

2319. Molecular Epidemiology of *Staphylococcus aureus* Isolated From Korean Children

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Background. Major community acquired-methicillin-resistant *Staphylococcus aureus* (CA-MRSA) clones have been reported worldwide including ST1 in Asia, Europe, United States, ST8 in Europe and United States and ST30 in Australia, Europe and South America. Panton-Valentine leukocidin (PVL) positive ST30-SCCmec IV has been reported as an important CA-MRSA in Singapore, Japan and Latin America, however reports in Korean children are limited. Therefore we investigated the antimicrobial resistance and molecular characteristics of *S. aureus* among children in Korea.

Methods. *S. aureus* previously isolated from children at Seoul National University Bundang Hospital (2010–2016) were analyzed for multilocus sequence type, SCCmec typing, and PCR of *PVL*, *qac A/B*, *smr* and *mupA* genes. Electronic medical records were reviewed for clinical data and antibiotic susceptibility results.

Results. A total of 79 isolates from skin and soft-tissue infection (SSTI) ($N = 41$, 51.9%), bone and joint infection ($N = 26$, 32.9%) and staphylococcal scalded skin syndrome (SSSS) ($N = 12$, 15.2%) were included. Among these, 32 (40.5%) were MRSA. Among children with underlying diseases (20.3%, 16/79), 56.3% (9/16) were MRSA. After excluding these cases, among children ≤ 1 month of age, 84.6% (11/13) were MRSA, whereas in children ≥ 2 months of age, 95.2% (20/21) of SSTI, and 90.0% (18/20) of bone and joint infection were MSSA. All SSSS cases were MRSA. Among MSSA strains, ST30 ($N = 28$, 59.6%) was the predominant clone and among ST30, 96.6% (28/29) were MSSA. MRSA strains included ST72-SCCmec IV ($N = 15$, 46.9%), ST89-SCCmec IV ($N = 10$, 31.3%), ST 5-SCCmec II ($N = 3$, 9.4%) and ST1-SCCmec IV ($N = 3$, 9.4%). ST30 was the most common clone in SSTI and bone and joint infection whereas ST89-SCCmec IV was most common in SSSS. *PVL* was detected in 3 strains (3.8%, ST30-SCCmec IV $N = 1$, MSSA ST30 $N = 2$) and *qac A/B* in 3 strains (MRSA = 3), *smr* in 3 strains (MSSA = 1, MRSA=2) and *mupA* in 7 strains (MRSA = 5, MSSA = 2).

Conclusion. The molecular epidemiology of *S. aureus* in Korean children differed from other countries. Among children with SSTI and bone and joint infection, ST30 was the predominant strain, and the majority was MSSA. Among MRSA isolates, ST72-SCCmec type IV was the most common clone in SSTI and bone and joint infection, and ST89-SCCmec type IV in SSSS.

Disclosures. H. Lee, National Research Foundation of Korea: Grant Investigator, Grant recipient

2320. Decolonization of the Oropharynx, an Important and Neglected Reservoir of *Staphylococcus aureus* Colonization

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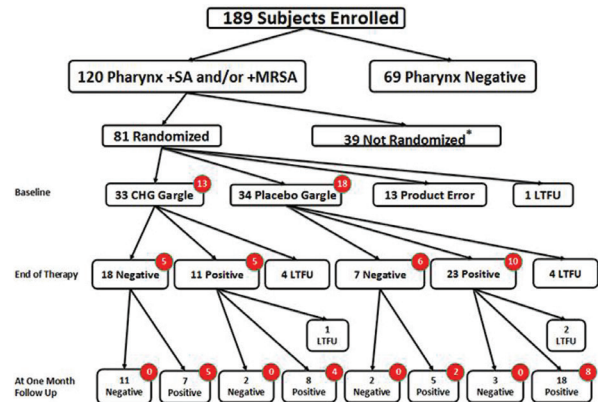
Background. Community-associated *S. aureus* skin and soft-tissue infections are common and recur in 20 to >50% of cases. Decolonization trials have been disappointing for unclear reasons, but may be related to untreated reservoirs. Given recent data that oropharyngeal (OP) *S. aureus* colonization is common with a prevalence comparable to nasal colonization, we performed a double-blind, placebo controlled trial of the efficacy of oral chlorhexidine gluconate (CHG) for OP *S. aureus* colonization.

