

THE EFFECTIVE PHYSICIAN

Management of Skin Infections

BY WILLIAM E. GOLDEN, M.D., AND ROBERT H. HOPKINS, M.D.

Background

Skin and soft tissue infections are common, and mild varieties are usually treated easily; however, emerging antimicrobial resistance can make treatment more difficult. The Infectious Diseases Society of America issued guidelines in November 2005 on the evaluation and management of skin structure infections.

Conclusions

Making a microbiologic diagnosis of simple cellulitis is difficult, and usually unnecessary, in patients with mild illness. But patients with soft tissue infection and signs of systemic toxicity, hypotension, immunosuppression, and/or renal insufficiency require more extensive evaluation for an etiologic diagnosis and may require inpatient care.

Progression of infection despite empiric antibiotics could indicate resistant infection or an underlying deeper infection. Gram stain, culture, and antimicrobial sensitivity data are very useful for directing therapy.

Cellulitis with furuncles, carbuncles, or abscesses usually is associated with *Staphylococcus aureus*, but diffuse cellulitis without an obvious entry portal is most commonly streptococcal.

Although 50% of methicillin-resistant *S. aureus* (MRSA) strains have inducible or constitutive clindamycin resistance, most community-acquired strains remain sensitive to trimethoprim-sulfamethoxazole and to tetracycline. Some series have reported high failure rates for doxycycline and minocycline.

Implementation

Mild cases of impetigo may respond to topical mupirocin alone; response to other topical agents is less common. Patients who do not respond to topical agents and those with numerous lesions should be treated with oral agents effective against *S. aureus* and *Streptococcus pyogenes*.

Minor cellulitis may be empirically treated with a semisynthetic penicillin or a first- or second-generation oral cephalosporin unless resistant infections are common in the community. Skin aspiration and blood cultures are rarely revealing in patients with cellulitis, but positive cultures, when obtained, can be useful in resistant infections.

Cutaneous abscesses and inflamed cysts must be incised, evacuated, and probed to break up loculations. Dry surface dressings are simple and effective. Gram stain, culture, and systemic antibiotics usually are unnecessary.

Patients hospitalized with *S. aureus* infections and those who worsen on therapy should be presumed to have MRSA and should be treated with vancomycin, daptomycin, or linezolid. After initial clinical response, and based on susceptibility data, a step-down to trimethoprim-sulfamethoxazole or tetracycline may be possible in some patients.

Clues to potentially severe underlying soft tissue infection include pain out of proportion to cutaneous findings, violaceous bullae, cutaneous hemorrhage, skin sloughing, rapid progression, skin anesthesia, or gas in the tissue. These findings often occur late in necrotizing infection, and their presence necessitates emergent surgical evaluation.

Animal bites account for 1% of visits to emergency departments, and 80% of these are

dog bites. Most associated infections are polymicrobial; Pasteurella species are the most commonly isolated. The extent of the injury and the depth and location of the wound all should be considered in deciding between oral and parenteral therapy. Most patients should be treated with oral amoxicillin-clavulanate, intravenous ampicillin-sulbactam, or ertapenem.

Human bites cause polymicrobial infections and are best treated with parenteral ampicillin-sulbactam or cefoxitin.

Patients who are diagnosed with tularemia should be treated with gentamicin or streptomycin for 7-10 days in most cases.

Surgical soft tissue infections rarely occur within the first 48 hours following surgery; fever in this time frame should prompt evaluation for another source. Surgical site infection is the most common source of fever that occurs more than 48 hours postoperatively.

For patients with fever less than 38.5°C and no signs of systemic toxicity, observation and dressing changes are usually sufficient. Patients with signs of toxicity require opening of the suture line and systemic antibiotics directed at the most likely organisms, based on the specific surgical procedure and site.

More than 20% of patients with chemotherapy-induced neutropenia develop skin and soft tissue infections. Infections occurring less than 7 days after onset of neutropenia are most commonly caused by bacteria; those occurring later are usually caused by resistant bacteria, fungi, or yeast.

Neutropenic patients with gram-negative infections may be given monotherapy with carbapenems, cephalosporins with antipseudomonal activity, or piperacillin-tazobactam.

Vancomycin is often included in initial empiric regimens for neutropenic patients with fever, but if cultures are negative at 72-96 hours, vancomycin should be discontinued. Profoundly neutropenic patients with ongoing fever and illness despite empiric antibiotics may benefit from empiric antifungal treatment.

