AAP Journals BLOG

Do We Need Antibiotics for Skin Abscesses?

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Among children with uncomplicated skin abscesses treated with trimethoprim-sulfamethoxazole (TMP-SMX) following surgical drainage, do those treated with a 3-day course experience higher failure and recurrence rates as compared to those treated with a 10-day course of TMP-SMX?

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Article type: AAP Grand Rounds Blog

At first glance, I thought this article might actually change clinical practice. My hopes were dashed at the third paragraph of the Methods section.

Source: Holmes L, Ma C, Qiao H, et al. Trimethoprim-sulfamethoxazole therapy reduces failure and recurrence in methicillin-resistant Staphylococcus aureus skin abscesses after surgical drainage. J Pediatr. 2016;169:128-134.e1; doi:10.1016/jpeds.2015.10.044. See AAP Grand Rounds commentary by Dr. Rebecca Brady (subscription required).

PICO Question: Among children with uncomplicated skin abscesses treated with trimethoprim-sulfamethoxazole (TMP-SMX) following surgical drainage, do those treated with a 3-day course experience higher failure and recurrence rates as compared to those treated with a 10-day course of TMP-SMX?

Question type: Intervention

Study design: Randomized controlled trial

The party line, including in well-respected national guidelines, has been that adequate surgical drainage of small cutaneous abscesses is sufficient therapy, and subsequent antibiotic treatment is unnecessary. However, most of the evidence for that management plan comes from retrospective studies, which are well-known to be less reliable and more likely to be refuted by research utilizing a study design less prone to bias, such as a randomized controlled trial (RCT). So, to see a RCT on the subject gave me some hope, but on closer examination the lack of blinding in the study calls the results into question.

Investigators at a single institution enrolled 249 children ages 3 months to 17 years with uncomplicated skin abscess at least 1 cm in diameter. They underwent incision and loop drainage, and then were randomized to either 3 days or 10 days treatment with trimethoprim/sulfamethoxazole (tmp/smx). No placebo was used, and thus neither investigators nor patients and families were blinded to study group assignment, a big problem since this introduces bias; for example, a family randomized to 3 days might be more worried about treatment failures, and thus more likely to seek medical attention, than would a family randomized into the 10 day group. (As an aside, a minor quibble here that I lay at the feet of the journal editors: the randomization wasn't described completely. Ideally informed consent was obtained first, and then the

investigator would open a sealed envelope stating the treatment assignment. Then we can be sure that the investigator couldn't have known/guessed the treatment assignment prior to approaching the family for consent, and subconsciously altered how they encouraged families to enroll their children.)

Ultimately the study found that the 10 day group did better than the 3-day group in the subset of children who had methicillin-resistant *S. aureus* (MRSA) grown from abscess culture. The authors recognized the limitation of the non-blinded randomization and attempted to explain that this likely wasn't important, but I wasn't convinced by their discussion.

I noted a few other interesting features of this study. First, it was designed as a noninferiority trial. If you don't know, or can't recall, what this means, visit one of my prior blogs for a refresher. Second, this trial had a sample size determined to detect a certain margin of noninferiority between the 2 treatment groups, but apparently was not adequately powered for post-hoc subgroup analysis, such as looking at those patients just with MRSA. So, when researchers go back to do these subgroup analyses, they should be employing a different statistical method (e.g. the Bonferroni correction) to determine significant differences. The authors don't state that they considered this in their analysis, so I must assume they did not.

I should mention, in the authors' defense, that it's not easy to make a placebo. It should have the same appearance, texture, smell, and flavor as the real drug, in this case tmp/smx. Usually these placebos are provided by the drug manufacturer, but tmp/smx has been generic for eons, and I doubt the investigators would have had much luck getting a generic manufacturer to lend a hand. I'd have a hard time cooking up this placebo in my home kitchen, even with my highly rated (only by me) culinary skills.

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