Methods. We enrolled healthy outpatient children from ages 5 to 17 who were tested for OP *S. aureus* colonization. Colonized subjects were randomized to 0.12% CHG or placebo gargle twice daily \times 7 days. Primary endpoint was OP colonization at the End of Therapy (EOT) visit using an intention to treat (ITT) model. We also measured OP colonization at 28 days and nasal *S. aureus* colonization at all study visits.

Results. Among 189 consented subjects, 120 (63%) had OP colonization; 81/120 (66%) were randomized and 67 were analyzable (CHG: $N = 33$; Placebo: $N = 34$). Fourteen subjects were not analyzable due to product error or loss to follow-up prior to study drug receipt (figure). In the ITT analysis, EOT OP *S. aureus* colonization was 45% (15/33) in the CHG group and 79% (27/34) in the placebo group ($P = 0.004$). In the as treated analysis, OP colonization was 40% (11/29) and 77% (23/30) in the CHG group and placebo groups ($P = 0.003$). At Day 28 in the ITT model, OP colonization

was 61% (20/33) vs. 85% (29/34) in the CHG and placebo groups ($P = 0.03$). At EOT nasal colonization in those without OP colonization was 11/25 (44%) vs. 15/34 (44%) in those still OP colonized. At Day 28, nasal colonization was 0/18 (0%) in those without OP colonization vs. 19/38 (50%) in those with OP colonization.

Conclusion. One week of 0.12% oral CHG gargle was more effective than the placebo at eradicating *S. aureus* OP colonization in *S. aureus* colonized children. Significant differences persisted at Day 28. Persistent OP colonization at Day 28 was associated with nasal *S. aureus* colonization, suggesting that nasal colonization may contribute to persistence and relapse of OP *S. aureus* colonization. Our findings support decolonization trials that include OP *S. aureus* decolonization as part of a more aggressive *S. aureus* decolonization strategy.



Legend

Red circles represent number of subjects that had nasal *S. aureus* colonization at each visit.
*Of the 39 not randomized, 31 were not randomized due to loss of contact (not returning calls, incorrect numbers given) with subjects, 4 subjects withdrew from the study, 2 subjects were not randomized due to being prescribed antibiotics upon initial screening, and 2 subjects were not randomized due to the expectation of re-hospitalization.

Disclosures. All authors: No reported disclosures.

2321. Epidemiology of *Staphylococcus aureus* Infections in Patients Admitted to Freestanding Pediatric Hospitals, 2009–2016

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Background. *S. aureus* causes a substantial number of pediatric infections in the United States each year, with potential for severe complications including death. Recent data suggest *S. aureus* infections are declining in adults, but a nationally representative and contemporary characterization of trends in pediatric *S. aureus* infections is lacking. Our objective was to describe recent pediatric hospitalization trends for *S. aureus* and associated antibiotic prescribing patterns.

Methods. We conducted a retrospective cohort study using Pediatric Health Information Systems data from 39 tertiary care freestanding children's hospitals in the United States. All inpatient encounters for patients ages <18 hospitalized between 1/1/2009–12/31/2016 at a continuously reporting hospital were included. Analysis was limited to patients with *S. aureus* infection, defined as: 1) having ≥ 1 ICD discharge code for methicillin-resistant (MRSA) or methicillin-susceptible (MSSA) *S. aureus*; and 2) ≥ 1 anti-staphylococcal antibiotic received. Analysis for rates were per 1,000 hospital admissions, antibiotic days of therapy (DOT) per 1,000 patient-days, and trends were analyzed using Cochran-Armitage tests; significance was set at $P < 0.05$.

Results. From 2009–2016 we identified 116,152 *S. aureus* hospitalizations. Patients had median age 3 (interquartile range: 0–11 years); 53.7% were male, 52.5% non-Hispanic white, and 18.8% non-Hispanic African American. From 2009 to 2016, *S. aureus* hospitalizations declined 36% from 26.3 to 16.8 infections per 1,000