



## RESEARCH

### *Treatment of Staphylococcus Aureus Colonization in Atopic Dermatitis Decreases Disease Severity*

A research study conducted by a team led by Dr. Amy S. Paller, the Walter J. Hamlin Professor and Chair of Dermatology, Professor of Pediatrics, at the Northwestern University Feinberg School of Medicine, in Chicago, Illinois, and National Eczema Association Scientific Advisory Committee member, was recently published in the Journal of the American Academy of Pediatrics. The study found that giving children with chronic moderate to severe eczema regular baths of diluted bleach together with monthly applications of mupirocin into the nose reduced the clinical severity of the condition in cases with secondary bacterial infection.

In the research study, compared to children treated with placebos, children on the bleach baths and mupirocin experienced a five-fold reduction in eczema severity over one to three months.

Dr. Paller has noted that we've long struggled with staphylococcal infections in patients with eczema. More than two-thirds of eczema patients show signs of staphylococcus on their skin, the bacteria that most commonly causes infection and makes the eczema worse. The study shows that simple household bleach, which we think decreases the staphylococcus on the skin, can help.

For the randomized, investigator-blinded, placebo-controlled study, Paller and colleagues set out to discover how common it was for patients with atopic dermatitis (chronic eczema) to also be infected with community-acquired MRSA and whether suppressing the growth of bacteria with bleach (sodium hypochlorite) baths and intranasal mupirocin would reduce the severity of the eczema.

They recruited 31 patients aged from 6 months to 17 years, all of whom had moderate to severe atopic dermatitis and were showing clinical signs of bacterial infection. All the patients took cephalexin (a first line antibiotic for skin conditions) for 14 days and were randomly assigned at the beginning as well to either the treatment or the placebo group.

For three months, the treatment group participants had baths in diluted sodium hypochlorite (bleach) and received intranasal mupirocin ointment treatment, while the placebo group participants had intranasal petrolatum ointment treatment and plain water baths. All participants were instructed to soak in their baths for up to 10 minutes twice a week for three months.

The main measure for the results was the Eczema Area and Severity Index score.

The results showed that:

- The prevalence of community-acquired MRSA in this study (7.4 per cent of the *S aureus* positive skin cultures and 4 per cent of the *S aureus* positive nasal cultures tested positive for MRSA) was much lower than that of the general population as determined from cultures held at Children's Memorial Hospital (75 to 85 per cent).
- Patients in the treatment group showed significantly greater mean reductions from baseline (before and after scores) in Eczema Area and Severity Index scores than the placebo group, both at the 1 and 3 month assessment.
- However, scores for the head and neck (they were not submerged during bleach baths) did not go down in the treatment group compared to the placebo group.
- Only the other body sites showed significant reductions in severity scores for the treatment group compared to the placebo group at the 1 and 3 month assessment, but these reductions were highly significant.

Dr. Paller and her colleagues concluded that:

- Chronic use of dilute bleach baths with intermittent intranasal application of mupirocin ointment decreased the clinical severity of atopic dermatitis [chronic eczema] in patients with clinical signs of secondary bacterial infections.
- Patients with atopic dermatitis do not seem to have increased susceptibility to infection or colonization with resistant strains of *S aureus*.

The study suggests the bleach has antibacterial properties and decreased the number of bacteria on the skin, which is one of the drivers of flares. Bleach has been used successfully by patients admitted to hospitals to reduce MRSA. The difference in results depending on whether the head and neck or other parts of the body were assessed is seen as further evidence that the bleach bath was effective, since the children did not put their heads under the water when they bathed.

Dr. Paller stressed that these baths should only be initiated with the knowledge and approval of the treating primary care physician or dermatologist, and notes that the treatment does not replace traditional anti-inflammatory therapies applied to the skin. Noting the different in response by body area, she suggests that older kids who have eczema and use this method close their eyes and mouth and dunk under the water to help improve the lesions on their face, head and neck. Playing with toys under the water is a good way to ensure that the hands get submerged as well. In her practice, she has found even daily baths with diluted bleach are well tolerated, and she makes it part of the daily routine for affected children.