CLINICAL CHALLENGE: CASE 1

Challenge your diagnostic acumen: Study the following x-rays, electrocardiograms, and photographs and consider what your diagnosis might be in each case. While the images presented here are authentic, the patient cases are hypothetical. Readers are welcome to offer their own patient cases and images for consideration by contacting the editors at editor@jucm.com.

12-Year-Old With Facial Trauma

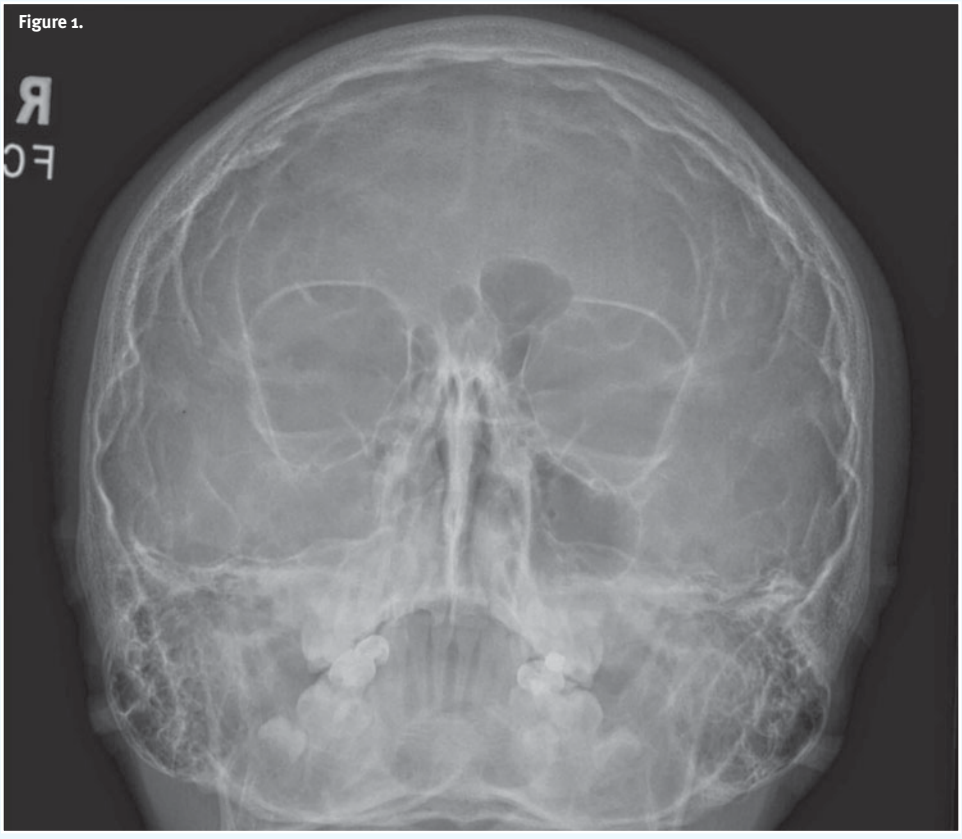
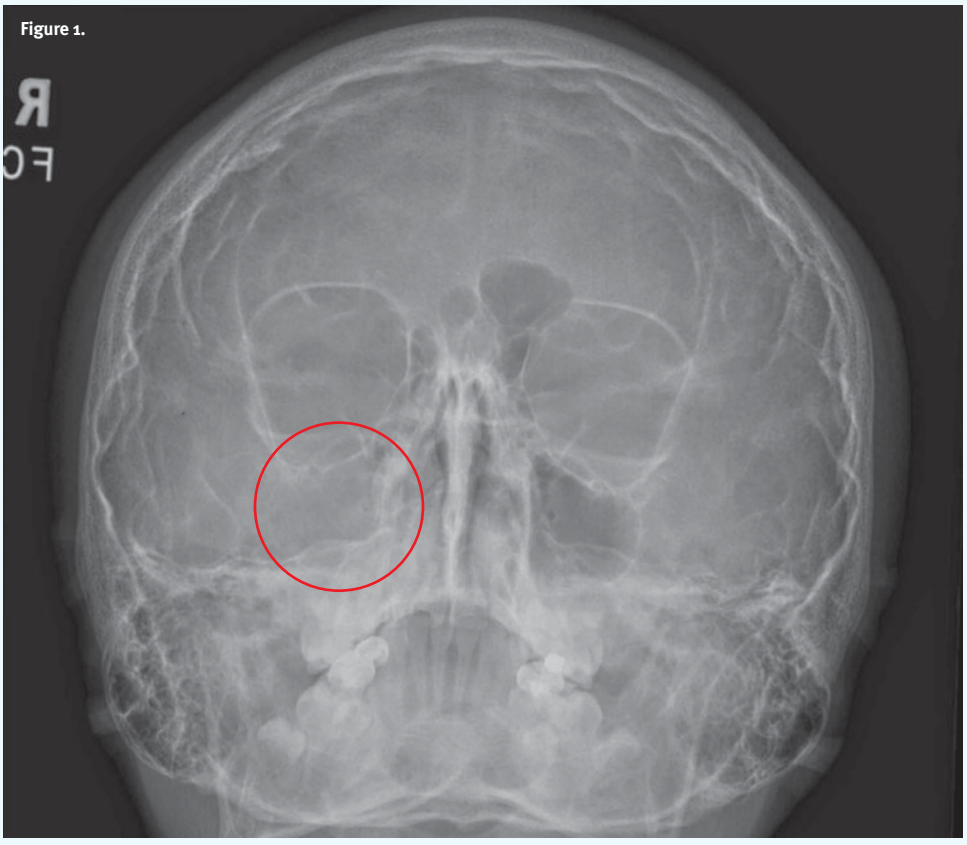


