



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 email the relevant materials and presenting information to [editor@juqm.com](mailto:editor@juqm.com).

## A 67-Year-Old Male with Shoulder and Neck Pain



Figure 1.

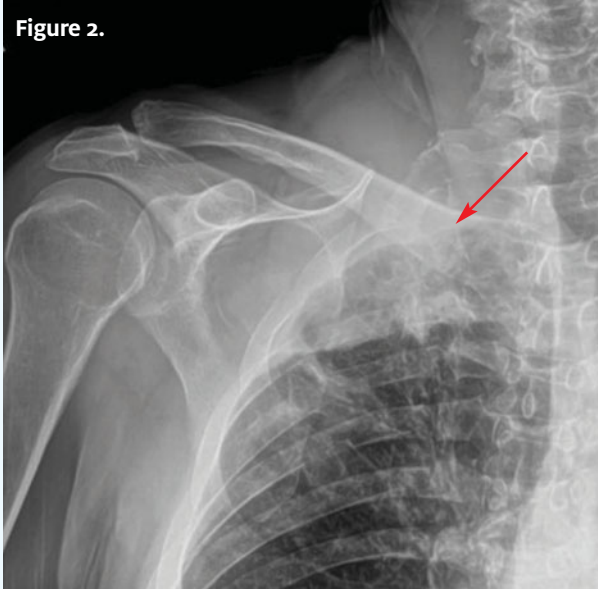
### Case

The patient is a 67-year-old man who presents with pain in his right shoulder and posterior right neck pain that he says radiates to his right arm. He reports that he first noted the pain “a few months ago” and is seeking care now because it has become more severe and “constant.”

Review the image taken and consider what the diagnosis and next steps would be. Resolution of the case is described on the next page.

THE RESOLUTION

Figure 2.



**Differential Diagnosis**

- Hill Sachs deformity/fracture
- Anterior shoulder dislocation
- Posterior shoulder dislocation
- Calcific tendonitis
- Pancoast tumor

**Diagnosis**

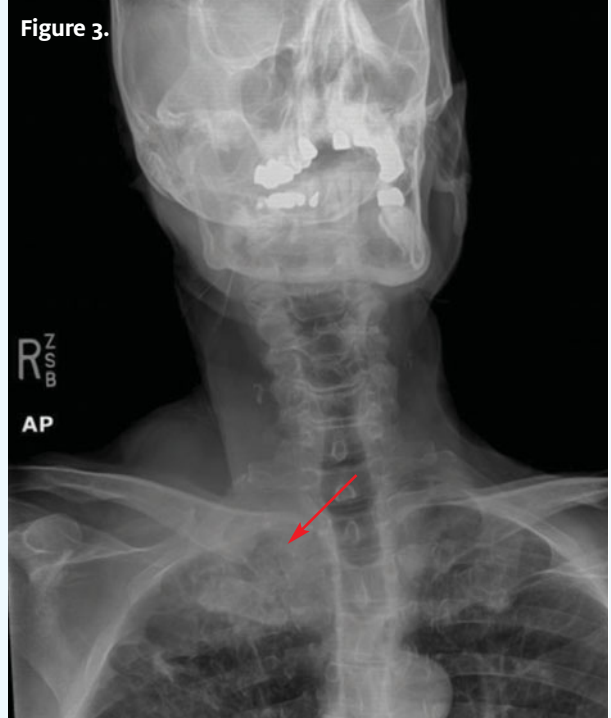
The patient was diagnosed with Pancoast tumor, a primary bronchogenic carcinoma in the apical region of the lungs. It is also referred as a superior sulcus tumor due to proximity to the superior pleuro pulmonary sulcus of the apical lung.

The chest x-ray that was also ordered (**Figure 3**) makes the diagnosis clear, without the distraction of the history of shoulder pain and the imaging focus on the shoulder.

**Learnings/What to Look for**

- This tumor has unique characteristics and presentations due to its proximity to the superior thoracic aperture, apical pleura, subclavian vessels, brachial plexus, stellate sympathetic ganglion, recurrent laryngeal nerve, superior mediastinum, ribs, and the thoracic spine
- Initial symptoms are usually localized as shoulder or neck pain

Figure 3.



