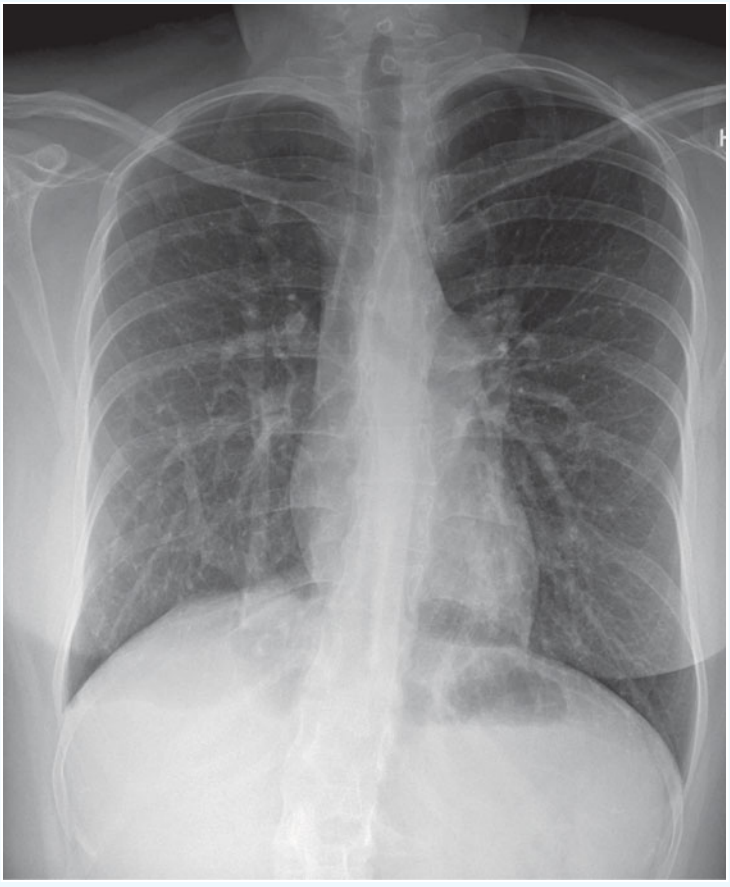
CLINICAL IMAGE CHALLENGE
X-RAY

Editor's Note: While the images presented here are authentic, the patient cases are hypothetical.

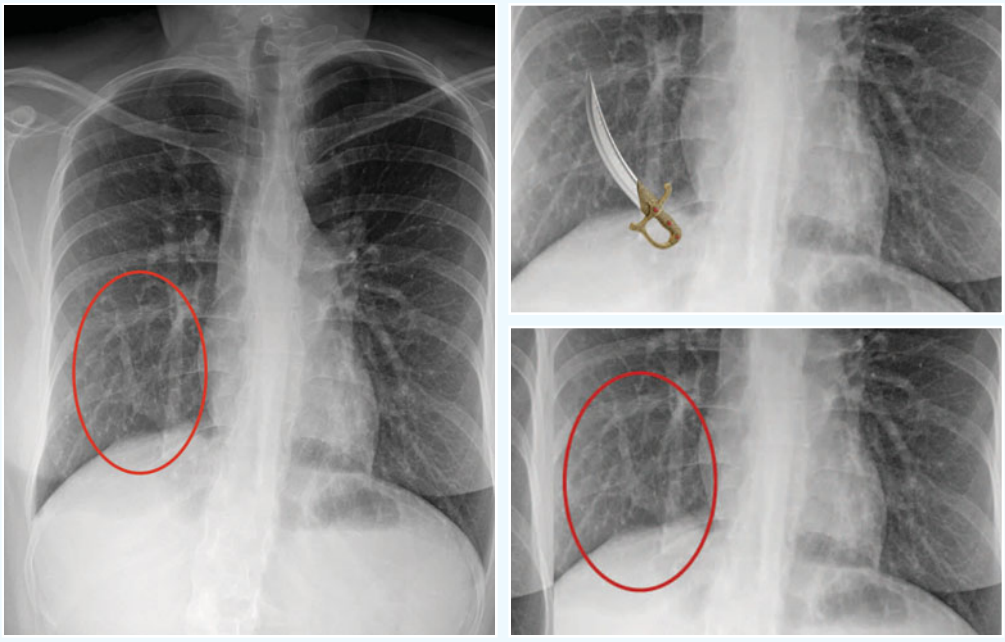
26-Year-Old Female With Cough, Shortness of Breath, and Fatigue



