



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@jucm.com.

A 28-Year-Old Man with Diarrhea and Abdominal Pain

Figure 1.



Figure 2.



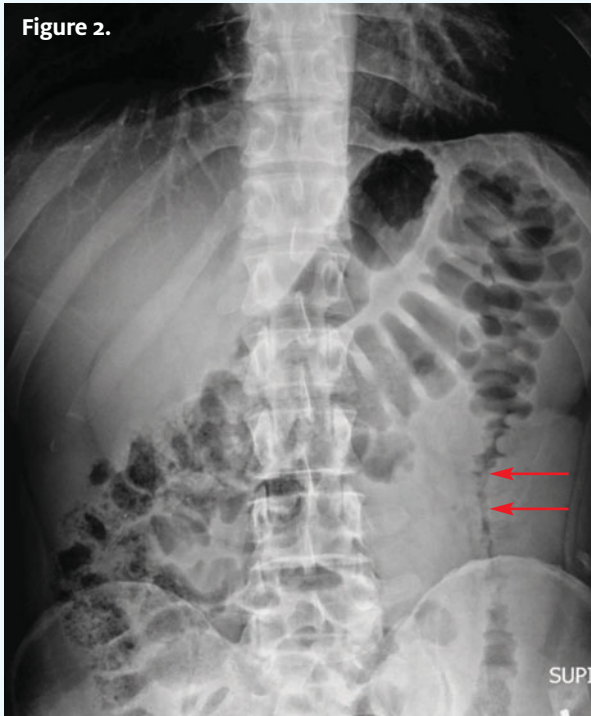
Case

The patient is a 28-year-old male who presents with a complaint of diarrhea and a 1-week history of abdominal pain. He reports no food allergies, recent travel, or known exposure to sick contacts.

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

THE RESOLUTION

Figure 2.

**Differential Diagnosis**

- Appendicitis
- Diverticulitis
- Epiploic appendagitis
- Omental infarction
- Segmental colonic thickening

Diagnosis

This patient was diagnosed with segmental colonic thickening, with possible colitis. The 12 cm segment of persistent narrowing in the descending colon indicates this to be segmental disease. The information in **Table 1** may be helpful in delineating the extent of disease in patients with this diagnosis.

Learnings/What to Look for

- Almost any pathologic condition can affect any areas of the colon. However, some pathologic entities have a propensity to localize to certain areas:
 - Cecal region – amebiasis, typhlitis (neutropenic colitis), tuberculosis
 - Isolated splenic flexure and proximal descending colon – watershed area for low-flow intestinal ischemia
 - Rectum – early stages of ulcerative colitis, stercoral colitis
 - Multiple skip regions – Crohn's disease

Table 1. Differential Diagnosis of Colonic Thickening**Focal disease (2 to 10 cm)**

- Neoplasm
- Diverticulitis
- Epiploic appendagitis
- Infection (tuberculosis/amebiasis)

Segmental disease (10 to 40 cm)

- Usually colitis
- Crohn's colitis
- Glutaraldehyde colitis
- Ischemia
- Infection
- Ulcerative colitis (typically begins in the rectum and spreads proximally)
- Rarely neoplasm (especially lymphoma)

Diffuse disease (most of the colon)

- Always benign
- Infection
- Ulcerative colitis
- Vasculitis (almost always involves the small bowel as well)

- There is significant overlap in the degree of colonic wall thickening among different colonic pathologic processes
 - Mild thickening – plaque-like tumors, mild colonic inflammation
 - Marked colonic thickening > 1.0 to 1.5 cm – pseudomembranous, tuberculous, cytomegalovirus colitis, colonic neoplasms, vasculitis

