • Tall, peaked T waves with narrow base • QT interval shortening • ST-segment depression 	Peaked T wave 
6.5–8.0 mEq/L	<ul style="list-style-type: none"> • Peaked T waves • PR-interval prolongation • P wave decreased amplitude or disappearance • QRS widening • R-wave amplification 	Blunted P wave Prolonged PR Wide QRS Absent P wave 
>8.0 mEq/L	<ul style="list-style-type: none"> • P-wave absence • QRS widening • Intraventricular/fascicular/bundle branch blocks • Sine wave 	Sine wave 

Differential Diagnosis

- Hyperkalemia
- Myocardial infarction with hyperacute T waves
- Myocarditis
- Hypocalcemia
- Brugada syndrome

Diagnosis

This patient was diagnosed with hyperkalemia due to acute renal failure.

ECG Analysis

This ECG shows a regular ventricular rate of 72 bpm without discernable P waves. The T waves are narrow-based with a pointed peak and the QRS is slightly widened. These findings are consistent with hyperkalemia.

Electrocardiographic findings of hyperkalemia tend to follow a progression as toxicity progresses (Table 1). Often, the earliest finding is narrow-based, peaked T waves, and at the extreme end of the hyperkalemia spectrum, a sine wave morphology is a harbinger of pending ventricular fibrillation.

The ECG can be used to predict short-term hyperkalemic adverse events. According to one retrospective study of

188 patients with severe hyperkalemia, the following three findings predicted adverse outcomes within 6 hours:

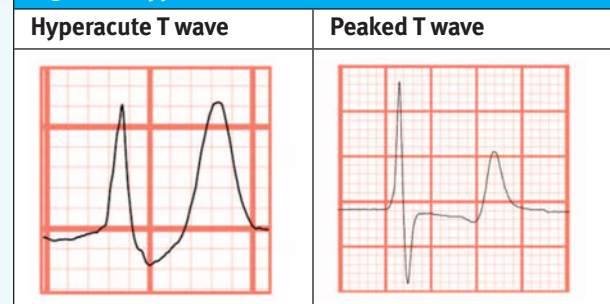
1. Bradycardia <50 bpm
2. QRS >110 ms
3. Junctional rhythm

Notice that peaked T waves were not found to predict acute adverse outcomes.²

While other differential considerations exist, it is most important to differentiate hyperacute T waves from the peaked T waves of hyperkalemia.

Peaked T waves of hyperkalemia tend to be narrow-

Figure 2. Hyperacute vs Peaked T Waves



based with a pointed peak, as opposed to the broad base and rounded peak of hyperacute T waves (**Figure 2**).

Myocarditis can cause hyperacute T waves, but does not tend to cause peaked T waves.

Hypocalcemia can cause a prolonged QT interval by way of prolongation of the ST-segment.

Brugada syndrome is a sodium channelopathy with a characteristic ECG pattern (pseudo-right bundle branch block pattern with down-sloping ST segment elevation in V₁ and/or V₂) and an increased risk of sudden cardiac death, in the absence of gross structural heart disease.

Acute treatment of hyperkalemia includes membrane stabilizers like calcium and hypertonic saline, and intracellular potassium shifters like insulin, beta-agonists, and sodium bicarbonate.¹ Patients with electrocardiographic features concerning for hyperkalemia should have all available treatments initiated and be transferred immediately to a dialysis-capable facility.

The potassium level in this case was 9.1 mEq/L, and the patient was immediately transferred to an emergency center for emergent dialysis.

Learnings/What to Look for

- Electrocardiographic features of hyperkalemia include peaked T waves, P wave blunting, and QRS widening
- ECG findings that predict short-term adverse outcomes include bradycardia less than 50 bpm, QRS width greater than 110 msec, and a junctional rhythm

Pearls for Urgent Care Management

- Any ECG features suggesting hyperkalemia should prompt initiation of available treatments and transfer to a dialysis-capable facility
- Nebulized albuterol is a simple and easily administered therapy in the urgent care setting that can be given while awaiting emergency transportation to shift potassium intracellularly

References

1. Long B, Warix JR, Koyfman A. Controversies in management of hyperkalemia. *J Emerg Med.* 2018;55(2):192-205.
2. Durfey N, Lehnhof B, Bergeson A, et al. Severe hyperkalemia: can the electrocardiogram risk stratify for short-term adverse events? *Western J Emerg Med.* 2017;18(5):963-971.

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

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