A 26-year-old female presents to urgent care with a persistent productive cough for 1 week. Over the past 3 days, she reports progressive shortness of breath and fatigue. She has a history of recurrent pneumonia. Vital signs show the patient is afebrile with normal blood pressure, heart rate, respiratory rate, and oxygen saturation. Physical examination reveals clear lung sounds with diminished air movement in the bilateral bases. Jugular venous distension (JVD) at 4 cm above the sternal angle and trace bilateral lower extremity edema to the ankles are noted. Cardiac exam reveals rightward displacement of the point of maximal impulse (PMI) and a 2/6 systolic murmur. Chest radiographs are ordered.

View the chest x-ray image 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).



Differential Diagnosis

- Bronchopulmonary sequestration
- Pulmonary vein dilatation
- Pulmonary abscess
- Community-acquired pneumonia
- Partial anomalous pulmonary venous return
- Pulmonary nodule
- Atelectasis

Diagnosis

A branching linear density is seen extending up from the slightly elevated right hemidiaphragm to the right lung base, and a vertical vein extends to the right upper chest. This may represent partial anomalous pulmonary venous return (PAPVR) with Scimitar sign.

PAPVR is a congenital anomaly where 1 or more pulmonary veins drain into the right atrium or systemic venous circulation instead of the left atrium of the heart. The defect itself often has no significant clinical impact, and asymptomatic patients generally do not require intervention. The left-to-right shunting can increase pulmonary blood flow, which can lead to pulmonary hypertension and volume overload. The diagnosis of PAPVR is typically made with cardiovascular imaging or catheterization; echocardiography may be sufficient for making the diagnosis in some cases. Surgical repair is the definitive treatment and focuses on redirecting the anomalous pulmonary veins into the left atrium.

What to Look For

- **Frequent infections**: Patients with symptomatic PAPVR often report a history of recurrent pulmonary infections such as pneumonia and bronchitis as well as fatigue and dyspnea.
- **Signs of right heart volume overload**: Assess for peripheral edema, increased jugular venous pressure (JVD), ascites, and hepatomegaly. These patients are more likely to have significant left-to-right shunts, and surgery is the definitive treatment.
- **The Scimitar sign on imaging:** Assess for a curvilinear vascular shadow along the right cardiac border caused by an anomalous right pulmonary vein draining into the inferior vena cava (IVC), resembling a Turkish sword or "scimitar."

Pearls For Urgent Care Management

- **Laboratory testing:** In the case of clinically significant fluid overload, laboratory testing including a metabolic panel to evaluate renal function and electrolytes is indicated.
- **Diuretic therapy:** consider starting low dose oral furosemide 20 mg daily for patients naïve to diuretics
- **Close follow-up** with primary care and/or cardiology, especially if starting diuretics in urgent care, is encouraged.
- **Cardiovascular imaging:** Patients with a scimitar sign noted on radiograph should be referred for cardiovascular imaging. ■

67-Year-Old Man With Dark Patch on Ankle

A 67-year-old man visits urgent care for a lesion on his right ankle that was first noticed 25 years ago. He reports that it has progressively grown larger over the past 6 months. The lesion is painless but is intermittently mildly pruritic. The patient denies any recent injury or past medical history besides chronic venous insufficiency. On dermatologic examination, a discrete dark brown plaque is noted posterior to the lateral malleolus with numerous surrounding spider veins, and deeper varicose veins are seen. A biopsy is taken, showing a proliferation of small, dilated vessels, fibrosis, and dermal edema.

View the image taken 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).

Differential Diagnosis

- Cutaneous T-cell lymphoma
- Acroangiodermatitis
- Stasis dermatitis
- Kaposi sarcoma
- Pigmented purpuric dermatoses
- Lichen simplex chronicus

Diagnosis

The patient's diagnosis is acroangiodermatitis (AAD), also known as pseudo-Kaposi sarcoma. AAD is a benign, rare, vasoproliferative skin disorder that occurs on the lower limbs due to chronic venous hypertension and hypostasis, most often in the setting of chronic venous insufficiency or stasis dermatitis. The condition is visually similar to Kaposi sarcoma but is distinguished histologically and by its association with chronic venous disease.

