1521. Evaluation of the Microbiology of Intraabdominal Infections in Children and Implications for Treatment and Outcomes
Thibsy L. Villalobos-Fry, MD, FAAP; Mahlon Schaefer; Kristin H. Wealesey, PharmD, BCOP; 1Lehigh Valley Reilly Children’s Hospital, Allentown, Pennsylvania; 2Lehigh Valley Health Network, Allentown, Pennsylvania

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Background. Acute appendicitis is the most common surgical emergency in pediatric medicine. Pseudomonas aeruginosa has been reported in up to 23% of intraabdominal cultures though current recommendations do not specify the need for antipseudomonal coverage for preoperative treatment. Prior to transitioning the empiric antibiotic regimen used in the management of perforated appendicitis from an anti-pseudomonal agent to a simplified daily antibiotic regimen, we conducted a retrospective review of bacterial cultures obtained from intraabdominal fluid collections and antibiotic regimens in children that underwent surgical treatment of perforated appendicitis and/or intraabdominal abscesses.

Methods. A retrospective chart review of electronic medical records was conducted for pediatric patients admitted with a diagnosis of perforated appendicitis and/or intraabdominal abscess between April 1, 2016 and April 30, 2018.

Results. Seventy-two patients met inclusion criteria for the study with abscess identified prior to surgery in 11 patients (42.3%). Intraabdominal cultures were obtained in 48 patients (66.7%). The predominant organisms isolated were Escherichia coli, Bacteroides fragilis, and alpha-hemolytic Streptococcus. P. aeruginosa was identified in 12 (24%) cultures and never as a single organism. The majority of patients received piperacillin/tazobactam empirically (91.7%) with a median duration of 5 days (IQR 2). Forty-four patients (61.1%) received oral antibiotics to continue therapy after discharge and 75% received amoxicillin/clavulanate. Of the 12 patients with P. aeruginosa isolated, all patients received piperacillin/tazobactam empirically and 8 (66.7%) were transitioned to oral antibiotics to complete therapy, of which only two regimens retained antipseudomonal coverage.

Conclusion. Majority of intraabdominal cultures were polymicrobial and the isolation of P. aeruginosa did not appear to impact the choice of definitive antimicrobial therapy. The predominant organisms identified suggest that a non-antipseudomonal regimen (i.e., cephalosporin with metronidazole) may be considered for empiric antibiotic therapy for cases of perforated appendicitis.

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1522. Clinical and Molecular Epidemiology of Invasive Haemophilus influenzae Serotype b Infections in Utah Children
Hillary Cran dall, MD, PhD; Jennifer E. Christiansen, BS; Alyssa Varghese; Adam K. Russon, BS; Kent Korgenski, MS, MT(ASCP); Mandy Diecky, BS; Jarrett Killp ack, B Sc; Elizabeth Knackstedt, MD; Judy Daly, PhD; Krow Ampofo, MCBCh; Andrew Pavia, MD; Anne Benkowski, MD/PhD; 1University of Utah, Salt Lake City, Utah; 2Intermountain Healthcare, Salt Lake City, Utah; 3Primary Children’s Hospital, Salt Lake City, Utah

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Background. Following widespread use of the Haemophilus influenzae serotype b (Hib) vaccine, H. influenzae serotype a (Hia) has emerged as an important pathogen in children. Rates of Hia disease are particularly high in Utah. We describe the clinical features and molecular epidemiology of invasive Hia disease in children in Utah over 11 years.

Methods. Cases of invasive Hia disease in children less than 18 years were identified through electronic clinical and microbiology records. Demographic data and clinical outcomes were abstracted from the medical record for all cases. Available Hia isolates were collected for molecular analysis. Isolates were genotyped by multi-locus sequence typing (MLST) and clonal division was determined using spa/CF PCR. Presence or absence of the putative virulence-associated IS1016-bexA duplication-deletion was evaluated.

Results. We identified 51 children with invasive Hia between 2007 and 2017. Median age was 11.3 months. The average annual incidence was 1.7 cases per 100,000 children aged 0-5 years (95% CI 1.2–2.2). Incidence was highest among children less than one year of age (4.8/100,000; 95% CI 3.1–6.9). Incidence rates were similar by race and ethnicity, although the confidence intervals were wide. The annual number of cases was similar over the 11-year study period (figure). The most common clinical manifestation was meningitis (54%); half had intracranial complications, 25% suffered hearing loss), followed by pneumonia (14%), and arthritis (14%). Twenty-two children (44%) required ICU care and one child died. Twenty-eight isolates (56%) were available for molecular analysis. ST62, clonal division II Hia isolates caused 75% (21/28) of disease. No isolates contained the virulence-associated IS1016-bexA duplication-deletion.

