

Clinical Pearls in Dermatology

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At the 2001 Annual Conference of the American College of Physicians, a new teaching format to aid physician learning, Clinical Pearls, was introduced. Clinical Pearls is designed with the 3 qualities of physician-learners in mind. First, we physicians enjoy learning from cases. Second, we like concise, practical points that we can use in our practice. Finally, we take pleasure in problem solving.

In the Clinical Pearls format, speakers present a number of short cases in their specialty to a general internal medicine audience. Each case is followed by a multiple-choice question answered live by attendees using an audience response system. The answer distribution is shown to attendees. The correct answer is then displayed and the speaker discusses teaching points, clarifying why one answer is most appropriate. Each case presentation ends with a Clinical Pearl, defined as a practical teaching point that is supported by the literature but generally not well known to most internists.

Clinical Pearls is currently one of the most popular sessions at the American College of Physicians meeting. As a service to its readers, *Mayo Clinic Proceedings* has invited a selected number of these Clinical Pearl presentations to be published in our Concise Reviews for Clinicians section. "Clinical Pearls in Dermatology" is one of them.

CASE 1

A 32-year-old man presents with recurrent episodes of rash (Figure 1). These lesions occur in a symmetric distribution and are asymptomatic. They resolve within 2 weeks of onset, and the patient has had 4 outbreaks during the past year. He is otherwise healthy and takes no medications. He admits to an episode of unprotected sex in his hot tub. His hobbies include collecting exotic fish for his home aquarium and camping and hiking in the mountains.

Question

Which **one** of the following is the **most likely** infectious association?

- Pseudomonas*
- Herpes simplex virus (HSV)
- Treponema pallidum*
- Borrelia burgdorferi*
- Mycobacterium marinum*

Discussion

Erythema multiforme presents with target or iris lesions that are often located on the palms and soles, but

generalized eruptions also occur. Although drugs (sulfonamides, barbiturates, and anticonvulsants) and infections (HSV, mycoplasma pneumonia) are commonly associated with development of erythema multiforme, recurrent lesions are most often linked to an HSV infection. While the skin signs of active HSV may be apparent, in some cases the HSV reactivation may be subclinical. Discontinuation of use of any culprit drugs and a trial of acyclovir or other appropriate antiviral agent for at least 6 months would be reasonable in cases of recurrent erythema multiforme.¹

Clinical Pearl

Recurrent erythema multiforme can be a skin sign of HSV infection.

CASE 2

An 18-year-old male freshman at the University of Colorado presents to your urgent care clinic with fever, malaise, headache, and rash (Figure 2). Previously healthy, he is taking no medications and has had all of his immunizations, including the primary and booster tetravalent vaccines for meningococcus.

On physical examination, his temperature is 39.2°C, blood pressure is 116/78 mm Hg, and heart rate is 120 beats/min. His neurologic examination shows no evidence of any focal abnormality. He has a petechial rash on his lower extremities that progresses over the course of 4 hours in the urgent care clinic. Laboratory testing reveals leukocytosis (white blood cell count of $13.9 \times 10^9/L$) with left-shifted maturation. All other laboratory test results are pending.

Question

In view of this patient's symptoms and examination findings, which **one** of the following is the **most likely** diagnosis?

- Meningococemia
- Primary rash of human immunodeficiency virus
- Rocky Mountain spotted fever
- Streptococcal toxic shock syndrome
- Acute measles infection

Discussion

This patient presents with the classic rash of meningococemia caused by *Neisseria meningitidis*. Although most commonly seen in children, cases often occur in people 18 years of age or older. Epidemics are seen in crowded settings such as college dormitories. It is a seasonal dis-

See end of article for correct answers to questions.

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FIGURE 1. Recurrent rash in an otherwise healthy 32-year-old man.

ease, and most cases are seen in winter and spring. The mortality is 10% to 20%, with some deaths occurring due to treatment delay.

Patients present with fever, headache, nausea, vomiting, and myalgia. Mental status changes and nuchal rigidity are signs of meningitis. The rash is a common and early sign and classically presents with petechiae scattered on the trunk and extremities that evolve rapidly to purpura with gunmetal-gray centers. The rapid progression of signs and symptoms is a hallmark of this disease. Treatment should not be delayed for transfer to another facility.

A tetravalent conjugate vaccine (that covers meningococcal serogroups A, C, W-135, and Y) was released in the United States in 2005 and is currently recommended for routine vaccination of adolescents, preferably at age 11 or 12, with a booster dose at age 16.^{2,3} Currently, there are no vaccines available in the United States for prevention of serogroup B *N meningitidis* disease (which is responsible for about a third of all cases).