Figure 1.

A 12- year-old male presents to urgent care with his mother complaining of facial pain. The patient experienced a trip-and-fall accident at home. He landed on a carpeted floor and now complains of facial pain.

View the image taken (occipitomental/Waters view) and consider what your diagnosis and next steps would be. Resolution of the case is described on the following page.



Differential Diagnosis
- Orbital fracture
- Sinus opacity
- Maxillary sinus fracture
- Nasal fracture

Diagnosis
The correct diagnosis is sinus opacity, as this x-ray demonstrates opacification of the right maxillary sinus with loss of the lateral sinus wall outline. Ultimately, it was discovered that this patient had a mass eroding the lateral sinus wall. Sinus opacity can be caused by many diseases including orbital floor/wall trauma, mucocele, neoplasm, and sinonasal polyposis.

What to Look For
- Clinically, look for pain, swelling, and tenderness over the affected sinus (maxillary, ethmoid, or sphenoid)
- On x-ray, loss of the air in the sinus or an air-fluid level within the sinus is present
- Maxillary sinus is the most prominent on x-ray; ethmoid and sphenoid sinuses are difficult to evaluate on plain radiography

Pearls for Urgent Care Management
- Unilateral maxillary sinus opacification is usually inflammatory in nature
- However, due to the varied causes, additional imaging (ie, CT sinus) is warranted for further evaluation

Acknowledgement: Images and case provided by Experity Teleradiology (www.experityhealth.com/teleradiology).

53-Year-Old With Spreading Rash


Figure 1.

A 53-year-old man presents to urgent care concerned about a spreading rash underneath his arms for the past 3 weeks. He initially thought it was an allergic reaction to a new deodorant, but the rash persisted after stopping the deodorant. The rash is not itchy. The patient has a history of type 2 diabetes. On examination, a broad, well-demarcated, thin, scaly plaque is seen extending from the lateral chest over the axilla to the upper arm.

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

Figure 2.

Differential Diagnosis

- Acanthosis nigricans
- Erythrasma
- Inverse psoriasis
- Tinea corporis

Diagnosis

The correct diagnosis in this case is erythrasma. Erythrasma is a common, superficial bacterial infection caused by *Corynebacterium minutissimum* and may be acute or chronic. It is more common in diabetic patients, immunocompromised patients, obese patients, and older patients. It is also more common in regions with high humidity.

