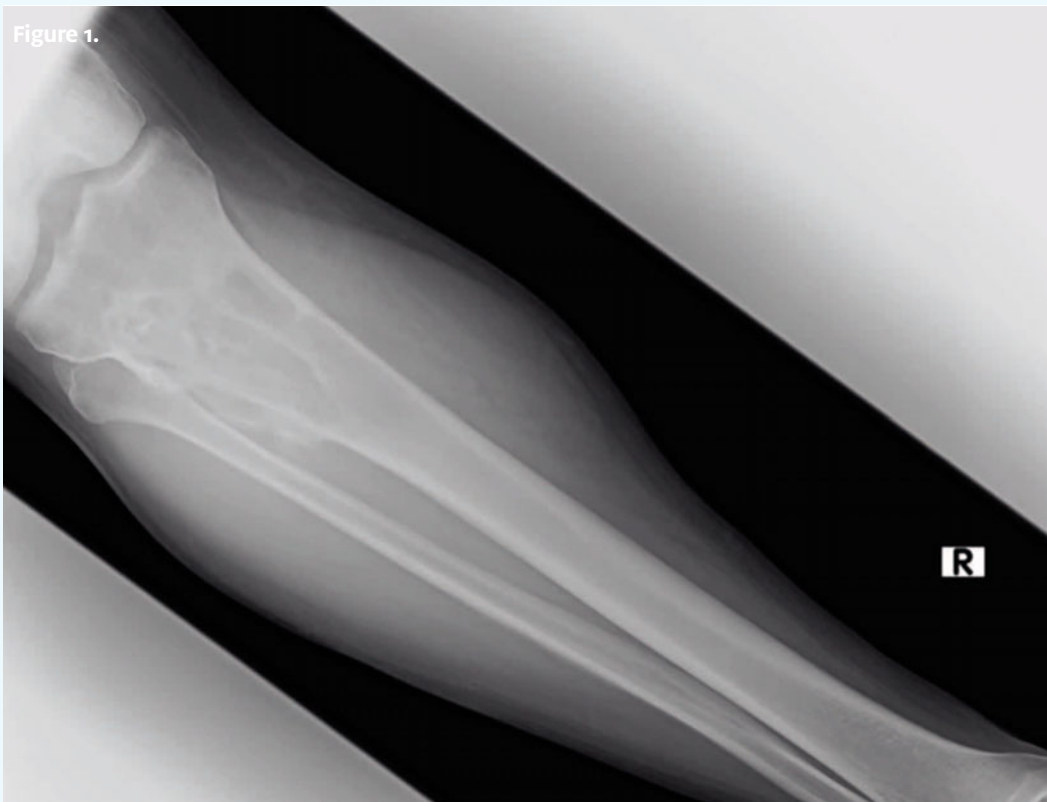




In each issue, *JUCM* will challenge your diagnostic acumen with a glimpse of x-rays, electrocardiograms, and photographs of conditions that real urgent care patients have presented with.

If you would like to submit a case for consideration, please email the relevant materials and presenting information to editor@juqm.com.