Clinical Pearl

The petechial rash of meningococcal disease has a characteristic appearance, progresses rapidly, and is

an early sign of this disease. The current vaccine does not cover all strains.

CASE 3

An 18-year-old man originally presented to your urgent care clinic 4 weeks ago with a small abscess on his knee. He was otherwise healthy and taking no medications. The abscess was incised and drained at the clinic, and the culture and susceptibility studies showed this lesion to be a methicillin-resistant *Staphylococcus aureus* infection. He now presents with a new abscess (Figure 3).

On physical examination, his temperature is 37°C, blood pressure is 118/76 mm Hg, and heart rate is 80 beats/min. Skin examination shows a 2×2-cm erythematous plaque on the forearm with a central fluctuant area. There are areas of healing skin on the knee.

Question

After incision and drainage of the current abscess, which one of the following is the most important intervention to prevent recurrence of infections in this patient?

- Education on wound care and personal hygiene
- Oral rifampin
- Intravenous vancomycin
- Oral clindamycin
- Combination treatment with oral trimethoprim-sulfamethoxazole and minocycline



FIGURE 2. Petechial rash on lower extremity of an 18-year-old man presenting with fever, headache, and malaise.



FIGURE 3. Abscess on upper extremity of an 18-year-old man who presented previously with an abscess on his knee.

Discussion

This patient presents with the typical history and physical findings of a skin and soft tissue infection (SSTI) with community-associated methicillin-resistant *S aureus* (CA-MRSA). Infections caused by CA-MRSA usually present as a solitary abscess, cellulitis, or soft tissue infection, often with central necrosis, but there are no specific findings to differentiate it from a methicillin-sensitive staphylococcal infection. Recurrence in an individual is common, as are community clusters or involvement of multiple household members.

Currently, CA-MRSA is the most common cause of SSTIs encountered in most urban emergency departments. This strain of MRSA has a distinct genetic resistance element (*SCCmec* IV) and toxin (Panton-Valentine leukocidin toxin) and develops in populations with close physical contact, such as children/young adults, prisoners, homeless persons, intravenous drug users, and people involved in contact sports (football, fencing, rugby, wrestling, etc). While resistant to β -lactam antibiotics, CA-MRSA isolates often remain sensitive to other antibiotics such as clindamycin, trimethoprim-sulfamethoxazole, and min-

ocycline. Antibiotic susceptibility patterns differ throughout the country.

The primary treatment for a small, simple cutaneous abscess is incision and drainage of the abscess. Management of recurrent MRSA SSTIs should focus on education about appropriate wound care and personal hygiene. Instruction should include keeping draining wounds covered with clean, dry bandages, maintaining good personal hygiene with regular bathing and cleaning of hands, and avoiding reusing or sharing personal items (disposable razors, linens, and towels). Environmental hygiene measures should focus cleaning efforts on “high-touch” surfaces using commercially available cleaners or detergents.

Clinicians should consider attempting decolonization if a patient experiences a recurrent SSTI despite optimal wound care and hygiene measures or if ongoing transmission is occurring among household members despite these measures.⁴ Decolonization strategies may include nasal decolonization with mupirocin twice a day for 5 to 10 days and body decolonization with a skin antiseptic solution (chlorhexidine) for 5 to 14 days or dilute bleach baths.

Clinical Pearl

Prevention of recurrent CA-MRSA should focus first on wound care and personal hygiene education.

CASE 4

An 18-year-old patient presents with a sore throat and signs of streptococcal pharyngitis. You start treatment with amoxicillin-clavulanate, and results of a rapid strep test are positive. The next day the patient calls regarding a new rash that has erupted all over his body (Figure 4). The palms and soles remain uninvolved.

Question

Which one of the following is the most likely cause of this patient's rash?

- Drug rash
- Pityriasis rosea
- Streptococcal scalded skin syndrome
- Mycoplasma pneumonia
- Psoriasis

Discussion

Psoriasis is a common disease with many different clinical presentations. Guttate psoriasis classically presents after infection with streptococcus in children or young adults. Guttate psoriasis presents with scaly, “droplike” papules on the trunk and ex-



FIGURE 4. Eruption of a new rash in an 18-year-old man who presented 1 day previously with a sore throat and signs of streptococcal pharyngitis.

tremities. It is often mistaken for a drug rash because antibiotics may have been initiated for the streptococcal infection. Throat cultures for streptococcal pharyngitis should be obtained. Guttate psoriasis has a good prognosis and may disappear spontaneously or may benefit from phototherapy.⁵

Clinical Pearl

Infections can cause flares of psoriasis. Streptococcal pharyngitis is a common cause of guttate psoriasis.

