

Cellulitis
Answers

A 20-year-old college wrestler is evaluated for a painful lesion on his upper back. He first noted a small painful area 7 days ago, and the lesion enlarged and became more red and painful during the next several days. The patient states that other members of his wrestling team have developed similar lesions. His history is otherwise uneventful. Examination of the upper back reveals a 1 x 1 cm² red, raised pustule that is tender to palpation, with a 4 x 4 cm² area of surrounding erythema. The remainder of the physical examination, including vital signs, is normal.

The lesion is incised and drained. A culture is sent to the laboratory.

1. What organism do you most suspect? MRSA

2. Which of the following is the most appropriate empiric treatment pending culture results?

- A. Levofloxacin
- B. doxycycline**
- C. dicloxacillin
- d. Cephalexin

3. What other groups are at risk for this infection? Outbreaks of MRSA have occurred in several populations, including such competitive athletes as football players, rugby players, and wrestlers, likely owing to hygiene issues. Other populations at risk for this infection include military personnel, children, prisoners, homeless persons, men who have sex with men, those living in public housing and injection drug users.

3. The patient develops recurrent episodes of these lesions; should you try to eradicate the organism? Although there is evidence that MRSA carriers can be decolonized, the net benefit of decolonization is uncertain and decolonization through the use of topical antimicrobials applied to the nares is not always successful. A review addressing eradication strategies for MRSA found insufficient evidence to support the use of topical or systemic antimicrobial therapy or combinations of these agents for eradicating nasal or extranasal MRSA and identified the potential for serious adverse events and the development of antimicrobial resistance.

4. A 32-year-old man has a 1-week history of worsening erythema and pruritus of both axillae. He is otherwise asymptomatic, his appetite is unchanged, and his weight is stable.

On physical examination, temperature is 37.1 °C (98.8 °F), pulse rate is 72/min, respiration rate is 16/min, and blood pressure level is 128/62 mm Hg. Both axillae show marked erythema, minimal tenderness, several small nonpustular vesicles, and a small amount of serous exudate that seems to be coming from ruptured vesicles. There is no erythema adjacent to the axillae and no palpable lymphadenopathy. Hemoglobin level is 15 g/dL (150 g/L); hematocrit is 47%; leukocyte count is 5.3 x 10⁹/L with 72% neutrophils, 18% lymphocytes, 2% monocytes, 8% eosinophils; and platelet count is 310 x 10⁹/L.

Cultures of the axillae grow several coagulase-negative staphylococci, *Propionibacterium acnes*, and rare *Escherichia coli*.

Which of the following is the most likely diagnosis?

- A. Streptococcal cellulitis
- B. Staphylococcal cellulitis
- C. *Pastuerella multocida* cellulitis
- D. Contact dermatitis**
- E. Hidradenitis suppurativa

5. An 83-year-old woman is brought to your office because of increasing redness and swelling of her right lower leg of several days' duration and a 12-hour history of nausea, vomiting, and diarrhea. The patient has type 2 diabetes mellitus and coronary artery disease. She has had chronic foot and lower leg swelling for several years that restricts her activity. Medications include glyburide, an angiotensin-converting enzyme inhibitor; a β -blocker; a statin; and low-dose aspirin.

On physical examination, temperature is 38.9 °C (102 °F), pulse rate is 102/min, respiration rate is 20/min, and blood pressure is 92/64 mm Hg. Profuse crackles are heard at both lung bases. Cardiac examination discloses a regular rhythm and no audible murmurs; there is a prominent S₃. The right leg is more swollen than the left and is erythematous with tenderness to the knee. There are no open lesions, and no inguinal lymphadenopathy is noted. Hemoglobin level is 11.4 g/dL (114 g/L); hematocrit is 34%; leukocyte count is 19.8 x 10⁹/L with 80% neutrophils, 15% lymphocytes, and 5% monocytes; platelet count is 281 x 10⁹/L; blood urea nitrogen is 34 mg/dL (12.14 mmol/L); serum creatinine level is 2.2 mg/dL (194.52 μ mol/L); and serum electrolytes and liver chemistry studies are normal.