- Radiographic findings include an apical mass or asymmetric unilateral pleural thickening
- In advanced stage one may see lytic lesions of the ribs or spine

**Pearls for Urgent Care Management and Considerations for Transfer**

- Referral to oncology is warranted
- Treatment of the Pancoast tumor differs from other lung carcinomas due to anatomic location and proximity to neurovascular structures complicating a surgical procedure. Presurgical chemo and radiation therapy are often utilized to downsize the tumor. Surgical excision may require removal of the entire upper lobe with adjoining involved neurovascular, bony and lymph node structures

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



## A 24-Year-Old Male with Papules in His Mouth



### Case

The patient is a 24-year-old male who presents for a pre-employment physical. While undergoing his exam, he mentions being “curious” about tiny papules he noticed recently in his mouth on the inside of his cheek. They seemed to be a group of slightly yellow lesions, present on both sides of his mouth. He reports that they have been there “for a few months,” but they have not caused discomfort so he hasn’t sought care.

Review the image above and consider what your diagnosis and next steps would be. Resolution of the case is described on the next page.

## THE RESOLUTION

**Differential Diagnosis**

- Sebaceous hyperplasia
- Fordyce spots
- Rubeola
- Oral candidiasis

**Diagnosis**

This patient was diagnosed with Fordyce spots—superficial sebaceous glands seen on mucosal surfaces of approximately 80% of the population. Because they are so prevalent, their occurrence is considered a normal anatomic variation.

**Learnings/What to Look for**

- Fordyce granules are usually multiple and clustered, and are often found on the oral mucosa and the vermillion of the lips
- Fordyce granules are also often present on the genitalia. They are not associated with hair follicles
- The tiny papules can appear at any point in life but the incidence increases with age, probably associated with hormonal influences

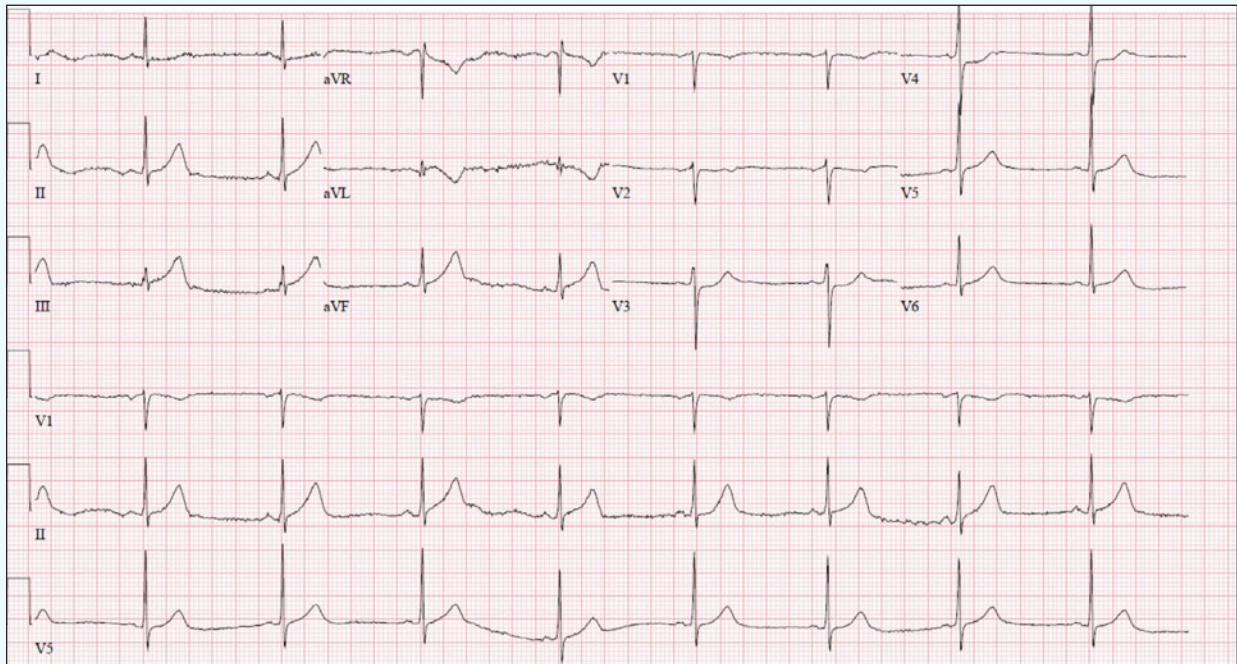
**Pearls for Urgent Care Management and Considerations for Transfer**

- The lesions are asymptomatic. They can be present for years and the patient is usually unaware of their presence. No treatment is required

