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.

29-Year-Old With Chronic Hip Pain

Figure 1.

A 29-year-old man presents to urgent care complaining of chronic right hip pain with movement and exercise. He's an avid mountain climber and used to play sports in college.

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

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

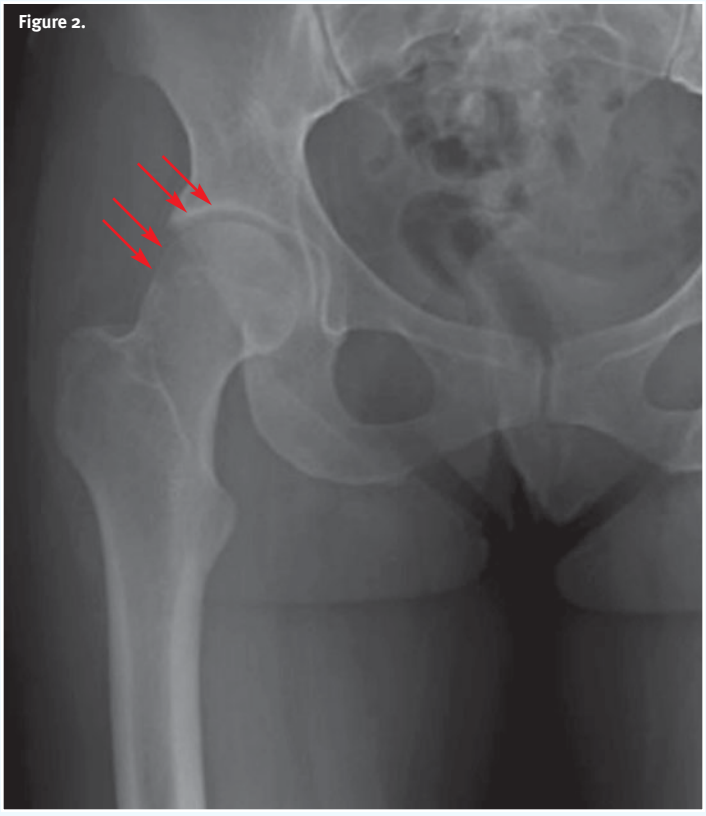
Figure 2.

Differential Diagnosis
- Osteoarthritis of the hip joint
- Femoroacetabular impingement syndrome
- Osteonecrosis of the hip joint
- Femoral head fracture

Diagnosis
The imaging above demonstrates a decreased offset and pistol grip deformity of the femoral head/neck junction. The correct diagnosis is femoroacetabular impingement (FAI) syndrome, cam morphology. There are two morphologies of FAI: cam and pincer. Cam is more common in young men, and pincer is more common in middle-aged women.

What to Look For
- Risk factors include high impact sports (especially in adolescents), overuse activity, previous slipped capital femoral epiphysis, and post-traumatic deformities
- The most common symptom is groin pain related to movement and/or position

Pearls for Urgent Care Management
- X-ray is the appropriate first line imaging modality, however, magnetic resonance imaging may be needed to make the diagnosis
- Treatment includes activity moderation, physical therapy, and non-steroidal anti-inflammatory drugs
- If symptoms do not improve with conservative management, surgery may be needed, and orthopedic referral is indicated

56-Year-Old With Cancer and Developing Rash


Figure 1.

A 56-year-old woman presents to urgent care for a rash that developed on her hands, ears, and nose over the last couple of months. She has a recent diagnosis of esophageal cancer. On examination, hyperkeratotic plaques were seen on the palm and fingers, and scaly papules were seen on her helices and nose. Her nails displayed subungual hyperkeratosis, onychodystrophy, and onycholysis along with erythema and edema on her nail folds.

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

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


Figure 2.

Differential Diagnosis
- Acrokeratosis paraneoplastica
- Dermatomyositis
- Palmoplantar keratoderma
- Psoriasis

Diagnosis
The correct diagnosis is acrokeratosis paraneoplastica. Also known as Bazex syndrome, it is a paraneoplastic dermatosis characterized by scaly, erythematous plaques that is commonly seen with squamous cell carcinomas of the upper aerodigestive tract and cervical lymphadenopathy from metastatic disease. Acrokeratosis paraneoplastica may appear prior to the diagnosis of an underlying malignancy.