The patient is hospitalized. On hospital day 2, blood cultures obtained on admission show no growth.

What is the diagnosis? Toxic shock syndrome - ↓ plts, ↓Ca, increased Cr, multi-system organ failure

6. Which of the following organisms is most likely causing this patient's current findings?

- A. *E. coli*
- B. *Clostridium tetani*
- C. *Staphylococcus aureus***
- D. *Bacillus cereus*

7. An 18-year-old male high school basketball player came to the emergency department in February because of a red patch on his left forearm. He had been well the day before, but woke up with a painful area measuring about 6 x 9 cm² on the volar surface of the forearm. The area was tender to touch, erythematous, and raised but was not fluctuant. The emergency department physician did not believe that incision and drainage were required and prescribed warm packs to the area and a course of dicloxacillin.

The patient returns to the emergency department 2 days later. The patch is larger and more tender but is still not fluctuant. He is slightly ill but does not seem toxic and is able to go to school and attend basketball practice. The emergency department physician changes the antibiotic to cephalexin, but the patient continues to become somewhat worse over the next 2 days. Which of the following is the most likely cause of this patient's clinical deterioration?

- A. Lyme disease
- B. an abscess
- C. Fasciitis
- D. A Beta-lactam-resistant organism**

8. Mr. Smith comes to your office complaining of redness, pain and swelling of his left thigh. He has just returned from vacation in Florida, where he spent a lot of time around the pool and hot tub. If he has cellulitis, what organism do you most suspect?

- a. *Eikenella corrodens* human bite
- b. ***P. aeruginosa*** hot tub exposure
- c. *Mycobacterium marinum* fish tank exposure
- d. *Pasteurella multocida* dog or cat bite

9. Your 9 year old son complains of blisters and sores on his left arm. He is afebrile, and you find numerous vesicles and ulcers on his left forearm, with surrounding erythema. The area is tender to palpation. There is no history of trauma.

What is the dx? Impetigo

What are possible causative organisms? Strep and Staph

10. What features suggest necrotizing fasciitis vs. simple cellulitis?

- Rapid increase in size of the infected area
- Evolution of violaceous bullae
- A reddish-purple discoloration of the skin
- Woody induration of the infected area
- A pale appearance of the infected area rather than erythema
- Pain or severe tenderness out of proportion to the appearance of the cellulitis
- Severe systemic toxicity
- Sepsis syndrome

11. A 53-year-old man underwent open reduction and internal fixation of a fractured tibia. The patient has diabetes mellitus and end-stage renal disease and requires hemodialysis by means of an arteriovenous graft in the left-upper extremity. Three weeks postoperatively, his surgical incision became inflamed, with an open section and drainage of cloudy yellow fluid. Culture of the discharge grew methicillin-resistant *Staphylococcus aureus* (MRSA) that was resistant to erythromycin, clindamycin, and tetracycline but was sensitive to vancomycin and trimethoprim-sulfamethoxazole. The patient was treated intermittently with vancomycin, 500 mg intravenously.

Two months later, the surgical incision is unchanged. Culture of the discharge now grows *Enterococcus faecalis* in addition to MRSA. Both pathogens are resistant to vancomycin. Polymerase chain reaction shows that the MRSA is vanA ligase-positive.

Which of the following is the most appropriate antibiotic agent for this patient?

- A. Linezolid
- B. Trimethoprim-sulfamethoxazole
- C. Clindamycin
- D. Imipenem
- E. Quinupristin-dalfopristin

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The lesion is incised and drained. A culture is sent to the laboratory.

1. What organism do you most suspect?
2. Which of the following is the most appropriate empiric treatment pending culture results?
 - A. Levofloxacin
 - B. Doxycycline
 - C. Dicloxacillin
 - d. Cephalexin
3. What other groups are at risk for this infection?
4. The patient develops recurrent episodes of these lesions; should you try to eradicate the organism?
5. A 32-year-old man has a 1-week history of worsening erythema and pruritus of both axillae. He is otherwise asymptomatic, his appetite is unchanged, and his weight is stable.

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