**Acknowledgment:** Images and case courtesy of VisualDx ([www.VisualDx.com/JJUCM](http://www.VisualDx.com/JJUCM)).



# A 67-Year-Old Male with Classic Signs of Myocardial Infarction



**Figure 1.** ECG upon urgent care arrival, 1 hour after pain onset.

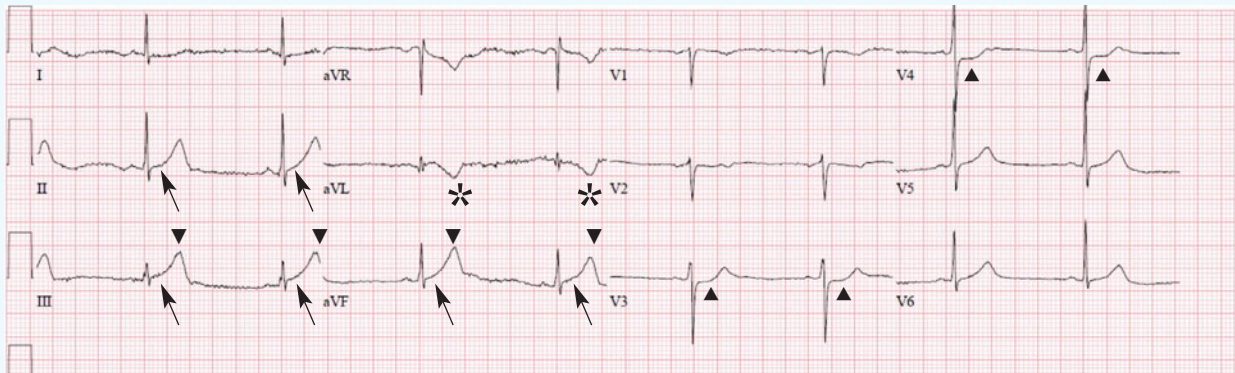
## Case

The patient is a 67-year-old male with no medical history who presents with severe chest pain radiating to his left arm that started 1 hour prior to arrival. The patient also endorses progressive dyspnea on exertion of six months duration.

View the ECG and consider what the diagnosis and next steps would be. Resolution of the case is described on the next page. (Case contributed by Gregory J Ducach, MD.)



## THE RESOLUTION



**Figure 2.** The initial ECG shows ST straightening in the inferior leads II, III, aVF (arrows) where the ST segments lose their normal concavity and start to “straighten.” The t waves in the inferior leads, while not large at first glance, are relatively large (or hyperacute) when compared to the size of their associated QRS complexes (▼). Often, the first reciprocal finding of an inferior myocardial infarction is a t-wave inversion in aVL (asterisks). Lastly, subtle reciprocal ST depressions can be seen in the precordial leads V3 and V4 (▲).

### Differential Diagnosis

- Benign early repolarization (BER)
- Acute pericarditis
- Evolving inferior ST-elevation myocardial infarction (STEMI)
- Non-ST-elevation myocardial infarction (NSTEMI)
- Posterior myocardial infarction

### Diagnosis

This patient was ultimately diagnosed with an inferior ST-elevation myocardial infarction (STEMI), seen here in the early stage of evolution.

The rhythm is sinus with a rate of 50 beats per minute, the axis and intervals are normal. The astute provider will recognize the subtle ECG changes that predict inferior myocardial infarction including ST-straightening in the inferior leads, hyperacute t waves in the inferior leads, and reciprocal changes in aVL, V3, and V4 (**Figure 2**). The patient’s symptoms, together with this ECG suggesting early inferior infarct, are worrisome for acute coronary syndrome and pending inferior STEMI. A repeat ECG performed 20 minutes later confirm inferior STEMI (**Figure 3**).

An inferior STEMI is present when at least two contiguous inferior leads (II, III, AVF) demonstrate >1 mm ST-segment elevation. Between 80% and 90% of inferior myocardial infarctions are due to occlusion of the right coronary artery, while the remainder are due to occlusion of the left circumflex artery.<sup>1</sup> Often, the atrioventricular node can be involved as it generally shares the blood supply with the inferior wall, which can manifest clinically as atrioventricular blocks.

Large inferior infarcts can also involve the right ventricle or extend to the posterior wall.<sup>1</sup> Right ventricular involvement is often reflected as concomitant ST elevation in V1, the most rightward-oriented precordial lead, and can be further supported by application of right sided leads, with ST elevation in V<sub>4R</sub> being

the most sensitive.<sup>1</sup>

ST elevation in lead III greater than ST elevation in lead II can also suggest right ventricular involvement.<sup>1</sup> This is prognostically significant, since right ventricular involvement implies a larger lesion and is associated with higher mortality rates.