Persons with defects of cell-mediated immunity are at risk for skin infections that result from bacteria, viruses, protozoa, helminths, or fungi. Skin manifestations may indicate the primary site of infection or hematogenous seeding.

Reference

Stevens D.L., et al. Practice Guidelines for the Diagnosis and Management of Skin and Soft-Tissue Infections. *Clinical Infectious Diseases* 2005;41:1373-406.



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Community-Acquired MRSA Meets Baseball

BY JANE SALODOF
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KAPALUA, HAWAII — Bars of soap and the sharing of personal items such as razors and towels have been banned from the New York Yankees clubhouse as a prophylaxis against the spread of methicillin-resistant *Staphylococcus aureus* infections.

"Baseball got put on notice in 2005 when two of its biggest stars got community-acquired staph infections," said Steve Donohue, the team's assistant trainer, as he described these and other defensive measures to physicians at the Winter Clinical Dermatology Conference, Hawaii.

Noting growing concern about risks faced by professional athletes, he cited the ailments of major league players Barry Bonds and Sammy Sosa, both of whom were waylaid last year, and the death of St. Louis Rams football announcer Jack Snow in January. An abscess and staph infection on the bottom of Mr. Sosa's left

foot put him on the Baltimore Orioles' disabled list during the 2005 season. Mr. Bonds played only 14 games for the San Francisco Giants while battling a bacterial infection after knee surgery.

Mr. Donohue said the Orioles management had infectious disease experts screen the Orioles clubhouse. He reported they found methicillin-resistant *Staphylococcus aureus* (MRSA) in two places: a carpet in front of Mr. Sosa's locker and ripped mats in the weight room.

Mr. Snow, 62, a former star player for the Rams, died after being hospitalized for several months with a staphylococcus infection. Mr. Donohue said he did not know whether it was caused by MRSA.

He noted, however, that a study reported 5 of 58 Rams players had MRSA infections in the 2003 season (*N. Engl. J. Med.* 2005;352:468-75). Three infections were recurrent, bringing the team's total number of MRSA infections to eight.

Although the authors of the Rams study did not find MRSA in nasal or environmental samples, they did find MRSA in whirlpools and taping gel and in 35 of 84 nasal swabs from players and staff. "This study is particularly scary," Mr. Donohue said at the meeting sponsored by the Center for Bio-Medical Communication Inc.

Professional athletes have many risks for MRSA infections, Mr. Donohue said. He listed turf burns and abrasions, shared equipment, body shaving (which he said has

"increased sharply with the bodybuilding and weight-lifting culture that has taken over baseball a little bit"), and frequent antibiotic use.

"In sports, players tend to be treated more aggressively, because they can't miss any time," Mr. Donohue said.

In the football study, the investigators calculated that the Rams players received an average of 2.6 antimicrobial drug prescriptions per year, according to entries in a team pharmacy log during 2002. This was described as more than 10 times the rate for men of the same age in the general population. During the 2003 season, about 60% of Rams players surveyed reported they had taken or received antimicrobial drugs.

Mr. Donohue said the Yankee



In the Orioles clubhouse, MRSA was found on the carpet in front of Mr. Sosa's locker and on mats in the weight room.

MR. DONOHUE

trainers have taken aggressive countermeasures to control and prevent MRSA infection from spreading in locker rooms at home or on the road. These include limiting the activity of anyone with an infection, providing alcohol-based hand rubs and antimicrobial soaps, banning the sharing of personal items such as towels and razors (which must be disposable), and being vigilant about surface and spa infection.

"We don't have any more bars of soap in our clubhouse anywhere. It is all liquids and gels," he said, adding, "we spray everything with a 10% bleach solution."

Players are educated about proper hand washing, he said, and trainers are alert to the risk from skin infections. Especially worrisome are situations when "a player complains of bug bites without seeing any bugs."

The team may need to do more, Mr. Donohue speculated, as he threw out two questions for his physician audience to ponder: "One, should nasal swab surveys be part of our spring training routine physical? Two, if we have a player who is infected with MRSA, would you prophylactically use [mupirocin] Bactroban nasally on the rest of the team to try and prevent colonization?"

Dr. Darrell S. Rigel, clinical professor at New York University, New York, also observed that MRSA is becoming a serious concern for the Yankee team, to which he is a dermatologic consultant. ■