

Do systemic antibiotics for skin and soft tissue abscesses after incision and drainage improve cure rates compared with placebo? A critical appraisal

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Article type: Systematic Review and Meta-Analysis
Ratings: Methods – 4/5 Usefulness – 4–5/5

Setting

Literature search of PubMed, CINAHL, Cochrane Database of Systematic Reviews, and Cochrane Central Register of Controlled Trials up until November 2017.

Eligibility criteria

RCTs comparing the use of systemic antibiotics with methicillin-resistant *Staphylococcus aureus* (MRSA) coverage versus placebo post I&D in the treatment of skin/soft tissue abscesses. Exclusion criteria included case reports, case series, retrospective studies, nonrandomized prospective studies and studies in abstract format only.

Outcomes

The primary outcome was treatment failure within 21 days post I&D; secondary outcomes included differences in recurrence rates for new abscesses and adverse events.

RESULTS

Four trials were included with a total of 2,406 patients (median age range: 4–44 years). There was no significant statistical heterogeneity across studies, $I^2 = 0\%$ ($p = 0.45$). Overall, there were 89 (7.7%) treatment failures in the antibiotic group and 150 (16.1%) in the placebo group. The risk difference for cure was 7.4% (95% CI 2.8%–12.1%), with a number needed to treat (NNT) of 14 and an odds ratio (OR) for clinical cure of 2.32 (95% CI 1.75–3.08). For secondary outcomes, there was a decreased recurrence of abscess in the antibiotic

INTRODUCTION

Background

Based on small historical studies, incision and drainage (I&D) has been the standard treatment of skin/soft tissue abscesses. Recent larger randomized controlled trials (RCTs) have suggested that post I&D antibiotics improve the cure rate of abscesses.

OBJECTIVES

The aim of this study was to determine whether post I&D antibiotics improve cure rates of skin/soft tissue abscesses.

METHODS

Design

Systematic review and meta-analysis

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group compared with placebo at 10–30 days (risk difference: –10.0%, 95% CI –12.8% to –7.2%) with an NNT = 10 and an OR = 0.32 (95% CI 0.23–0.44). This was accompanied by a minor increase in adverse events (risk difference of 4.4%, 95% CI 1.0%–7.8%; number needed to harm = 23 and an OR = 1.29, 95% CI 1.06–1.58).

APPRAISAL

Strengths

- Clinically relevant patient/problem, intervention, comparison, outcome (PICO) question
- Comprehensive literature search mitigating publication bias
- Adherence to preferred reporting items for systematic reviews and meta-analyses (PRISMA) guidelines¹
- Article selection, unbiased and reproducible
- Use of the Cochrane Risk of Bias Tool to assess primary studies
- Large patient population with clinically important outcomes
- Statistical heterogeneity assessed and accounted for
- Publication bias formally evaluated
- Overall small losses to follow up that did not exceed the outcome event rate

Limitations

- Only included four RCTs
- Primary studies performed in differing settings (ED or outpatient)
- Different antibiotics used in primary studies – however, both associated with improved clinical cure rates
- Differing definition of clinical cure in primary studies (one used a clinical definition, three used both a clinical definition and the need for further intervention)
- Differing follow-up periods among studies for primary outcome (three used 7–10 days; one used 14–21 days)
- Limited statistical power to assess rare but serious adverse outcomes

CONTEXT

The largest meta-analysis performed to date on this topic. Expert consensus is shifting to use of post I&D antibiotics for uncomplicated abscesses. Further study is needed to determine which populations (i.e., immunocompromised, comorbid, overlying cellulitis) have the most benefit. Similarly, more evidence is needed about the effects of widespread antibiotic use on both the patient and healthcare system levels. All studies were undertaken in the United States, where incidence of MRSA is higher.²

BOTTOM LINE

This well-executed meta-analysis demonstrates a modest but significant difference in the cure rate with the use of MRSA covering antibiotics with only a small increase in mild, self-limited adverse events. This study is not able to identify subgroups of patients that would most benefit from, nor considers potential effects of more widespread antibiotic use. Based on the previous evidence, we suggest the use of systemic antibiotics with MRSA coverage following I&D of skin and soft tissue abscesses in the ED, notwithstanding the potential increased adverse event risks associated with antibiotic therapy.

Keywords: Incision and drainage, skin abscess, soft tissue infection, systemic antibiotics

Competing interests: None declared.

REFERENCES

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