What to Look For
- Findings of plaques like psoriasis located on the nose, ears, fingers and toes
- Associated alopecia, plantopalmar keratoderma, and nail changes may also be present

Pearls for Urgent Care Management
- If diagnosed, ensure the patient pursues malignancy work-up if current cancer diagnosis is not present
- Treatment of underlying malignancy may resolve cutaneous symptoms
- The most common direct treatment is oral acitretin

CLINICAL CHALLENGE: CASE 3

70-Year-Old With Fatigue and Edema

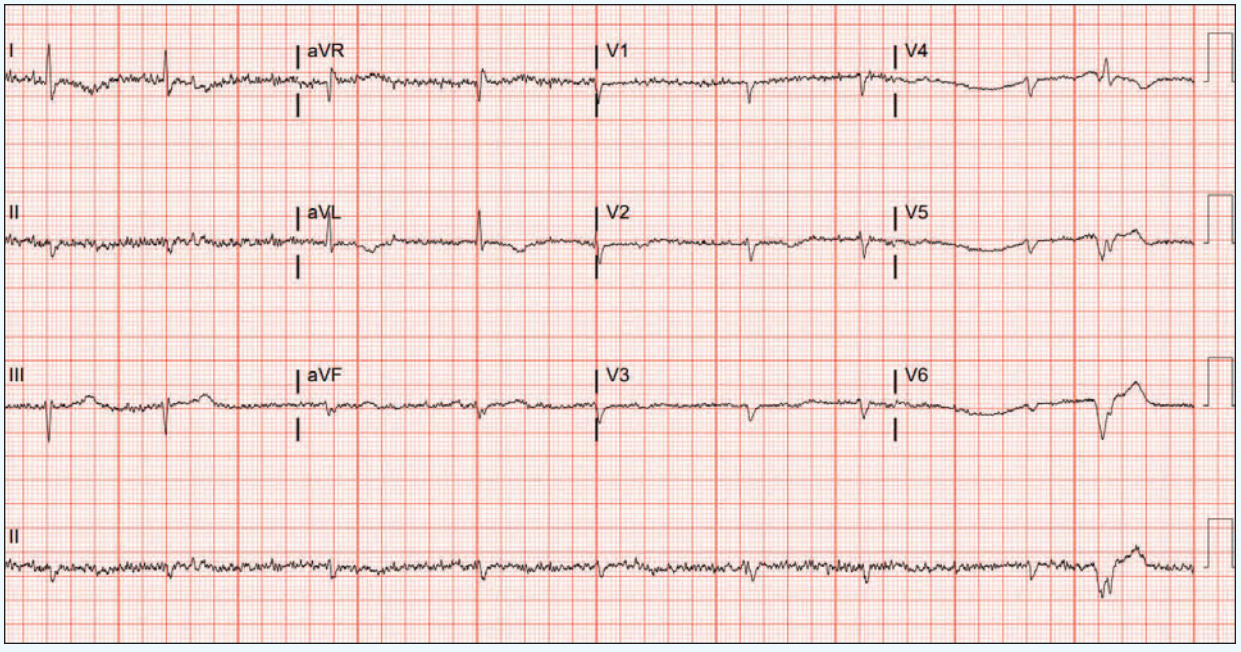

Figure 1: Initial ECG

A 70-year-old male with a history of atrial fibrillation presents to urgent care for 1 week of fatigue and edema of the lower extremities and face. An ECG is obtained.