What To Look For

- **History of venous insufficiency:** AAD is a complication of venous insufficiency and stasis dermatitis; it should be considered in patients with chronic venous disease who develop purpuric plaques.
- **Lesions on legs and feet:** Purpuric macules and papules may coalesce into large, purple-brown plaques on the extensor surfaces of the legs and dorsa of the feet.

Pearls for Urgent Care Management

- **Address underlying causes:** The mainstay of management is to address the underlying venous hypertension and chronic venous insufficiency.
- **Compression therapy:** Compression bandaging systems or compression stockings are the primary conservative treatment for stasis dermatitis and its complications, including AAD.
- **Lifestyle modifications:** Encourage exercise, frequent walks, leg elevation, avoidance of prolonged standing to decrease venous hypertension and reduce edema.
- **Skin care:** Gentle cleansing with mild, fragrance-free cleansers, and frequent use of bland emollients will limit dryness and itching.
- **Referral:** If stasis dermatitis and its complications (including AAD) do not improve with supportive care, referral to a vascular specialist is indicated for further evaluation and treatment. ■

84-Year-Old With Palpitations

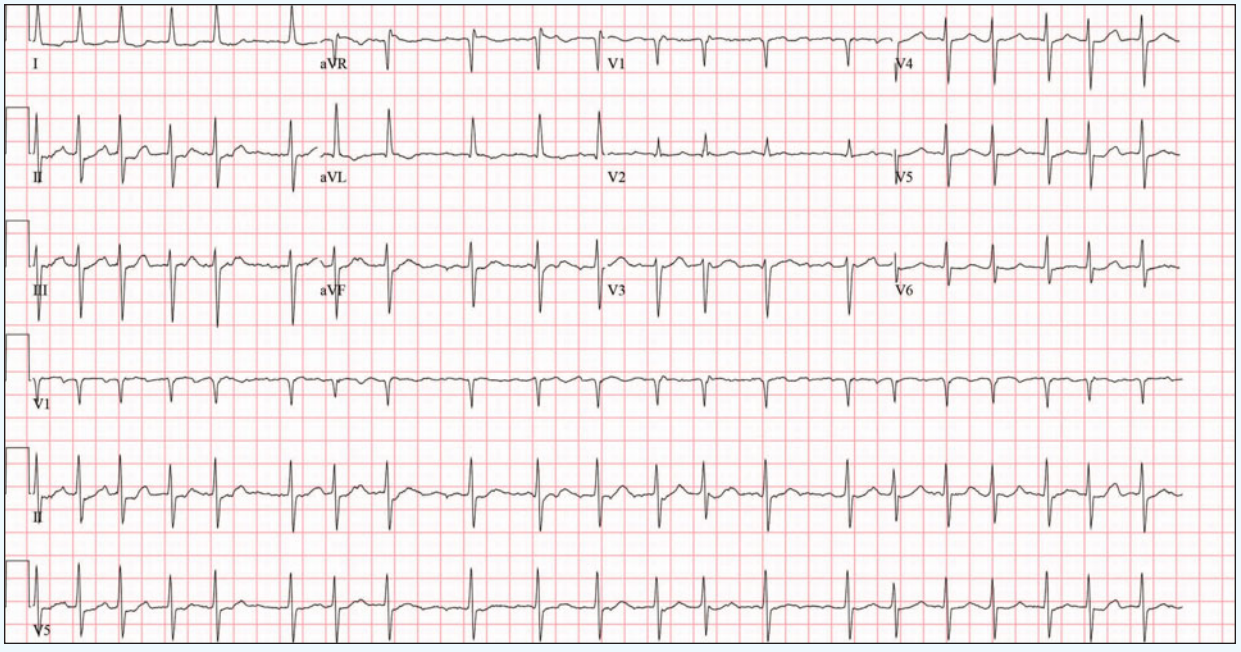


Figure 1: Initial ECG

An 84-year-old woman presents to urgent care with palpitations that have lasted for several hours. The patient is afebrile, slightly tachypneic on exam, with a blood pressure of 148/97 mm Hg. An ECG is obtained.