A 58-Year-Old Male with a Painful Mass on His Knee

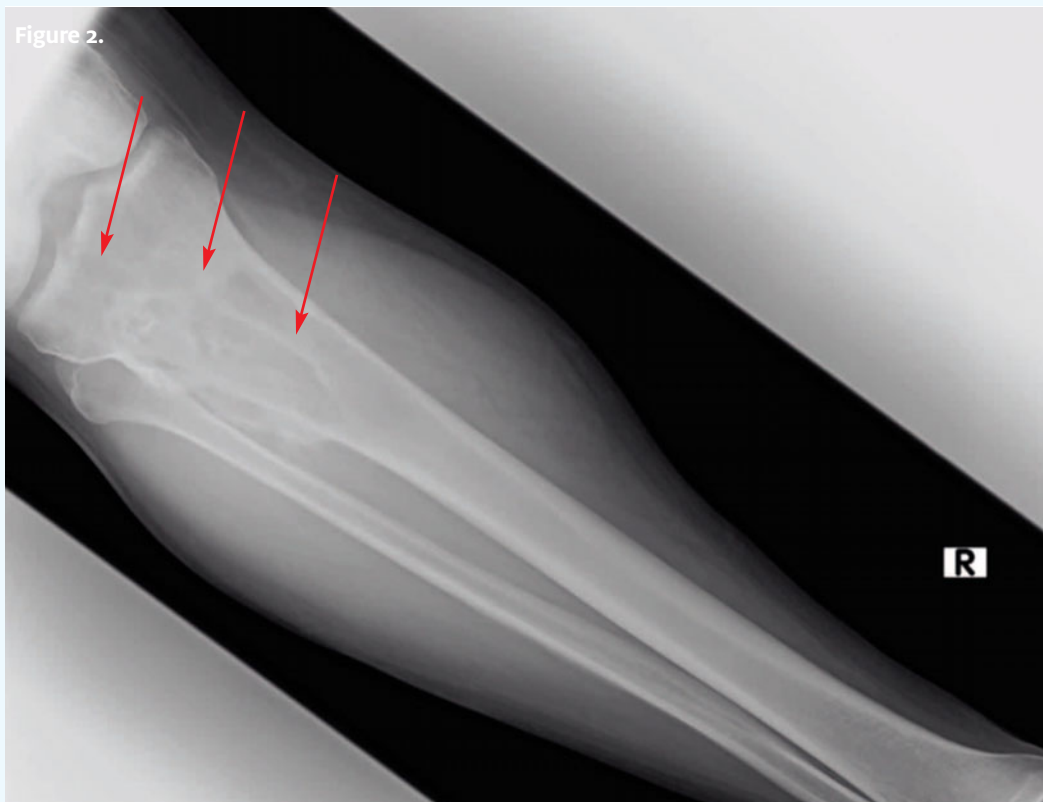


Case

The patient is a 58-year-old male who presents with a painful mass at the lower aspect of his right knee. He denies any impact to his leg, but reports that the pain started “some time ago,” getting progressively worse.

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

**Differential Diagnosis**

- Metastatic disease
- Giant cell tumor
- Malignant transformation of a pre-existing bony dysplasia

Diagnosis

Aggressive expansile lesion proximal tibia with pathological fracture and malignant features. Proximal tibial diaphysis was an expansile lesion of 5.0 x 5.3 x 10.3 cm. The lesion has mostly lucent or cystic components with areas of amorphous calcifications within. Lesion is expansile with endosteal scalloping, bowing, and thinning of the overlying cortex. There is a focal anterior cortical break present at the site of the pathological fracture. There is abnormal periosteal new bone formation along the anterior surface in a sunburst pattern and overlying soft tissue swelling.

Learnings/What to Look for

- The sunburst appearance of periostitis occurs when the lesion grows too fast and the periosteum does not have enough time to lay down a new layer. Instead, the Sharpey's fibers stretch out perpendicular to the bone
- Sunburst periostitis is classically associated with osteosarcoma, but can also occur with other aggressive bony lesions such as Ewing's sarcoma or osteoblastic metastases (eg, prostate, lung or breast cancer)

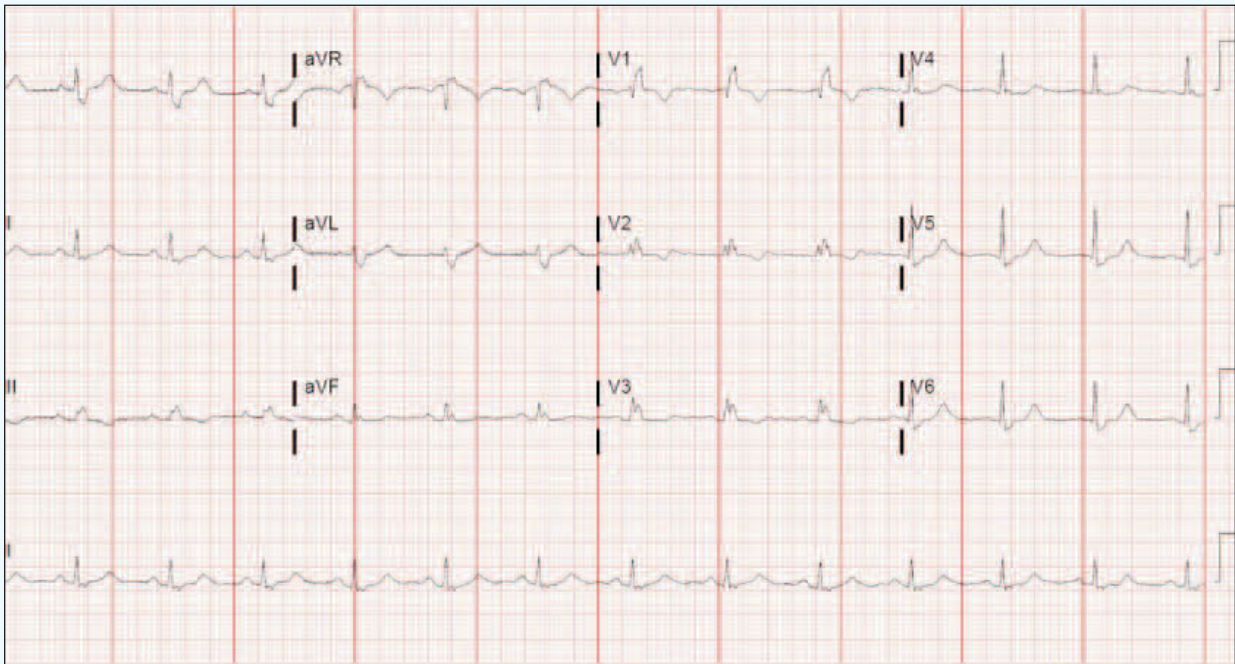
Pearls for Urgent Care Management and Considerations for Transfer

