Management of Skin Abscesses: The Buffalo Experience

Lucy Holmes MD, Haiping Qiao, MBBS, Cheryl Drabik MSN, Donna Jones MSN, Sarah Judkiewicz MSN, Colleen Hurley MSN, Kiran Majeed MD, Kathy Alessi RN, Howard Faden MD

Background

• Dramatic increase in skin & soft tissue infections (SSTI) in the last 15 years
• Most of these SSTI have been abscesses caused by community-associated methicillin-resistant Staphylococcus aureus (CA-MRSA)
• 1st report of CA-MRSA in children published in 1998

<table>
<thead>
<tr>
<th>Risk Factors *</th>
<th>CA-MRSA</th>
<th>HA-MRSA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Causes invasive disease</td>
<td>Less often</td>
<td>More often</td>
</tr>
<tr>
<td>Resistant to many antibiotics</td>
<td>Less often</td>
<td>More often</td>
</tr>
<tr>
<td>Type of SCCmec gene</td>
<td>Type IV &amp; V</td>
<td>Type II &amp; III</td>
</tr>
</tbody>
</table>

Background

• Open incision & drainage alone, in otherwise healthy patients, is sufficient treatment in patients with skin abscesses (Stevens, 2005)
• It is less clear if this is sufficient management for patients with skin abscesses caused by CA-MRSA
Background

- 2011 Clinical Practice Guidelines by the Infectious Diseases Society of America

- I & D alone was likely sufficient management for simple abscesses

Background

- Studies early in the SSTI epidemic supported this management decision.

- Patients with SSTI & placed on antibiotics that were not effective against CA-MRSA did not have more adverse outcomes than patients who were prescribed an antibiotic that was effective.


Background

- Adult patients prescribed an active antimicrobial were significantly more likely to experience treatment cure than patients prescribed an inactive antimicrobial. (95% v. 87%)

Ruhe (2007)

Background

- Retrospective study

- Patients with SSTI more likely to be prescribed TMP/SMX in 2005 than in 1998

- Significantly more patients with MRSA had clinical resolution in 2005 than in 1998

Szumowski (2007)

Background

- Double-blind, randomized controlled study

- Pediatric study

- All patients had surgical drainage of abscess

- 10 days of TMP/SMX v. placebo

- No significant difference in failure rates between 2 groups

Duong (2010)

Background

- Placebo group significantly more likely to have new lesion formation (greater than 5 cm from the original skin abscess) at the 10 day follow-up

- This difference disappeared by the 3 mo. follow-up

Duong (2010)
Background

Conclusion:

- Antibiotics not required for resolution of pediatric skin abscesses
- Antibiotics may help prevent new lesions in the short term.

Duong (2010)

Background

- A similarly designed adult study showed no significant difference in failure rates at the 7 day follow-up
- However, a significantly higher recurrence rate in the placebo group within 30 days of the initial abscess

Schmitz (2010)

Background

Conclusion:

- Treatment with TMP/SMX after incision & drainage of uncomplicated abscesses in adults does not reduce treatment failure, but may decrease new lesions

Schmitz (2010)

Objective

To determine if 3 or 10 days of TMP/SMX for the treatment of skin abscesses after incision & drainage affects

1. Cure rate
2. New lesions in the index case
3. Secondary infection to household contact rates

Methods – patient population

- Age 3 mo. to 17 yrs old
- Present to the ED at WCHOB with a skin abscess that required surgical drainage
- Abscess defined as a localized collection of pus, causing soft tissue swelling & surrounded by firm granulation tissue

Methods – exclusion criteria

- Require immediate hospitalization
- Received 2 or more doses of an oral antibiotic in the previous 36 hrs
- Chronic medical condition such as diabetes, sickle-cell disease, an immuno-compromising disease, an underlying medical condition predisposing the patient to frequent hospitalizations or medical visits
Methods – exclusion criteria

- Concurrent additional infection
- Indwelling catheters or percutaneous medical devices
- Allergy to TMP/SMX