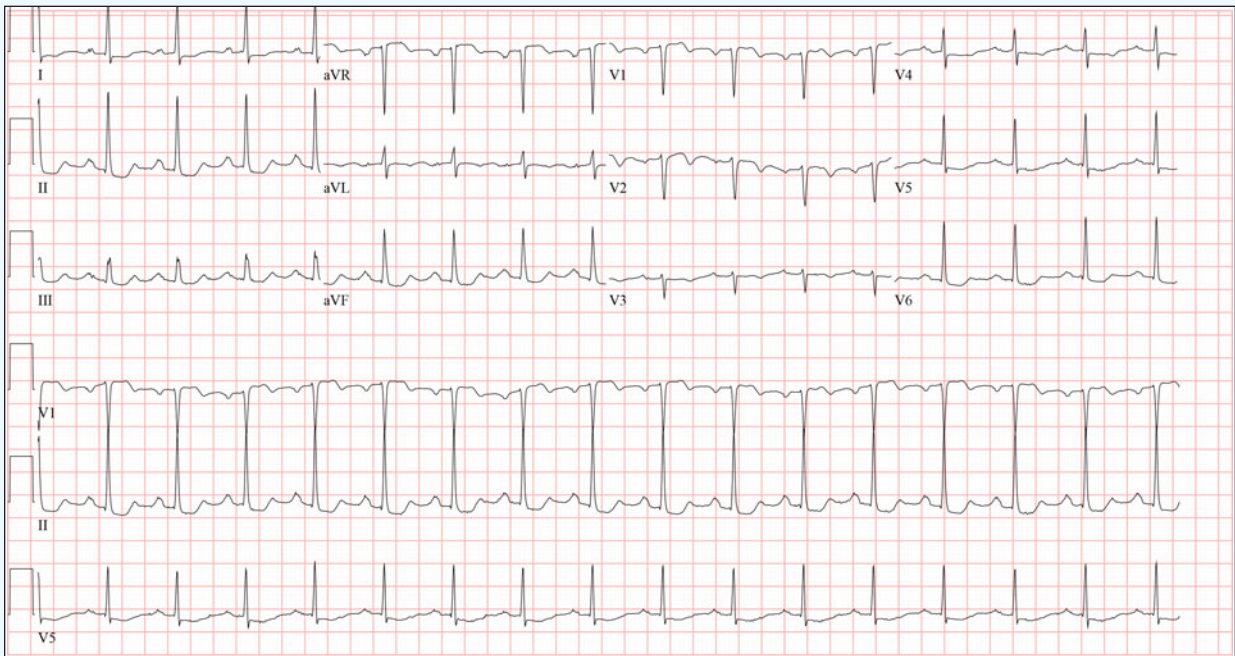
Pearls for Urgent Care Management and Considerations for Transfer

- CT is most helpful in assessing colon cancer vs focal/segmental diverticulitis. An acute abdominal series does not have the sensitivity to reliably diagnose serious urgent care conditions such as appendicitis, small bowel obstruction, or malignancy

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



A 74-Year-Old Female with Multiple Episodes of Chest Pain Over a 2-Day Period



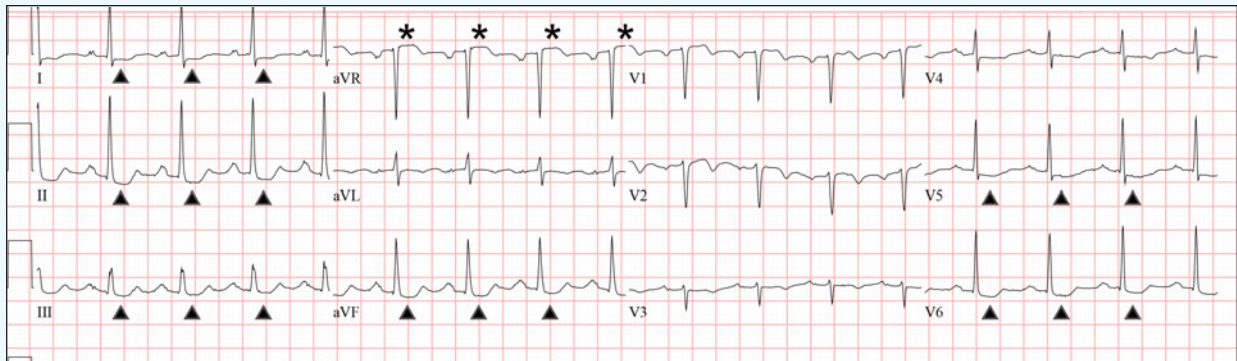
Case

A 74-year-old female presents to urgent care complaining of two episodes of chest pain in the past 2 days. The pain is mid-sternal, squeezing, does not radiate, and began at rest. The patient denies associated nausea, vomiting, diaphoresis, cough, lower extremity swelling or pain. Personal medical history is remarkable for hypertension, asthma, and diabetes.

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

(Case presented by Jonathan Giordano, DO, MS, MEd, The University of Texas Health Science Center at Houston McGovern Medical School.)

THE RESOLUTION

**Differential Diagnosis**

- Diffuse subendocardial ischemia
- Hypokalemia
- Left ventricular hypertrophy (LVH) with strain
- ST-Elevation myocardial infarction (STEMI)
- Ventricular tachycardia

Diagnosis

The ECG reveals a regular, narrow-complex, sinus rhythm at a rate of 96 beats per minute. There is a normal axis and normal intervals. There are diffuse ST-segment depressions (identified by the arrows) in the inferolateral leads and >1 mm ST-segment elevation (see asterisks) in aVR. This patient was diagnosed with ST-elevation myocardial infarction (STEMI).