Clinically, these patients are preload-dependent and may warrant intravenous fluid administration if hypotensive. It is key to avoid nitrates in this subset of patients as these are known to decreased preload.<sup>2</sup>

Posterior involvement is reflected electrocardiographically by horizontal ST depression in V1-V3, upright T waves, and tall R waves (late finding).<sup>3</sup> Like right ventricular involvement, posterior extension implies larger infarctions, which carry a higher mortality rate.<sup>4</sup> The ST depressions in V2-V6 manifested in the second ECG (**Figure 3**) may indeed represent posterior extension.

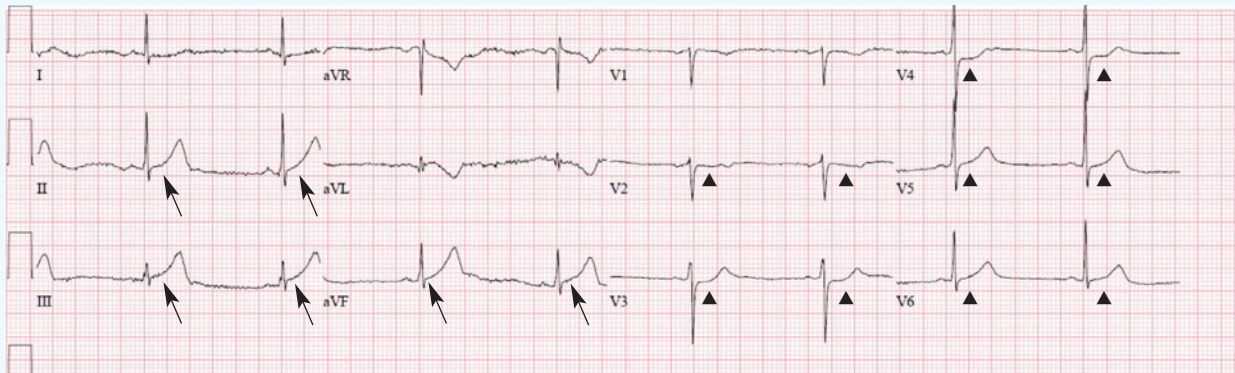
### Benign early repolarization (BER)

Benign early repolarization is an ECG finding characterized by diffuse, fixed, concave-up ST-segment elevations without reciprocal changes, and notching of the terminal QRS complex.<sup>5</sup> This finding is noted in 10%–15% of individuals presenting to emergency departments with chest pain and is considered as a non-pathologic normal variant. It is more prevalent in young, healthy individuals under the age of 50, and is relatively uncommon in those over the age of 50.<sup>5</sup>

### Pericarditis

The pain associated with pericarditis is often described as sharp and pleuritic, relieved by sitting forward, and worsened by lying back. ECG findings of pericarditis include diffuse ST elevation, absent reciprocal changes, PR-segment depression, and sometimes a down-sloping ST segment known as “Spodick’s sign.” Like benign early repolarization, the ST segments of pericarditis

## THE RESOLUTION



**Figure 3.** ECG performed 20 minutes later confirming the presence of an inferior MI. There is contiguous ST elevation in the inferior leads II, III, and aVF (arrows) with reciprocal ST depressions in aVL, and V2 through V6 ( ).

are concave up, contrasting with the ST segment of STEMI which is often flat or concave down. It is important to note, however, that while morphology is suggestive, it is only a guide to interpretation and should not be considered in isolation when differentiating STEMI from other causes of ST elevation.<sup>6</sup>

#### Non-ST-elevation myocardial infarction

NSTEMI is diagnosed specifically by evidence of acute myocardial injury via elevated cardiac biomarkers (troponin I or troponin T).<sup>7</sup> Though this patient's initial ECG did not meet criteria for STEMI (owing to <1 mm ST elevation) and his initial troponin was not elevated, it is highly suggestive of an occlusive myocardial infarction. The subsequent ECG did meet STEMI criteria.

#### Learnings/What to Look for

- A new t-wave inversion in aVL can be the first electrocardiographic sign of inferior myocardial infarction
- Consider serial ECGs in patients for whom there is a suspicion for acute coronary syndrome, especially when presenting early in their course
- With inferior infarction, consider concomitant right ventricular involvement and avoid nitrates

#### Pearls for Urgent Care Management and Considerations for Transfer

- Administration of aspirin has a mortality benefit; administer 160-325 mg chewable aspirin with STEMI
- Immediate transfer to a percutaneous coronary intervention-capable facility is indicated in patients with suspected STEMI
- When transfer to a percutaneous coronary intervention-capable facility is unavailable or will result in delayed care (> 120 minutes), the urgent care physician should consider thrombolysis if possible<sup>8</sup>

#### References

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