What to Look For

- Distinct, superficial hyperpigmented or erythematous patches localized to intertriginous areas, especially of the axillae, genitocrural crease, and interdigital web space of the toes
- Discoform is a rare variant with round plaques not in the intertriginous areas (as above)
- Lesions are often asymptomatic, although pruritus may be present, especially when it affects the genitocrural region
- Wood's lamp exam demonstrates coral-red fluorescence

Pearls for Urgent Care Management

- First line treatment is topical antibacterial agents including clindamycin or erythromycin
- The topical imidazole antifungal also has activity against *C. minutissimum*
- Extensive erythrasma may require oral clindamycin or erythromycin

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

CLINICAL CHALLENGE: CASE 3

18-Year-Old With Chest Pain

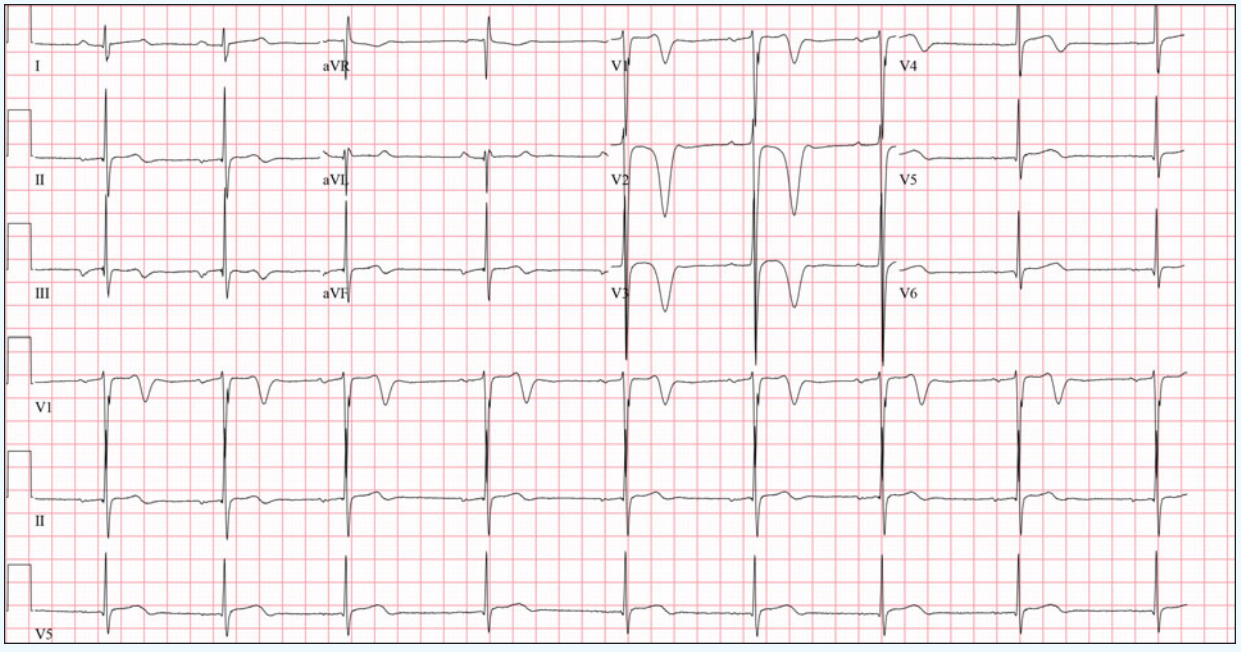


Figure 1: Initial ECG

An 18-year-old male presents with chest pain with coughing for one day. The patient has no known medical history.

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

Case presented by John McCarthy, MD, PGY3 resident at UTHealth Houston.

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

ECG STAMPEDE

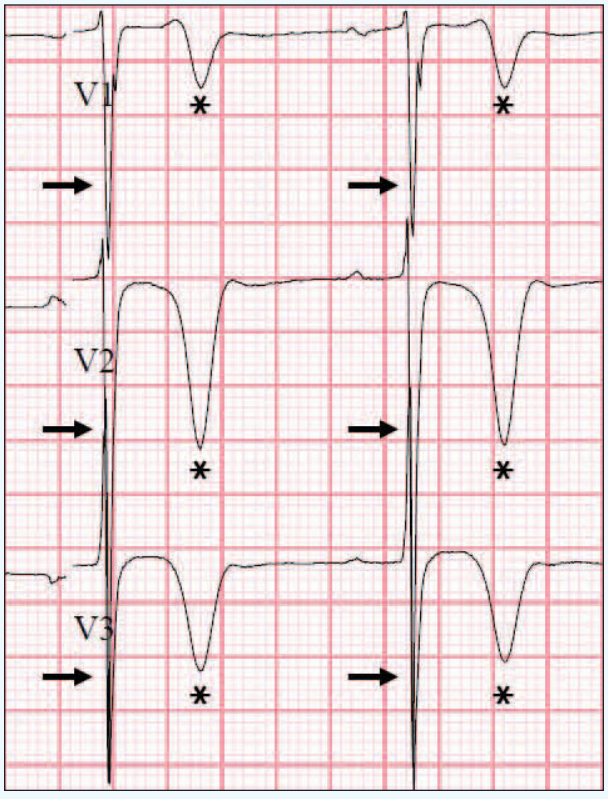


Figure 2. Symmetric T-wave inversions (asterisks) and large QRS complexes (arrows) in the precordial leads V1 through V3.