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 Joe Stockhausen, MD

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

ECG STAMPEDE

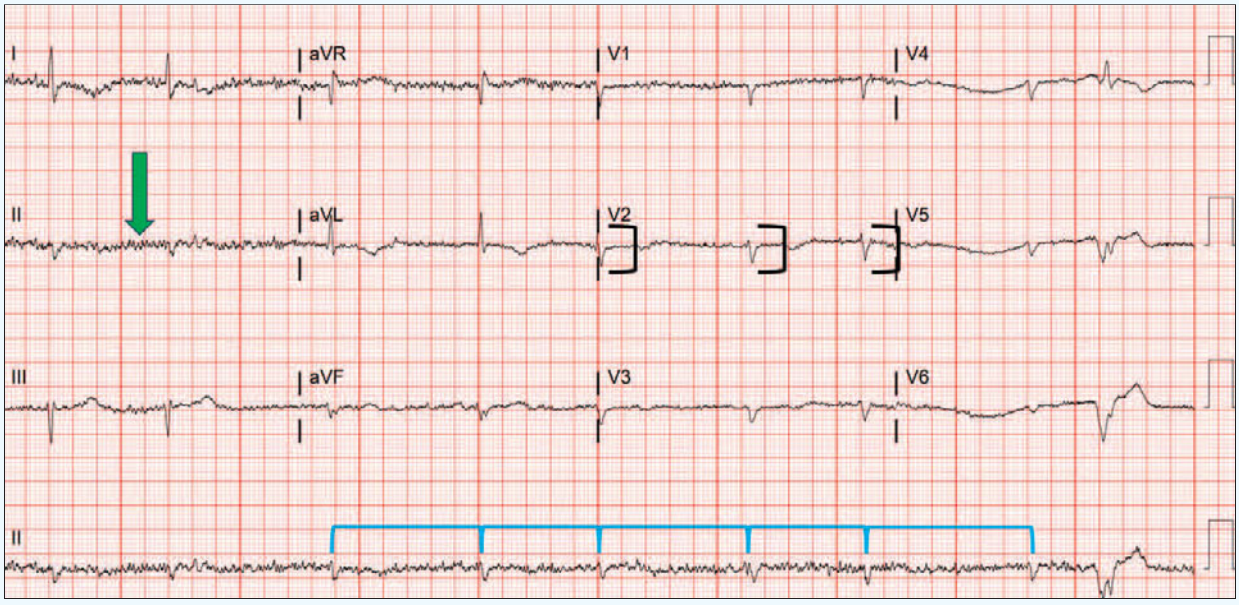

Figure 2: Atrial fibrillatory waves (green arrow), QRS complex in an irregularly irregular pattern (blue brackets), and low precordial voltage (‹ 10 mm of amplitude, black brackets).

Differential Diagnosis

- Complete heart block
- Digoxin toxicity
- Myxedema coma
- Hypothermia
- Beta blocker or calcium channel blocker toxicity

Diagnosis

The diagnosis is myxedema coma. The ECG reveals an irregularly irregular bradycardia with a rate of approximately 50 beats per minute and low voltage. Atrial activity shows fine fibrillations without discernible P waves consistent with atrial fibrillation.

Discussion

Atrial fibrillation is a condition where disorganized fibrillatory waves in the atria cause a lack of visible P waves on the surface ECG.[1] Only some signals are allowed through the atrioventricular (AV) node, which leads to an irregularly irregular ventricular rhythm (**Figure 2**). While atrial fibrillation typically involves ventricular rates ›100 beats per minute, slow ventricular response describes ventricular rates ‹60 beats per minute.[2]

The ECG in this case also has low voltage. Low voltage is defined as QRS amplitudes ‹5 mm in the limb leads or ‹10 mm in the precordial leads.[3] In this case, the patient had a QRS amplitude of ‹10 mm in all precordial leads.

When slow atrial fibrillation is encountered, the urgent care provider must consider a broad differential including, but not limited to, the 5 conditions listed above. The pathophysiology commonly involves slowed conduction through the atrioventricular node by a variety of causes, many of which can be ruled out with a comprehensive history and physical examination including medication use. Other conditions, such as hypothyroidism, require additional testing. The combination of low voltage and bradycardia is particularly concerning for hypothyroidism/myxedema.[4]

Thyroid hormones have multiple cardiac effects at the cellular level, including regulating the amount of beta-1 adrenergic receptors.[5] The sum of these effects leads to decreased rate and contractility. Hypothyroidism may also contribute to the presence of atrial fibrillation through the remodeling and fibrosis of the heart and its conduction system, leading to impaired atrial conduction.[6]

Hypothyroidism can cause low voltage through two mechanisms: the direct effects of hormonal deficiency on the generation of cardiac action potentials and the presence of a pericardial effusion (seen in up to one third of patients with hypothyroidism).[4,7] Patients with large effusions due to hypothyroidism will characteristically lack a compensatory tachycardic response, and will be bradycardic or normocardic.[8,9]

Digoxin toxicity can present with many different ECG manifestations including premature ventricular complexes, ventricular tachycardia, atrial fibrillation, and atrioventricular blocks.[1] Digoxin and other medication toxicities (eg, beta blockers or calcium channel blockers) can cause slow atrial fibrillation but are not associated with low amplitude. Complete heart block can occur in the setting of atrial fibrillation, but the rhythm is expected to be regular. Hypo-

thermia can also cause slow atrial fibrillation, but that was also not the case here.

What to Look For

- Slow atrial fibrillation is typically caused by slowed conduction through the atrioventricular node, which can be from a variety of different causes such as medications, ischemia, and myxedema
- Consider all causes of slow atrial fibrillation to avoid missing dangerous diagnoses, including performing a thorough medication reconciliation

Pearls for Initial Management, Considerations for Transfer

- Patients with severe hypothyroidism will require transfer to a higher level of care
- Hemodynamic instability could be caused by cardiac tamponade in patients with hypothyroidism, in which case fluid administration while preparing for immediate transfer is indicated

References

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