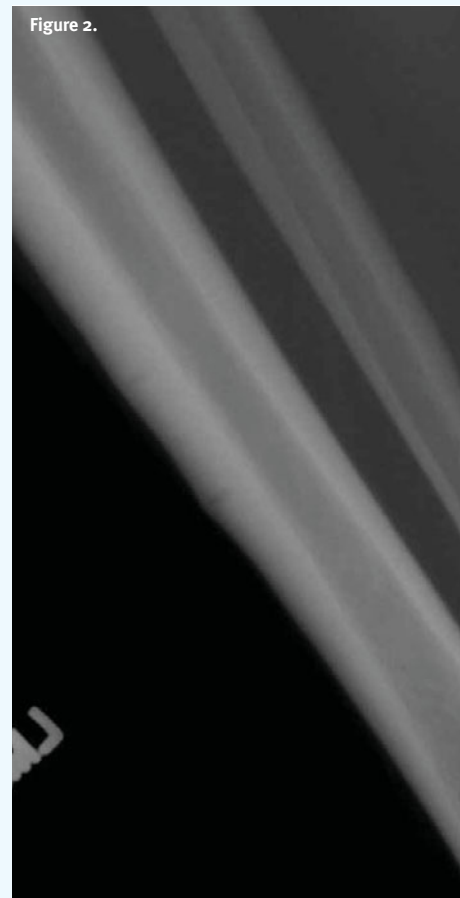




In each issue, *JUCM* will challenge your diagnostic acumen with a glimpse of x-rays, electrocardiograms, and photographs of conditions that real urgent care patients have presented with.

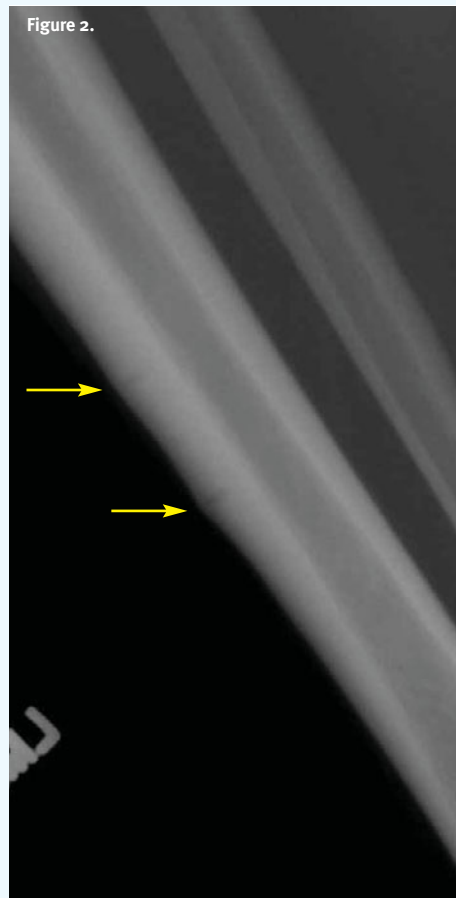
If you would like to submit a case for consideration, please e-mail the relevant materials and presenting information to [editor@jucm.com](mailto:editor@jucm.com).

## A 28-Year-Old with Tibial Pain After Prolonged Exercise



A 28-year-old male presents complaining of anterior shin pain. He shares that he is a runner training for a marathon, and that the pain began toward the end of an 18-mile run. There was no direct trauma.

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



### Differential Diagnosis

- Chronic exertional compartment syndrome (CECS)
- Periostitis
- Popliteal artery entrapment syndrome
- Tibial stress fracture

### Diagnosis

The images show short segment, ill-defined cortical lucencies of the anterior tibial cortex with associated cortical thickening. This patient was diagnosed with anterior tibial stress fractures.

### Learnings/What to Look for

- Stress fracture is an overuse injury, with tibial stress fractures seen often in military recruits and runners after a change in exercise routine
- When enough stress is placed on the bone, it causes an imbalance between osteoclastic and osteoblastic activity and a stress fracture may appear

### Pearls for Urgent Care Management

- Treatment is commonly activity restriction with protected weightbearing and pain management
- Surgical intramedullary nailing may be considered for severe situations

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



## A 7-Year-Old Boy with New Facial Rash



A woman brings her 7-year-old son to the urgent care center with a rash that had developed “over the past few weeks.” On examination, there are smooth, pink papules around the mouth. The mother reports that the patient has a history of asthma, for which he uses inhalation

budesonide daily as maintenance therapy. Otherwise he is healthy, has no systemic symptoms, and is well-appearing.

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

Figure 2.