CASE 5

A 28-year-old man presents with a rash and pruritus (Figure 5) that has been present for 3 weeks. He has no history of skin or other health problems and is not receiving any medications. He has used no new products on the skin and has not frequented wooded areas. On examination, he has red papules and excoriations on the wrists, groin, and axillae and nodular areas on his scrotum.

Question

To identify the cause of this patient's rash and pruritus, which one of the following is the best laboratory test?

- Mineral oil preparation of a skin scraping
- Tissue transglutaminase measurement
- Skin biopsy
- Lyme disease serology
- Skin biopsy for tissue culture

Discussion

Scabies is caused by infestation of the epidermis with the mite *Sarcoptes scabiei* var. *hominis*. Infection occurs as a result of direct skin-to-skin contact; fomite transmission is uncommon. Scabies causes epidemics in schools, nursing homes, and hospitals. Pruritus is the major complaint, prominently at night, and there is often a history of itching or rash in family members and close personal contacts. The rash is due to hypersensitivity reaction to the mite protein.

Clinical features include inflammatory, excoriated papules in the web spaces of the hands and feet, the axillae, groin, wrists, and areolae, and submammary sites in women. Facial or scalp involvement is uncommon, except in children and elderly persons. Nodules or thickened areas in the scrotum are also a helpful

FIGURE 5. Rash and pruritus of 3 weeks' duration in an otherwise healthy 28-year-old man.



FIGURE 6. Brawny thickening of the skin of the upper back and neck in a 68-year-old man with diabetes mellitus and chronic renal insufficiency.

clue. The pathognomonic finding is a burrow, commonly located on the hands. Identification of mites, eggs, or fecal material on a scabies preparation is diagnostic. In immunocompromised patients, scabies may appear as a generalized scaling eruption (crusted scabies, formerly called Norwegian scabies). This form of scabies is highly infectious and can cause epidemics in hospitals or nursing homes.

Treatment of classic scabies includes the topical application of permethrin, while oral ivermectin may be used in the treatment of crusted scabies.⁶

Clinical Pearl

Scabies has a pathognomonic distribution and skin finding (burrow). Isolation of the mite with a scabies preparation (skin scraping) is the best diagnostic test.

CASE 6

A 68-year-old patient with diabetes mellitus and chronic renal insufficiency presents for evaluation of “hardening” of the skin of his neck and upper back. He has noted decreased range of motion in his neck and states that “it just feels tight.” The symptoms have been progressing. Six months ago, he underwent magnetic resonance imaging of his lumbar spine for pseudoclaudication.

On physical examination, he has no evidence of synovitis or any additional skin findings. The only notable finding is a brawny thickening of the skin of the upper back and neck (Figure 6).

Question

Which **one** of the following is the **most likely diagnosis** in this patient?

- Scleroderma
- Scleredema
- Eosinophilic fasciitis
- Nephrogenic systemic fibrosis
- Morphea

Discussion

Scleredema is an underrecognized skin sign of internal disease and is primarily seen in association with diabetes mellitus, paraproteinemia, and streptococcal infection. It presents with thickening and stiffness of the skin on the upper back and posterior aspect of the neck. In adults, it is commonly seen in association with diabetes mellitus. It may also be seen in association with multiple myeloma/paraproteinemia, hyperparathyroidism, rheumatoid arthritis, Sjögren syndrome, insulinoma, and human immunodeficiency virus infection. In children, it may be seen following a streptococcal infection. Characteristic biopsy findings include excessive mucin deposition and mild sclerosis.

Other skin signs of diabetes mellitus include candida infections of the mouth and genitalia, diabetic bullae, diabetic dermopathy (brown shin spots), necrobiosis lipoidica, foot ulcers, acanthosis nigricans, granuloma annulare, insulin lipodystrophy, and eruptive xanthoma.^{7,8}

Clinical Pearl

Scleredema presents with symmetric skin thickening of the upper back and posterior aspect of the neck and may be associated with diabetes and a variety of other medical conditions.

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CORRECT ANSWERS: Case 1: b. Case 2: a. Case 3: a. Case 4: e. Case 5: a. Case 6: b