- This patient is likely to require surgery, radiotherapy, and/or chemotherapy. Referral to an orthopedic oncologist is appropriate

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



A 42-Year-Old Male with an Abnormal ECG



Case

The patient is a 42-year-old male who presents after referral from a diagnostic testing site with an abnormal ECG, obtained during a preoperative evaluation. He reports a history of hypertension and symptomatic inguinal hernia, and acknowledges chronic right groin pain. He is otherwise asymptomatic, including robust exercise tolerance.

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

(Case presented by Tom Fadial, MD, The University of Texas Health Sciences Center of Houston McGovern Medical School.)

THE RESOLUTION

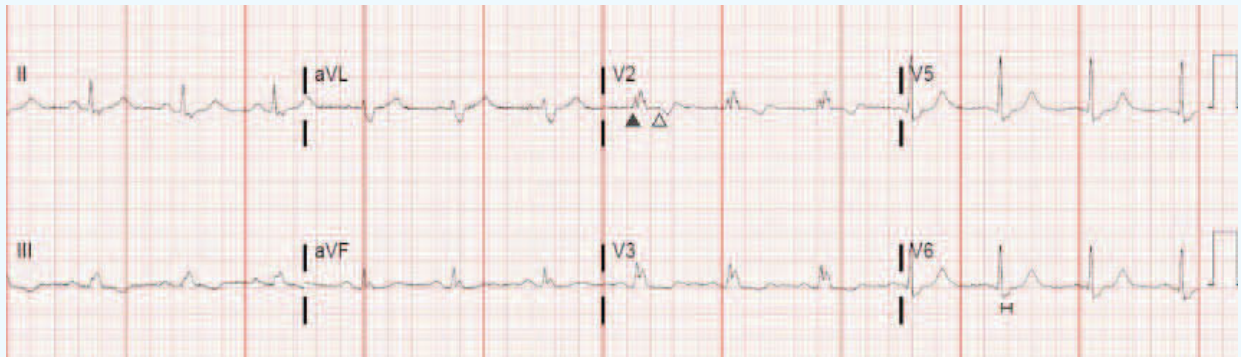


Figure 2. Anterior precordial lead V_2 shows “M”-shaped RSR’ pattern (▲) (long arrows) and associated repolarization changes (△). Lateral leads I and V_6 show S-wave >40 ms

Differential Diagnosis

- Pulmonary embolus
- Right ventricular hypertrophy
- Right bundle branch block
- Anterior STEMI
- Myocarditis
- Hyperkalemia

Diagnosis

This patient was diagnosed with a right bundle branch block (RBBB). The ECG demonstrates normal sinus rhythm at a rate of 78bpm. The QRS duration is prolonged, measuring >120 ms. The QRS appearance is “M”-shaped in the anterior precordial leads (V_1 - V_3) and there is a slow, slurred S-wave with a duration exceeding 40ms in the lateral leads (I, aVL, V_6).

