Editorial

Is Resistance Futile?

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One of the greatest clinical challenges of the new century is the emergence of antibiotic resistance. Strains of methicillin-resistant *Staphylococcus aureus* (MRSA) are increasingly common in the community.[1] These differ, however, from the usual hospital-acquired MRSA isolates in their molecular biology, activity, and antimicrobial susceptibility. More and more, infection has emerged in patients who do not have the established risk factors.

To ascertain the national burden and clinical effect of MRSA, Fridkin et al[1] evaluated MRSA infections in patients identified from population-based surveillance in Baltimore and Atlanta and from hospital-laboratory–based sentinel surveillance of 12 hospitals in Minnesota. Information was obtained by interviewing patients and reviewing their medical records. Infections were classified as community-acquired MRSA disease if no established risk factors were identified in the patient.[1]

From 2001 through 2002, 1647 cases of community-acquired MRSA infection were reported, representing between 8% and 20% of all MRSA isolates.[1] The annual disease incidence varied according to the site (25.7 cases per 100,000 population in Atlanta vs 18.0 per 100,000 in Baltimore) and was significantly higher among persons younger than 2 years than among those who were 2 years or older (relative risk, 1.51; 95% CI, 1.19–1.92) and among blacks than among whites in Atlanta (age-adjusted relative risk, 2.74; 95% CI, 2.44–3.07). Six percent of cases were invasive, and 77% involved skin and soft tissue. The infecting strain of MRSA was resistant to prescribed antimicrobial agents in 73% of cases. Among patients with skin or soft tissue infections, the therapy to which the infecting strain was resistant did not appear to be associated with adverse patient-reported outcomes. Overall, 23% of patients were hospitalized for the MRSA infection. The authors concluded that community-associated MRSA infections are now a common and serious problem. These infections usually involve the skin, especially among children, and hospitalization is common.[1]

How is the dermatologist to respond to this situation? Chambers[2] notes that issues concerning outpatient management of suspected staphylococcal skin and soft tissue infections in communities in which MRSA is prevalent are "murky." Oral agents such as trimethoprim-sulfamethoxazole; doxycycline; and clindamycin, to which community-associated MRSA strains are often susceptible in vitro, have little or no track record to demonstrate their clinical effectiveness. Newer drugs such as linezolid, which is approved by the US Food and Drug Administration for the treatment of MRSA infections, are quite expensive.

Importantly, according to Chambers,[2] the question of whether initial therapy with an antibiotic active against MRSA even affects the outcome of skin and soft tissue infections is uncertain. As noted in the study by Fridkin et al,[1] patients who were prescribed an antimicrobial agent to which the isolate was not susceptible actually had fewer follow-up visits and were less likely to have a new antimicrobial prescribed than those given a drug to which the isolate was susceptible, though the difference did not achieve statistical significance except among those undergoing incision and drainage. Potentially, with adequate surgical drainage, skin and soft tissue infections severe enough to warrant hospitalization resolve regardless of whether the antimicrobial agent given to the patient has in vitro activity.[2]

Chambers[2] concludes that as rates of community-associated MRSA infection rise, clinical trials will be needed to determine the precise role of antimicrobial agents in the treatment of uncomplicated skin and soft tissue infections and to identify which agents are most clinically effective and cost-effective.

In the meantime, dermatologists should probably routinely perform bacterial cultures, regularly employ incision and drainage, and become aware of novel antibacterial therapeutic options for skin and skin structure infections.[3]

REFERENCES

1. Fridkin SK, Hageman JC, Morrison M, et al, for the Active Bacterial Core Surveillance Program of the Emerging Infections Program Network. Methicillin-resistant *Staphylococcus aureus* disease in three communities. *N Engl J Med*. 2005;352:1436-1444.
2. Chambers HF. Community-associated MRSA—resistance and virulence converge [editorial]. *N Engl J Med*. 2005;352:1485-1487.
3. Schweiger ES, Weinberg JM. Novel antibacterial agents for skin and skin structure infections. *J Am Acad Dermatol*. 2004;50:331-340.