Antibiotics as Adjunctive Treatment of Uncomplicated Cutaneous Abscess

Opposing authors provide succinct, authoritative discussions of controversial issues in emergency medicine. Authors are provided the opportunity to review and comment on opposing presentations. Each topic is accompanied by an Editor's Note that summarizes important concepts. Participation as at authoritative discussant is by invitation only, but suggestions for topics and potential authors can be submitted to the section editors.

Editor's Note: *Recent randomized controlled trials indicate that administering antibiotics, in addition to traditional incision and drainage, yields improved cure rates among patients presenting with uncomplicated skin abscess. To achieve superior outcomes, antibiotics must be provided to all patients, even though only a minority will receive benefit. This implies that the majority of patients will need to bear the expense and potential adverse effects of antibiotic treatment to ensure favorable outcomes in a minority. In this installment of Clinical Controversies, pro and con advocates present evidence and arguments relating to the use of antibiotics in treating uncomplicated skin abscesses and discuss opposing perspectives that should be considered in deciding whether to administer antibiotics after drainage of simple cutaneous abscesses.*

STEWARDSHIP OF PATIENT OUTCOMES BASED ON EVIDENCE NOT EXPERT OPINION

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Emergency department (ED) visits for skin and soft tissue infections have increased substantially during the past 2 decades, and the primary culprit has been the skin abscess.[1] *Staphylococcus aureus*, including community-acquired methicillin-resistant *S aureus* (MRSA), is the leading cause of skin infections in many locations. Historically, the standard approach for management of uncomplicated skin abscesses has primarily been incision and drainage alone, and adjunctive antibiotics have been discouraged.[2] This dogmatic approach has been supported by small studies unpowered to demonstrate potentially important differences in outcomes[2,3] or which tested antibiotics that are inactive against community-acquired MRSA.[4] The practice was largely perpetuated by expert opinion in which the strength of recommendations far exceeded the strength of accompanying evidence, perhaps motivated by the push for stewardship to limit antibiotic use to circumstances with proven benefit.[5]

The traditional management of uncomplicated skin abscess has been called into question by the publication of recent articles describing 2 independently conducted US multicenter randomized controlled trials in children and adults.[6,7] These studies investigated greater than 2,000 combined patients with an uncomplicated skin abscess and demonstrated that oral antibiotics with activity against community-acquired MRSA, in addition to incision and drainage, were superior to incision and drainage (and placebo). In one trial, trimethoprim/sulfamethoxazole (320 mg/1,600 mg twice daily) was used for 7 days,[6] and in the other, trimethoprim/sulfamethoxazole (160 mg/800 mg twice daily) or clindamycin (300 mg 3 times daily) was used for 10 days.[7] In both trials, antibiotics were associated with significantly higher cure rates and lower rates of new skin infections and subsequent drainage procedures, extending out to as far as 6 weeks after treatment. One study that evaluated subsequent hospital admissions and infections in household members found these too were significantly reduced.[6]

In the one trial that had a clindamycin arm, this antibiotic was associated with more adverse events.[7] In both studies, trimethoprim/sulfamethoxazole and placebo had similar adverse event rates, and most antibiotic reactions were mild gastrointestinal adverse effects that did not affect medication adherence. No cases of *Clostridium difficile* colitis or Stevens-Johnson's syndrome occurred. There was only one severe reaction, thought to be due to trimethoprim/sulfamethoxazole–related hypersensitivity that resolved without sequelae,[7] although the studies were powered to compare neither rates of rare severe antibiotic reactions nor development of potentially antibiotic-preventable invasive infections.

Although a full discussion of findings of all studies is beyond the scope of this summary, examination of the findings of the largest trial, by Talan et al,[6] which involved 1,265 participants, is illustrative. The between-group percentage-point difference in cure rate of the primary lesion such that no new antibiotics were required was 7, or a number needed to treat of 14. Antibiotics were also associated with a reduced rate of recurrent abscesses and new lesions. When cure was defined as not requiring either a new antibiotic or a new drainage procedure, then the percentage-point difference was 12, or a number needed to treat of only 8.

The main limitation of all these trials was defining a sufficient threshold of benefit compared with cost. Any treatment failure likely leads to another ED or office visit (hundreds of dollars), another incision and drainage (several more hundreds of dollars), or both. A total course of trimethoprim-sulfamethoxazole costs approximately $5. One does not even have to assume the near 50% reduction in subsequent hospitalization rate[6] (ie, 6.4% to 3.6%; several thousands of dollars) to understand the overwhelming financial benefit independent of alleviation of patient suffering and reduced disease transmission.

For skeptics of 2 large randomized controlled trials with remarkably concordant results demonstrating efficacy of a limited course of inexpensive off-patent antibiotics, there are further data to inform practice. Talan et al[8] recently reported a planned subgroup analyses of the largest of the 2 trials[3] to test previous expert recommendations that only patients with a large skin abscess associated with certain conditions should receive adjunctive antibiotics.[2] Antibiotic benefit was found regardless of whether the abscess cavity or surrounding erythema was small or large and regardless of the absence or presence of fever, history of MRSA, diabetes, and other comorbidities. These were secondary analyses and are not validated associations that can guide selective treatment of high- and low-benefit subgroups, although they present opportunity for further expert opinion. The reduction in the rate of recurrent infections with use of community-acquired MRSA antibiotics has been substantiated, with the effect demonstrated to extend over 12 months.[9] Furthermore, a recent meta-analysis that included past underpowered trials concluded that use of antibiotics resulted in increased rate of clinical cure, decreased rate of new lesion development, and only a minimal increase in mostly mild adverse events.[10]

These well-designed studies offer evidence for routinely recommending, if not at least offering, adjunctive antibiotics to patients with a drained skin abscess. The promotion of bacterial antibiotic resistance in a community is related to total tonnage of personal, food animal, and environmental exposure,[11] and this exceeds the limited amount of these targeted antibiotics for healthy individual community dwellers. Theoretic concerns of antibiotic stewards should not come at the expense of validated improved patient outcomes. Furthermore, the data support benefits that extend well beyond cure of the primary lesion to prevention of new infections, additional surgical procedures, hospitalizations, and even disease in the community. At a minimum, the benefits of adjunctive antibiotics, in the face of minimal cost and risk, should be a routinely presented option to patients as part of shared decisionmaking. Ultimately, what is most important is that we be good patient stewards, and we can now base our treatment decisions on evidence, not just expert opinion.

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