### Differential Diagnosis

- Acne vulgaris
- Coxsackie virus
- Molluscum contagiosum
- Perioral dermatitis of childhood
- Lip licker's eczema

### Diagnosis

This patient was diagnosed with perioral dermatitis of childhood, also called periorificial dermatitis. This is a benign inflammatory eruption characterized by erythematous papules and pustules around the mouth.

### Learnings/What to Look for

- Lesions are typically clusters of erythematous or skin-colored papules, vesicles, and/or pustules. They are often asymptomatic but may be mildly pruritic
- Development of perioral dermatitis is often preceded by exposure to topical corticosteroids. Use of mask-delivered inhaled corticosteroids is a common cause in young children

- Various cosmetic products, including fluorinated toothpastes, have also been reported as potential precipitants of this condition
- Unlike periorificial dermatitis, perioral coxsackie disease is often associated with rash elsewhere on the body sometimes with fevers, oral ulcers, or diarrhea. Lip-licker's eczema features dry, irritated skin well demarcated around the lips without discrete papules or vesicles. Molluscum contagiosum lesions are typically smooth, dome-shaped papules and are rarely in a perioral distribution

### Pearls for Urgent Care Management

- Treatment is often initiated with topical antibiotics, such as metronidazole, clindamycin, erythromycin, or sulfacetamide
- Topical nonsteroidal anti-inflammatory creams may reduce inflammation

*Acknowledgment: Image and case presented by VisualDx ([www.VisualDx.com/jucm](http://www.VisualDx.com/jucm)).*



# A 52-Year-Old Male with Shortness of Breath and a History of Multiple Cardiologic Issues

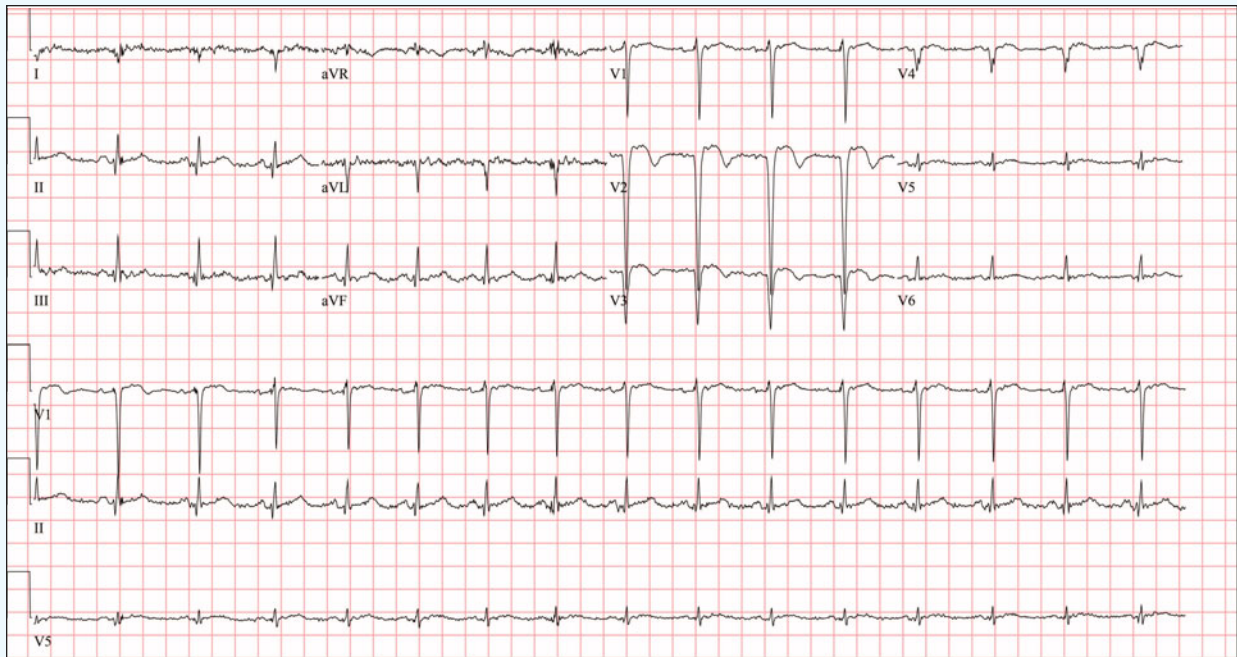


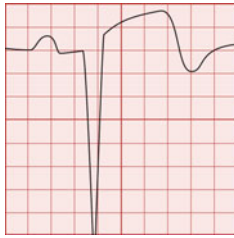
Figure 1. Initial ECG

A 52-year-old male with a history of hypertension, hyperlipidemia, and recent myocardial infarction (1 month ago) presents to urgent care with shortness of breath for the past week. He denies fever, chest pain, or cough. On examination, the patient is breathing comfortably and saturating well on ambient air.