The pattern of diffuse ST-segment depressions with ≥ 1 mm ST-segment elevation in aVR suggests left main coronary artery or triple-vessel disease.^{1,2} The most recent European Society of Cardiology guidelines recommend emergent reperfusion strategies for these patients in the setting of symptoms consistent with acute coronary syndrome.³

The challenge with this ECG pattern is that it can also be seen in patients not presenting with symptoms of acute coronary syndrome. In one study, 142 ECGs with this pattern were collected and only 28% were associated with acute coronary syndrome.⁴ Essentially any disease processes that lead to global subendocardial ischemia can present with ECG findings of diffuse ST-segment depressions with ≥ 1 mm ST-segment elevation in aVR, often secondary to supply/demand mismatch in the absence of acute coronary syndrome. Several can't-miss diagnoses can present with this pattern, including pulmonary embolism,⁵ severe anemia, hypoxia, and shock.⁴ This pattern can also be seen in tachydysrhythmias where resolution of the ST segment changes is expected after conversion. A similar pattern can also be seen with left ventricular hypertrophy and metabolic disorders, like hypokalemia.⁶

Learnings/What to Look for

- In the setting of acute coronary syndrome, diffuse ST-segment depressions with ≥ 1 mm ST-segment elevation in aVR are suggestive of left main coronary artery or significant multivessel disease
- Global subendocardial ischemia can result from any disease process that creates a supply/demand mismatch, including pulmonary embolism, severe anemia, hypoxia, and shock
- This pattern can also be caused by tachydysrhythmias, left ventricular hypertrophy, and hypokalemia
- Compare to a prior ECG when available

Pearls for Initial Management and Considerations for Transfer

- In the setting of acute coronary syndrome, diffuse ST-segment depressions with ≥ 1 mm ST-segment elevation in aVR warrant emergent transfer to percutaneous coronary intervention capable center
- Consider alternative diagnoses when the patient's complaint is not consistent with acute coronary syndrome

References

1. Wagner GS, Macfarlane P, Wellens H, et al. AHA/ACCF/HRS recommendations for the standardization and interpretation of the electrocardiogram. Part V: electrocardiogram changes associated with cardiac chamber hypertrophy. *Circulation*. 2009;53(11):1003-1011.
2. Kosuge M, Ebina T, Hibi K, et al. An early and simple predictor of severe left main and/or three-vessel disease in patients with non-ST-segment elevation acute coronary syndrome. *Am J Cardiol*. 2011;107(4):495-500.
3. Ibanez B, James S, Agewall S, et al. 2017 ESC guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation. *Eur Heart J*. 2018;39(2):119-177.
4. Knotts RJ, Wilson JM, Kim E, et al. Diffuse ST depression with ST elevation in aVR: is this pattern specific for global ischemia due to left main coronary artery disease? *J Electrocardiol*. 2013;46(3):240-248.
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6. Chua CE, Choi E, Khoo EYH. ECG changes of severe hypokalemia. *QJM*. 2018;111(8):581-582.

Acknowledgment: JUCM appreciates the assistance of ECG Stampede (www.ecgstampede.com) in sourcing content for electrocardiogram-based cases for Insights in Images each month.

ECG STAMPEDE



A 25-Year-Old Woman with Plaques on Her Elbows and Feet



Case

The patient is a 25-year-old woman who presents with 1 month of smooth, red-brown plaques on her elbows and the tops of her feet which are pruritic. The lesions are round with a slightly darker ring on the outside, with no scaling or significant surface change to the skin. She has no systemic symptoms.

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

THE RESOLUTION

**Differential Diagnosis**

- Tinea corporis
- Granuloma annulare
- Necrobiosis lipoidica
- Lichen planus

Diagnosis

This patient was diagnosed with granuloma annulare (GA), a benign granulomatous inflammatory disorder of the dermis or subcutis. Its cause is unknown, but there are reports in the literature suggesting that GA is associated with certain triggers or systemic diseases, most commonly diabetes mellitus. Other diseases that may be associated include thyroid disease, dyslipidemia, malignancy, and infections. GA occurs in women twice as often as it does in men; two-thirds of patients with GA are under 30 years of age.

Learnings/What to Look for

- Small dermal papules may present in isolation or coalesce to form smooth annular plaques, often on extremities
- Lesions are typically asymptomatic or only mildly pruritic, but the appearance may cause distress for the patient
- There are three principal variants of GA: localized (75% of cases), disseminated (or generalized), and subcutaneous (also known as pseudo-rheumatoid nodules). Patch GA is a variant of localized GA in which the plaques are extremely thin and barely palpable. A fourth type—perforating GA—refers to rare lesions that demonstrate histologic evidence of transepidermal extrusion of degraded collagen

Pearls for Urgent Care Management and Considerations for Transfer

- GA usually resolves spontaneously with no adverse sequelae
- Some cases may be persistent or recurrent

Acknowledgment: Images and case presented by VisualDx (www.VisualDx.com/JUCM).