Methods

- Patients had an I & D done under conscious sedation with the placement of a subcutaneous drain
- Patients randomized to receive 3 or 10 days of TMP/SMX
- Patients followed-up 10-14 days later in surgery clinic to remove the subcutaneous drain & assess for resolution of the infection

Minimally invasive surgical technique

Minimally invasive surgical technique

Minimally invasive surgical technique

Minimally invasive surgical technique
Minimally invasive surgical technique

Methods

Cure defined as:
1. No or minimal tenderness
2. No or minimal erythema
3. No fever
4. No wound drainage
5. No warmth
6. No fluctuance or induration

• New lesions defined as:
  New infection involving a non-contiguous anatomic site or the same site more than 2 weeks after resolution of the original infection
### Results - Demographics

<table>
<thead>
<tr>
<th></th>
<th>3 Days (%)</th>
<th>10 Days (%)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>125 (50.2)</td>
<td>124 (49.8)</td>
<td>ns</td>
</tr>
<tr>
<td>Age, median</td>
<td>54 mos.</td>
<td>43 mos.</td>
<td>ns</td>
</tr>
<tr>
<td>Age, range</td>
<td>6 mo – 17 yrs</td>
<td>4 mo – 17 yrs</td>
<td>ns</td>
</tr>
</tbody>
</table>

### Gender

- Male: 37%
- Female: 63%

### Race

- Black: 0%
- Hispanic: 10%
- White: 20%
- Other: 70%

### Location of Abscess

- Head/Neck: 4%
- Groin: 5%
- Thigh: 11%
- Ankles: 7%
- Lower Leg/Foot: 6%
- Buttock: 36%

### Fever

- Yes: 5%
- No: 95%
History of Abscess

Household Contact with History of Abscess

Culture Results

Culture Results

Culture Results Sensitivities

Treatment Results – all cultures
Treatment Results – Staph. Aureus

- 3 days, 8.3%
- 10 days, 1.8%

Failures: p=0.04

Treatment Results – MSSA only

- 3 days, 2.6%
- 10 days, 2.5%

Failures: p=1.00

Treatment Results - MRSA

- 3 days, 11.6%
- 10 days, 1.4%

Failures: p=0.03

New lesions up to 1 mo. follow-up in index patient - MRSA

- 3 days, 13.3%
- 10 days, 3.0%

New Lesions: p=0.03

New lesions up to 1 mo. follow-up in household contact - MRSA

- 3 days, 13.3%
- 10 days, 17.9%

New Lesions: p=0.48

New lesions up to 6 mo. follow-up in index patient

- 10-14 day: 20%
- 1 mo: 26%
- 2 mo: 28%
- 3 mo: 32%
- 4 mo: 34%
- 5 mo: 35%
- 6 mo: 38%

New Lesions: p=0.03
New lesions up to 6 mo. follow-up in household contact

Conclusions

- Most skin abscesses are below the waist
- 37% of patients with a skin abscess had a history of a previous abscess
- 50% of patients with a skin abscess had a history of a household contact with a previous abscess

Conclusions

- 90% of skin abscesses were caused by staph. aureus
- 64% of the staph. abscesses were MRSA
- 36% of the staph. abscesses were MSSA

Conclusions

- 100% of staph. isolates were sensitive to TMP/SMX
- 94% of the MRSA isolates were sensitive to clindamycin
- 87% of the MSSA isolates were sensitive to clindamycin

Conclusions

- 42% of patients with skin abscesses had a new skin infection within 6 months of presentation
- 30% of patients with skin abscesses had a household contact with a new skin infection within 6 months of presentation

Conclusions

Patients with abscesses infected with MRSA & given 3 days of appropriate antibiotic therapy instead of 10 days were more likely to:

1. experience treatment failure
2. experience new lesions up to 1 month after presentation
Unanswered Questions

- Why do patients with skin abscesses have recurrent infections?
- Why do patients with skin abscesses have household contacts with abscesses?
- If patients with recurrent abscesses are colonized with Staph. aureus, where are they colonized?
- What would be the best treatment to reduce recurrent abscesses?
- What would be the best treatment to prevent household contact abscesses?