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

Case presented by Benjamin Cooper, MD, McGovern Medical School, The University of Texas Health Science Center at Houston, Department of Emergency Medicine.

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

ECG STAMPEDE

Differential Diagnosis

- Atrial fibrillation
- Sinus tachycardia
- Supraventricular tachycardia
- Multifocal atrial tachycardia
- Atrial flutter

Diagnosis

The diagnosis in this case is atrial fibrillation with rapid ventricular response. The ECG reveals an irregularly irregular rhythm with narrow QRS complexes and a ventricular rate of 125 beats per minute. There are no discernible P waves.

Discussion

The presence of an irregularly irregular rhythm is indicated by R-R interval irregularity with no discernible pattern to the irregularity. The differential diagnosis for an irregularly irregular rhythm includes atrial fibrillation (most common), atrial flutter with variable conduction, and multifocal atrial tachycardia. Both atrial flutter and multifocal atrial tachycardia show organized atrial activity, whereas atrial fibrillation does not.

Atrial fibrillation is the most common arrhythmia, with an annual incidence in patients older than 65 years of 24 per 1,000 person-years.[1] There are many causes including valvular pathology, hypertension, heart failure, ischemia, electrolyte derangements, thyrotoxicosis, and excessive alcohol consumption.[2] Management is guided by identifying and treating primary pathology, rate or rhythm control, and stroke risk reduction.

Atrial fibrillation increases stroke risk approximately fivefold.[3] The mainstay of stroke prevention is anticoagulation. Tools like the CHA_2DS_2-VASc score can help with risk stratification and guide anticoagulation decisions.[2] Patients with onset of atrial fibrillation within 12-48 hours might be candidates for early cardioversion, and emergency department referral should be considered. In the absence of alternative primary pathology, rate control (ie, heart rate goal of less than 110 beats per minute) with atrioventricular nodal blocking agents can be pursued but should be performed in a monitored setting.[2,4,5] Patients with hemodynamic instability (eg, hypotension, altered mental status, ischemic chest pain, or acute heart failure) should be immediately cardioverted.

This patient was referred to an emergency department, where the providers elected to perform rate control.

What To Look For

- Irregularly irregular rhythms are defined by randomly changing R-R intervals over time (ie, no discernable pattern).
- The differential for irregularly irregular rhythms includes atrial fibrillation, atrial flutter with variable conduction, and multifocal atrial tachycardia.
- Early management of new-onset atrial fibrillation involves identification of underlying pathology and potentially rhythm or rate control.

Pearls For Initial Management, Considerations For Transfer

- Refer symptomatic patients or patients needing urgent identification and/or treatment to an appropriate emergency department.
- Place pads on the patient if unstable while awaiting transport.
- Cardioversion is the preferred strategy for hemodynamically unstable atrial fibrillation. ■

References

1. Khurshid S, Ashburner JM, Ellinor PT, et al. Prevalence and Incidence of Atrial Fibrillation Among Older Primary Care Patients. *JAMA Netw Open*. 2023;6(2):e2255838. doi:10.1001/jamanetworkopen.2022.55838
2. Joglar JA, Chung MK, Armbruster AL, et al. 2023 ACC/AHA/ACCP/HRS Guideline for the Diagnosis and Management of Atrial Fibrillation: A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines. *Circulation*. 2024;149(1):e1-e156. doi:10.1161/CIR.0000000000001193
3. Wolf PA, Abbott RD, Kannel WB. Atrial fibrillation as an independent risk factor for stroke: the Framingham Study. *Stroke*. 1991;22(8):983-988. doi:10.1161/01.str.22.8.983
4. Andrade JG, Aguilar M, Atzema C, et al. The 2020 Canadian Cardiovascular Society/Canadian Heart Rhythm Society Comprehensive Guidelines for the Management of Atrial Fibrillation. *Can J Cardiol*. 2020;36(12):1847-1948. doi:10.1016/j.cjca.2020.09.001
5. Van Gelder IC, Rienstra M, Bunting K V, et al. 2024 ESC Guidelines for the management of atrial fibrillation developed in collaboration with the European Association for Cardio-Thoracic Surgery (EACTS). *Eur Heart J*. 2024;45(36):3314-3414. doi:10.1093/eurheartj/ehae176