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 Tom Fadial, MD, McGovern Medical School at UT Health Houston Department of Emergency Medicine.)*

**Figure 2. ST-Segment Elevation and Large Q-Waves Associated with LV Aneurysm**



### Differential Diagnosis

- Myocardial infarction
- Left ventricular aneurysm
- Hypertrophic cardiomyopathy
- Wellens syndrome
- Brugada syndrome

### Diagnosis

This patient was diagnosed with left ventricular aneurysm.

The ECG shows a normal sinus rhythm at a rate of 96 bpm. There is rightward axis deviation and intervals appear normal. Finally, there is ST-segment elevation in leads V2 and V3.

An acute myocardial infarction is always the leading concern for a patient with ST-segment elevation. In this case, the patient has no chest pain, and his symptoms are both subacute and mild. His presentation allows for a more comprehensive consideration of the differential for ST-segment elevation.

We note that the ST-segment elevations are preceded by large Q-waves. In the reported context of recent MI this is highly suggestive of a left ventricular aneurysm. (See Figure 2.)

In the absence of reperfusion therapy, left ventricular aneurysm is a common structural complication of acute MI, occurring in 35% to 64% of patients with anterior acute MI.<sup>1,2</sup> Usual ECG findings of left ventricular aneurysm include ST-segment elevation that persists more than 2 weeks after STEMI, deep Q waves, and the absence of reciprocal ST-segment depressions. However, these features are neither sensitive nor specific for left ventricular aneurysm.<sup>3</sup> The less-than-expected T-wave amplitude relative to the QRS can be quantified using “proportionality” formulae, further supporting the diagnosis of LV aneurysm. (See Table 1.)

Importantly, neither rule’s test characteristics are sufficient to rule out ST-elevation MI in a symptomatic patient.

Hypertrophic cardiomyopathy is the most common cause of sudden cardiac death among individuals under 40 years of age, and a cause of outflow obstruction. ECG findings include left ventricular hypertrophy, T wave inver-

**Table 1. LV Aneurysm Rules**

<b>Rule #1</b>	$\frac{\text{(sum of T wave amplitudes V}_1\text{+V}_2\text{+V}_3\text{+V}_4\text{)}}{\text{(sum of QRS amplitudes V}_1\text{+V}_2\text{+V}_3\text{+V}_4\text{)}} > 0.22$
<b>Rule #2</b>	$\frac{\text{(T wave amplitude)}}{\text{(QRS amplitude)}} \text{ In any lead V}_1\text{, V}_2\text{, V}_3\text{, or V}_4 \geq 0.36$
Rule #1 ~87% accuracy, Rule #2 ~89% accuracy.	

sions (especially in lateral leads), and narrow, “dagger” Q waves in the lateral leads (I, aVL, V5, V6).

Wellens syndrome is a syndrome of characteristic ECG findings—biphasic T waves (up then down) or deeply inverted and symmetric T waves in the anterior precordial leads V1-V3; in the correct clinical context, that suggests a critical stenosis of the left anterior descending artery.

Brugada syndrome is a sodium channelopathy with a characteristic ECG pattern (ST-segment elevation of  $\geq 2$  mm with a coved-type morphology in  $\geq 1$  right precordial lead) and an increased risk of sudden cardiac death, in the absence of gross structural heart disease.<sup>4</sup>

### Learnings/What to Look for

While the differential diagnosis for ST-segment elevation is broad, immediate stabilization and management of MI should be the priority for any patient with typical symptoms. In the context of recent myocardial infarction, it should be noted that left ventricular aneurysm, a delayed complication, can be associated with ST-segment elevation.

Key points to consider include:

- ST-segment elevation in precordial leads occurring  $> 2$  weeks after a myocardial infarction
- Associated with large Q-waves
- Low-amplitude T-waves identified visually or using “proportionality” formulae

### Pearls for Urgent Care Management

This patient’s symptoms may be attributable to mild heart failure. He warrants transfer for echocardiography to confirm the diagnosis of LV aneurysm suspected based on his ECG and identification of complications such as LV thrombus.

### References

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3. Klein LR, Shroff GR, Beeman W, Smith SW. Electrocardiographic criteria to differentiate acute anterior ST-elevation myocardial infarction from left ventricular aneurysm. *Am J Emerg Med.* 2015;33(6):786-790.
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Case courtesy of ECG Stampede ([www.ecgstampede.com](http://www.ecgstampede.com)).

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