Critical Review Form

Therapy

Management & Outcome of Children with Skin & Soft Tissue Abscesses Caused by Community-Acquired Methicillin-Resistant Staphylococcus aureus

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Objectives: To report the management and outcome of skin and soft tissue abscesses caused by CA-MRSA in children.

Methods: Prospective observational study at University of Texas Southwestern from 5/02-2/03. MRSA identified by a single investigator who reviewed ED microbiology laboratory log book Monday-Friday with subjects excluded if no working phone number or inadequate documentation at index ED evaluation. All subjects had two follow-ups: a) 1-6 days (when culture results available); b) 6-10 day (one week after first follow-up).

In addition, charts were reviewed 2-6 months after the index ED evaluation to ascertain retrospectively if recurrent abscesses occurred. For those who did not follow-up physically as instructed, phone follow-up with an adult caregiver was conducted by a physician responsible for the care of the patient. Data collected included demographics and PMN, abscess I&D, wound packing, culture results, antibiotics therapy before and after culture results, change in antibiotics therapy, fever, site/size of abscess and follow-up of presence/absence, better/worse, discharge/tenderness/erythema.

Guide		Comments
I.	**Are the results valid?**	
A.	**Did experimental and control groups begin the study with a similar prognosis (answer the questions posed below)?**	
1.	Were patients randomized?	No – a single prospective observational study to describe present management and outcome.
2.	Was randomization concealed (blinded)?	Not randomized.
3.	Were patients analyzed in the groups to which they were randomized?	Not randomized.
4.	Were patients in the treatment and control groups similar with respect to known prognostic factors?	Not randomized, so no treatment and control groups.

B.	**Did experimental and control groups retain a similar prognosis after the study started (answer the questions posed below)?**	
1.	Were patients aware of group allocation?	Not randomized or blinded so yes patients and clinicians and outcome assessors aware of treatment provided. Lack of randomization with a control group and non-blinded approach open the door for a variety of biases: *compliance*, *ascertainment*, *selection*, etc.
2.	Were clinicians aware of group allocation?	Yes. Retrospective Study.
3.	Were outcome assessors aware of group allocation?	Yes. Retrospective Study.
4.	Was follow-up complete?	No. 6/62 lost to follow-up. (Fig 1, p.126)
II.	**What are the results (answer the questions posed below)?**	

1.	How large was the treatment effect?	• 62/69 had out patient treatment with antibiotics ineffective for MRSA based on in vitro resistance • Fever >101°F in 48% • Gram stain positive (GPC in 91%) • In vitro, MRSA 100% sensitive to Bactrim, Vancomycin, Rifampin, and Gentamycin with 88% sensitivity to Clindamycin. • Only 36% had antibiotics changed based on susceptibility results at first visit. • Four patients (6%) treated with ineffective antibiotics were admitted at the first follow-up versus none (0/5) of those treated with effective antibiotics. • Significant numbers of outpatient failures were due to size of abscess >5cm (33%) subsequently hospitalized versus 0% <5cm, p = 0.004). • At the second follow-up visit there was no significant difference observed between those changed to effective antibiotics and those not switched regarding tenderness, erythema, fever, wound discharge or size. • 4.3% recurrence rate between 2 to 6 months.
2.	How precise was the estimate of the treatment effect?	No Confidence Intervals are provided.

III.	How can I apply the results to patient care (answer the questions posed below)?	
1.	Were the study patients similar to my patient?	No, these were pediatric patients.
2.	Were all clinically important outcomes considered?	Yes, except medications side effects.
3.	Are the likely treatment benefits worth the potential harm and costs?	No appreciable benefit to antimicrobial treatment in this non-randomized, select patient population.

Limitations

1. Selection bias – only assessed those who had cultures positive for MRSA. What about those who had abscess without cultures? Also those who lack phone for follow-up (exclusion criteria) may differ importantly from those who do.
2. Observational trial not randomized controlled trial so multiple potential biases preclude definitive conclusions about a cause-effect relationship.
3. Large (10%) loss to follow-up without any sensitivity analysis.
4. *In vitro* sensitivity patterns may not reflect *in vivo* reality and predicted clinical response.
5. No assessment of compliance (other than refilling) which would impact therapeutic response.
6. No Kappa analysis of subjective measures such as better/worse or discharge/tenderness/erythema.

Bottom Line

Prospective observational trial of children at one Texas hospital suggesting CA-MRSA soft tissue abscesses managed with incision, drainage and packing do not benefit from antibiotic therapy as measured by subjective outcomes such as improved appearance of abscess or associated discharge, tenderness or erythema. Future RCT should assess these and other patient-oriented evidence that matters in the era of CA-MRSA to more confidently define the role of adjuvant antimicrobial therapy. Abscesses larger than 5cm may benefit from antibiotic therapy and/or admission.