These changes are caused by a right bundle branch block (RBBB). In an RBBB, the conduction of the left bundle branch is unaffected, resulting in a normal appearance of the early part of the QRS complex. Delayed right-ventricular activation results in a second R-wave (R’) in the anterior precordial leads (producing the RSR’ or “M”-shaped appearance) and also causes the slurred appearance of the S-wave in lateral leads.

As occurs with other depolarization disturbances, repolarization changes are common including ST-segment deviations (typically minimal and discordant with the QRS vector) and T-wave changes (similarly discordant) resulting in the T-wave inversions seen in anterior precordial leads.

RBBB can occur in normal hearts and is a benign finding in an otherwise healthy patient. However, the differential diagnosis includes ominous considerations such as processes resulting in acute or chronic elevations in right ventricular pressure (pulmonary embolus, pulmonary hypertension). Other causes include myocardial ischemia or inflammation (such as myocarditis), as well as intrinsic conduction system disease.

As a result, the clinical relevance of RBBB is variable. While

the presence of an RBBB may be associated with increased rates of heart failure, pacemaker requirement, and even all-cause mortality over longer periods of time, in the urgent care setting the focus remains on the identification of an acute or progressive precipitant.^{1,2} For asymptomatic and otherwise-healthy patients, a careful history and physical examination to evaluate for causes of right ventricular strain (pulmonary embolus, pulmonary hypertension, or other cardiomyopathies) or features suggestive of cardiac ischemia is sufficient.

Learnings/What to Look for:³

- QRS duration >120 ms
- RSR’ in V_1 or V_2
- S-wave of greater duration than R-wave or 40ms in leads I, V_6
- An “incomplete” RBBB matches the same diagnostic criteria with a QRS duration between 110-120ms

Pearls for Urgent Care Management and Considerations for Transfer

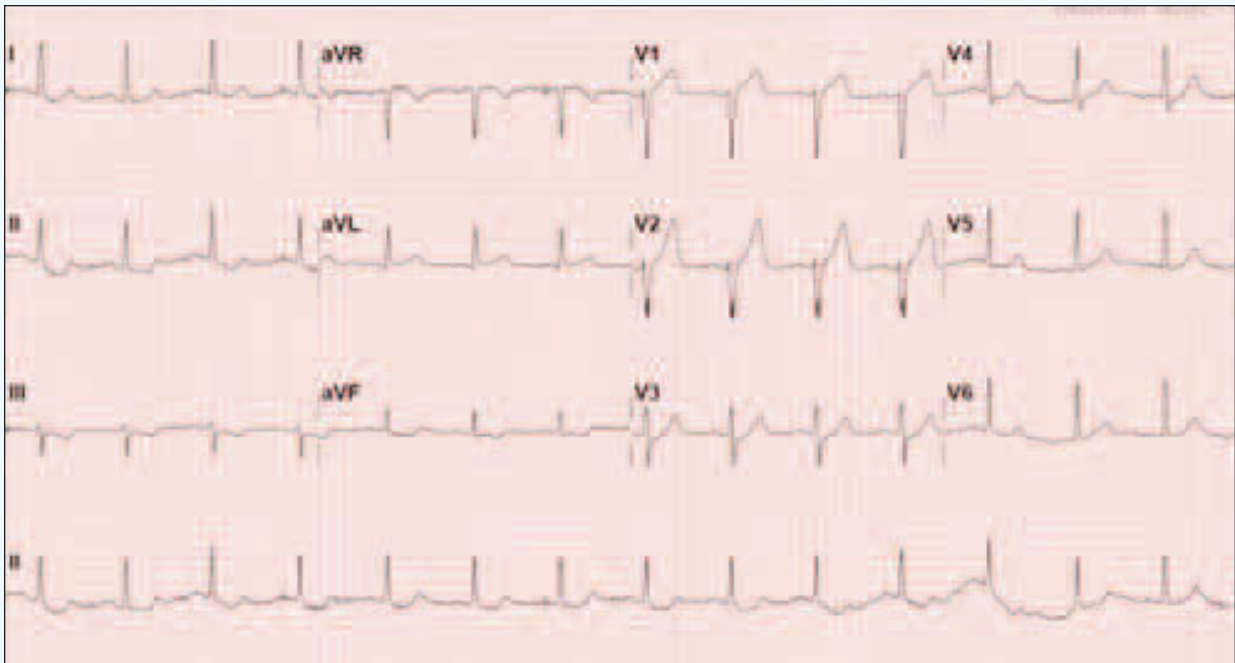
- Evaluate for acute or progressive precipitant of right ventricular strain such as pulmonary embolus, pulmonary hypertension, cardiomyopathy or ischemia
- The presence of a RBBB does not interfere with the usual diagnosis of a myocardial infarction