Differential Diagnosis

- Wellens syndrome
- Hypokalemia
- Subarachnoid hemorrhage
- Persistent juvenile T-wave pattern
- Hypertrophic cardiomyopathy

Diagnosis

The diagnosis is hypertrophic cardiomyopathy. The ECG reveals sinus bradycardia with a rate of 54 beats per minute. There are impressive, symmetric T-wave inversions in the anterior precordial leads V1 through V4 and large QRS complexes in V1 through V3.

Hypertrophic cardiomyopathy (HCM) is the most common cause of sudden cardiac death in individuals under 40 years of age.[1] It's not uncommon to see repolarization abnormalities like the ones seen here (**Figure 2**). Common ECG findings include large QRS complexes of left ventricular hypertrophy, T wave inversions (especially in lateral leads), and narrow, "dagger" Q waves in the lateral leads (I, aVL, V5, V6).[2,3] Symmetric T-wave inversions in the precordial leads is suggestive of apical HCM, although this patient had septal hypertrophy (**Figure 3**).

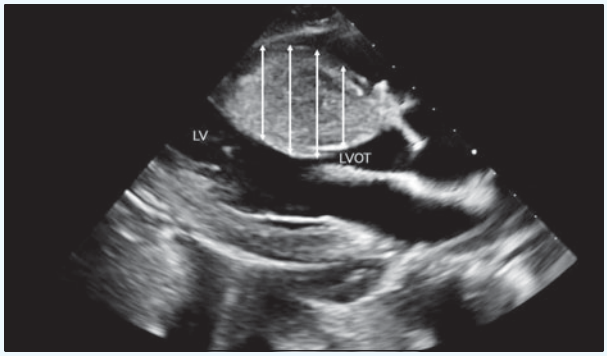


Figure 3. The patient's echocardiogram showing septal hypertrophy (white arrows); LV, left ventricle; LVOT, left ventricular outflow tract.

Physical exam may show the classic finding of a harsh crescendo-decrescendo mid-systolic murmur best heard at the lower left sternal border, which becomes louder when ventricular volume is low (ie, with Valsalva maneuver or going from squatting to standing).

HCM is characterized predominantly by left ventricular hypertrophy in the absence of another explanatory cardiac, systemic, or metabolic disease state. Nearly any pattern of wall thickening can be present, with the anteroseptal most affected.[2] Disease severity depends upon the exact location of the thickening, the amount of the thickening, and the degree of obstruction to left ventricular outflow that the thickening causes.

If syncope or other symptoms suggesting a possible life-threatening dysrhythmia are present, transfer to a higher level of care is warranted.

What to Look For

- ECG findings of HCM include large QRS complexes of left ventricular hypertrophy, T wave inversions, and narrow, "dagger" Q waves in the lateral leads

Pearls for Initial Management, Transfer

- Patients with possible HCM and syncope should be transferred to a cardiac-capable facility
- Limit tachycardia to allow left ventricular filling. Beta blockers or non-dihydropyridine calcium channel blockers may be warranted while arranging transfer.

References

1. Semsarian C, Ingles J, Maron MS, Maron BJ. New perspectives on the prevalence of hypertrophic cardiomyopathy. *J Am Coll Cardiol*. 2015;65(12):1249-1254. doi:10.1016/J.JACC.2015.01.019
2. Ommen SR, Mital S, Burke MA, et al. 2020 AHA/ACC Guideline for the Diagnosis and Treatment of Patients With Hypertrophic Cardiomyopathy: A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines. *J Am Coll Cardiol*. 2020;76(25):e159-e240. doi:10.1016/J.JACC.2020.08.045
3. Wagner GS, Strauss DG. *Marriott's Practical Electrocardiography*. 12th ed. Lippincott Williams & Wilkins; 2014.