Photo Quiz

Red, Tender Nodules in a Child With Cellulitis

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FIGURE 1

FIGURE 2

A six-year-old boy presented to the emergency department with a rash and central pustule on his trunk that appeared three days earlier. He had a fever of 102°F (39.9°C). The day before presentation, his mother noted painful annular lesions on his legs. He had completed treatment for streptococcal pharyngitis three months earlier and did not have a sore throat, runny nose, or cough. He was prescribed a 10-day course of cephalexin for cellulitis and followed up with his family physician six days later. At the follow-up, he had a fever and new lesions on his legs. Acetaminophen provided limited pain relief.

Physical examination revealed numerous poorly demarcated, annular lesions that were warm, raised, and markedly tender to palpation. The lesions were primarily on the legs *(Figures 1 and 2)*, with several on the forearms. The lesions showed no fluctuance or ulceration. The cellulitis on his trunk was clearing.

A rapid polymerase chain reaction test was negative for COVID-19. He had increased platelets (552×10^3 per µL [552×10^9 per L]), C-reactive protein (3.5 mg per dL [350 mg per L]), erythrocyte sedimentation rate (55 mm per hour), and streptolysin antibody (815 IU per mL). White blood cell count and antinuclear antibody findings were negative. The patient's fevers dissipated slowly over two weeks, and the pain resolved over one month of treatment with ibuprofen.

Question

Based on the patient's history and physical examination findings, which one of the following is the most likely diagnosis?

- ☐ A. Atypical pityriasis rosea.
- ☐ B. Erythema induratum.
- ☐ C. Erythema nodosum.
- ☐ D. Toxic shock syndrome.

See the following page for discussion.

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SUMMARY TABLE

Condition	Characteristics
Pityriasis rosea	Erythematous, scaly patch (herald patch), usually on the trunk, that spreads centrifugally; classically appears in a Christmas tree pattern, but the rash can have an atypical presentation such as erythematous, multiforme-like (targetoid) lesions on the extremities
Erythema induratum	Erythematous, tender nodules on both calves; associated with tuberculosis
Erythema nodosum	Erythematous, tender nodules or plaques on knees, shins, and ankles
Toxic shock syndrome	Rapid onset of a diffuse, erythematous, macular, sunburn-like rash on the palms and soles accompanied by systemic illness; progresses to desquamation of the skin

Discussion

The answer is C: erythema nodosum, the most common form of panniculitis (inflammation of the subcutaneous fat). Streptococcal infection is the most common cause in children. Erythema nodosum is a rare condition that typically presents in individuals in their 20s and is more common in women; however, it can occur in anyone.

Erythema nodosum can be primary or secondary. Primary erythema nodosum is idiopathic but may be a hypersensitivity response to an underlying disease process. Secondary causes include bacterial, viral (e.g., infectious mononucleosis), fungal (e.g., coccidioidomycosis), or parasitic infections; systemic disease (e.g., sarcoidosis, Behçet syndrome, inflammatory bowel disease); medication use (e.g., penicillin, cephalosporins, sulfonamides, oral contraceptives, angiotensin-converting enzyme inhibitors, angiotensin receptor blockers, vaccines, proton pump inhibitors), malignancy (e.g., leukemia), and pregnancy.[1,2]

Erythema nodosum has an acute onset and typically presents as erythematous, tender nodules or plaques that are 1 to 6 cm in diameter. The lesions normally become bruise-like and resolve without scarring. Typical prodromal symptoms of fever, malaise, and upper respiratory tract symptoms are ambiguous and may be related to an underlying etiology. Lesions are bilateral and symmetrical along the knees, shins, and ankles but can occur in other areas. The condition is self-limited and clears without intervention in one to six weeks.[2]

Erythema nodosum is a clinical diagnosis based on history and physical examination findings. Laboratory and additional tests are useful to identify underlying etiologies that may require treatment.[2] Biopsy can confirm the diagnosis but is usually unnecessary. Inflammatory markers such as erythrocyte sedimentation rate, C-reactive protein, and platelets can support the diagnosis; elevations are proportionate to the level of disease burden. A complete blood count with differential is helpful in excluding hematologic malignancy and may be suggestive of an active viral or bacterial infection. Antistreptolysin O titers and throat swabs are helpful in diagnosing a treatable streptococcal etiology.[1] An antistreptolysin O titer that increases by at least 30% four weeks after onset confirms a streptococcal infection.[3] Antistreptolysin O levels can stay elevated several months after streptococcal exposure. Chest radiography may be considered for suspected pneumonia, sarcoidosis, or tuberculosis.[1,2]

Pityriasis rosea normally presents as an erythematous, scaly patch (herald patch), usually on the trunk, that spreads centrifugally. Although it classically appears in a Christmas tree pattern, the rash can have an atypical presentation such as erythematous, multiforme-like (targetoid) lesions on the extremities.[4]

Erythema induratum can present as erythematous, tender nodules but is located on both calves as opposed to the shins. It is associated with tuberculosis.[5]

Toxic shock syndrome causes rapid onset of a diffuse, erythematous, macular, sunburn-like rash on the palms and soles accompanied by systemic illness secondary to a bacterial infection such as cellulitis. The rash typically progresses to desquamation of the skin.[1,2]

The opinions and assertions contained herein are the private views of the authors and are not to be construed as official or as reflecting the views of the U.S. Department of Defense.

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