References

1. Rasmussen P, Skov M, Ghouse J, et al. Clinical implications of electrocardiographic bundle branch block in primary care. *Heart*. 2019;105(15):1160-1167.
2. Sumner G, Salehian O, Yi Q, et al. The prognostic significance of bundle branch block in high risk chronic stable vascular disease patients: a report from the HOPE trial. *J Cardiovasc Electrophysiol*. 2009;20(7):781-787.
3. Surawicz B, Childers R, Deal B, Gettes L. AHA/ACCF/HRS Recommendations for the Standardization and Interpretation of the Electrocardiogram Part III: Intraventricular Conduction Disturbances A Scientific Statement From the American Heart Association Electrocardiography and Arrhythmias Committee, Council on Clinical Cardiology; the American College of Cardiology Foundation; and the Heart Rhythm Society Endorsed by the International Society for Computerized Electrocardiology. *J Am Coll Cardiol*. 2009;53(11):976-981.



Chest Pain in a 44-Year-Old Male: Is It Too Early for Emergent Coronary Intervention?



Case

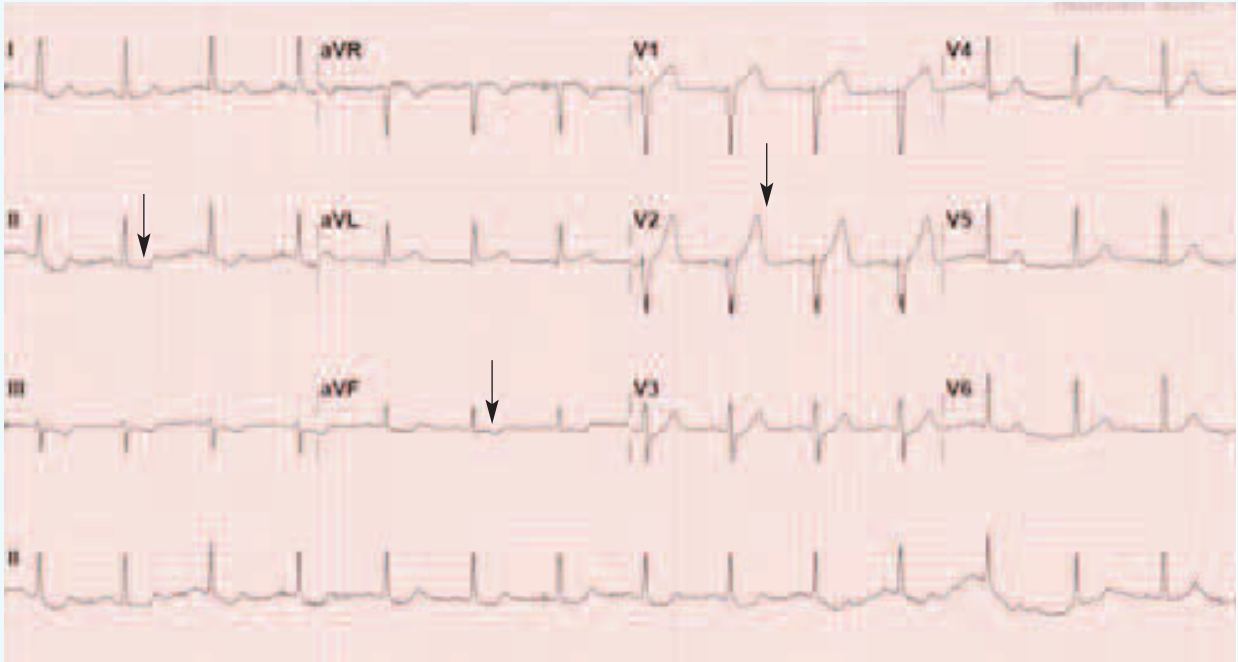
The patient is a 44-year-old previously healthy male who presents with continuous, typical cardiac chest pain of a few hours' duration, with no associated symptoms. He reports that this is a first-time occurrence. He also relays that he is a nonsmoker, nonalcoholic with no family history of heart disease.

