Skin Colonization by *Staphylococcus aureus* in Patients With Eczema and Atopic Dermatitis and Relevant Combined Topical Therapy: A Double-Blind Multicentre Randomized Controlled Trial


**PURPOSE OF THE STUDY.** To investigate the colonizing features of *Staphylococcus aureus* in the lesional and nonlesional skin of patients with eczema and atopic dermatitis (AD) in China and to compare the therapeutic effect of mupirocin plus hydrocortisone butyrate with vehicle ointment plus hydrocortisone butyrate.

**STUDY POPULATION.** There were 327 patients with AD and eczema (177 male and 150 female); 75 were aged <10 years, 48 between 10 and 18 years, and 204 >18 years.

**METHODS.** A multicenter, double-blind randomized trial was conducted. Eczema area and severity index scores were evaluated before the start of the trial and on the 7th, 14th, and 28th day of treatment. Swabs for bacterial isolation were taken from lesional skin before the start of the trial and on the 7th, 14th, and 28th day of treatment and from nonlesional skin only before the start of the trial. A combination topical therapy with mupirocin plus hydrocortisone butyrate ointment was used in the experimental group, with vehicle ointment plus hydrocortisone butyrate ointment as a control.

**RESULTS.** Of 327 patients enrolled onto the study, bacteria were isolated from 74.8% of lesional and 34% of nonlesional skin samples from patients with AD, of which *S aureus* accounted for 79.8% and 80.5%, respectively. The colonization density of *S aureus* was markedly higher in lesional than in nonlesional skin and was positively correlated with lesion severity. Both groups had equivalent clearing of AD and improvement of skin lesions. The patients with severe AD improved faster with combination therapy compared with monotherapy with hydrocortisone butyrate ointment. However, the patients with severe AD were equivalent at days 14 and 28.

**CONCLUSIONS.** This study confirmed that lesional skin of patients with AD was more frequently colonized with *S aureus* than was nonlesional skin. The more severe the eczema, the higher the colonization rate of *S aureus*. *S aureus* infection is related to the pathogenesis of eczema and AD. An antibiotic-corticosteroid combination and corticosteroid alone both provided good therapeutic effect in eczema and AD, and both reduced colonization by *S aureus*. Early combined topical therapy is beneficial to patients with moderate-to-severe eczema and AD, and it is unnecessary to use antibiotics at later stages of disease or in mild eczema or AD.

**REVIEWER COMMENTS.** *S aureus* colonization has been recognized as a long-standing issue in AD. This study confirmed a high rate of colonization and correlation with AD severity. The important new finding was that treatment with topical steroids only decreased *S aureus* colonization without treatment of antibiotics. This is important as the rate of resistant *S aureus* rises. Maintaining good control of AD will keep the use of unnecessary antibiotics down. Therefore, antibiotic treatment is probably just necessary for the patients with severe AD flares.
The Role of Immune Response to *Staphylococcus aureus* Superantigens and Disease Severity in Relation to the Sensitivity to Tacrolimus in Atopic Dermatitis

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