On physical examination, you find his vital signs are stable. Cardiac auscultation reveals normal first and second heart sounds with no murmurs. Labs reveal slightly elevated cardiac enzymes. Other routine laboratory results are within normal ranges.

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

(Case presented by Omar Al-assaf, Internal Medicine Department, Rashid Hospital, Dubai Health Authority; Muna AlJallaf, Cardiology Department, Rashid Hospital, Dubai Health Authority; and Anas Musa Emergency Department, Rashid Hospital, Dubai Health Authority.)

THE RESOLUTION

**Differential Diagnosis**

- Wellens' syndrome
- De Winter syndrome
- Brugada
- Shark fin

The ECG shows sinus rhythm with small P wave, deep S wave, hyperacute T wave, mild ST elevation in anterior leads, and ST depression in inferior leads indicating de Winter syndrome. The patient was taken for urgent coronary angiography which showed acute occlusion of the proximal left anterior descending coronary artery (LAD) and successful recanalization was done by implanting a single drug-eluting stent.

De Winter syndrome, an electrocardiographic pattern, was first described in 2008 by de Winter, et al as an indicator of acute left anterior descending artery occlusion. It is characterized by upsloping ST segment depression by more than or equal to 0.1 mV at the V1–V6 leads with symmetrical tall T waves.¹ In 2017, Morris, et al published a systematic review and found that de Winter pattern holds a positive predictive value of 95.2% to 100% for acute proximal LAD occlusion.²

ECG abnormalities other than ST-segment elevation are known to indicate transmural myocardial injury; hence, immediate reperfusion is highly recommended to avoid extension of the myocardial injury. STEMI management for primary coronary intervention in STEMI management guideline must be followed since the myocardial damage in de Winter pattern can be reversible.³

References

1. de Winter RJ, Verouden NJ, Wellens HJ, et al. A new ECG sign of proximal LAD occlusion. *N Engl J Med.* 2008;359(19):2071-2073.
2. Morris NP, Body R. The De Winter ECG pattern: morphology and accuracy for diagnosing acute coronary occlusion: systematic review. *Eur J Emerg Med.* 2017;24(4):236–242.
3. American College of Emergency Physicians; Society for Cardiovascular Angiography and Interventions; O'Gara PT, Kushner FG, Ascheim DD, et al. 2013 ACCF/AHA guideline for the management of ST-elevation myocardial infarction: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. *J Am Coll Cardiol.* 2013;61(4):e78-e140.



A 37-Year-Old Male with an ‘Itchy’ Lesion on his Face



Case

The patient is a 37-year-old male who presents with a red, round lesion with a fine, scaly plaque on his face which developed over the past month. He also reports seeing similar lesions on his scalp while combing his hair. None of the lesions are painful, though he describes them as “slightly itchy.” No history of injury to the area.

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**

- Tinea corporis
- Lichen planus
- Discoid lupus erythematosus
- Sarcoidosis
- Basal cell carcinoma

Diagnosis

This patient was diagnosed with discoid lupus erythematosus (DLE), a disfiguring autoimmune skin disease and the most common form of chronic cutaneous lupus erythematosus.

Learnings/What to Look for

- DLE has a characteristic clinical appearance consisting of red, scaly plaques with resulting pigmentary changes and scars; the plaques are frequently found on the face and scalp
- Discoid rash is one of the 11 diagnostic criteria for systemic lupus erythematosus (SLE); 20% of patients with SLE will manifest discoid lesions. However, only 5% to 10% of patients

with DLE demonstrate systemic involvement or will go on to develop SLE

- DLE most commonly afflicts women in the third and fourth decades of life, although it may occur at any age and in either gender
- Individuals of African and Hispanic descent are at increased risk, and there may be a positive family history of lupus or connective tissue disease

Pearls for Urgent Care Management and Considerations for Transfer

- Patients with DLE should be counseled to employ sun-protection measures such as sunscreen, photoprotective clothing, brimmed hats, and avoiding exposure to the sun during peak hours
- Topical retinoids have been reported to be helpful
- Rarely, squamous cell carcinoma may rarely develop in chronic DLE scars, especially in sun-exposed areas

Acknowledgment: Images and case courtesy of VisualDx (www.VisualDx.com/JJUCM).