Conclusion. Hia is an important cause of severe invasive bacterial infection in Utah. Molecular analyses revealed that a majority of infections were caused by ST62 isolates, a clonal division II Hia type lacking the IS1016-bexA duplication-deletion. Hia ST62 has not been commonly reported in other settings, suggesting a unique molecular epidemiology in our population.

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1523. Clinical Epidemiology of Children with Orbital Cellulitis
Meghna Sharma, BS; Alejandro Espinel, MD; Emily Ansusinha, BA, MA; Rana F. Hamdy, MD, MPH, MSCE; George Washington School of Medicine, Washington, DC; Children's National Medical Center, Washington, DC; Children's National Health System, Washington, DC

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Background. The microbiology of pathogens causing orbital cellulitis in children is evolving over time; with studies from around 10 years ago describing MRSA as responsible for anywhere from 0 to 13% of cases of orbital cellulitis. However, the prevalence of community-acquired MRSA infections has declined over the past decade. A current understanding of the bacteria most commonly found to be responsible for orbital cellulitis would be important to inform the empiric antibiotic regimens for cases of orbital cellulitis in which no microbiologic data are available.

Methods. This is a single-center retrospective cohort study of children ≤18 years hospitalized with orbital cellulitis at Children’s National Medical Center between January 1, 2017 and July 31, 2018. We excluded children with immunocompromising conditions, cystic fibrosis, underlying craniofacial abnormality, or recent craniofacial or otorhinolaryngologic surgery. Baseline clinical characteristics, microbiologic data, clinical outcomes, and antibiotic treatment data were abstracted through structured chart review and summarized with descriptive statistics.

Results. We identified 68 children that met inclusion criteria, with an average age of 8.2 years; 66.2% were male, 48.5% were African American, and 14.7% were Hispanic. Most (67.6%) had no underlying medical problems, 14.7% had asthma, and 22.1% had allergic rhinitis. The median duration of symptoms prior to presentation was 4 days. An abscess or phlegmon was identified in 41 of the 68 (60.3%). Three patients (4.4%) developed intracranial complications. About one-quarter (27.9%) of all patients in the cohort underwent surgical drainage. The most commonly identified pathogens were viridans group streptococci (7/19, 36.8%), followed by Staphylococcus aureus (4/19, 21.1%). Anti-MRSA therapy was provided empirically in almost all (95.6%) of patients.

Conclusion. One-quarter of all patients hospitalized for orbital cellulitis underwent surgical drainage, and viridans group streptococci and S. aureus were the most commonly isolated pathogens. While MRSA was isolated in only one patient (5.2%), almost all received empiric anti-MRSA therapy.

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1524. Presentation of Acute Focal Bacterial Nephritis in Children
Geun Ha Park, MD1; Bongjin Lee, MD2; Jung-Woo Rhim, MD, PhD3; Kyung-Yil Lee, MD, PhD; Hyun Mi Kang, MD; College of Medicine, The Catholic University of Korea, Daegu, Taegon-j Khal, Republic of Korea; College of Medicine, Seoul National University, Seoul, Seoul-Tukpyolsi, Republic of Korea

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Background. Ascending infections are thought as the main route of infection in acute pyelonephritis (APN). However, among patients diagnosed with APN, a subset has atypical presentation unexplainable by ascending routes of infections. This study aimed to review 8 cases initially diagnosed as APN, however presenting with no or minimal pyuria and presenting as acute focal bacterial nephritis (AFBN).

Methods. This was a retrospective cohort study of children <18 years old without underlying diseases, treated for their first episode of APN during 2006 and 2016. Those that fit the following inclusion criteria were diagnosed as AFBN: (1) characteristic CT findings compatible AFBs, (2) atypical presentation of APN including lack of urinary symptoms, and (3) no antibiotic administration prior to urine culture. Electronic medical records were analyzed, and radiologic images re-evaluated.

Results. During the 11-year period, of the total of 359 patients were diagnosed with the first episode of APN. Of these, 8 were re-diagnosed as AFBN. The mean age was 9.8 years old (1.9–17.4). Abdominal pain with nausea and vomiting were chief complaints (62.5%), and none had urinary symptoms including dysuria, incontinence, or increased frequency. Initial urinalysis in all the patients showed WBC <10–19 hpf, and were negative for nitrite. High initial WBC and CRP levels were observed (median 17.892 × 10⁹/mm³ and 13.1 mg/dL, respectively). Cultures were positive for E. coli in 3 cases. CT findings showed nephromegaly with multifocal wedge-shaped heterogeneous enhancement defects corresponding to blood supply patterns of renal segmental arteries, no hydronephrosis, and no inflammation in the pelviureteric calyceal system.

Conclusion. Lack of urinary symptoms, insignificant pyuria, and CT findings of AFBN support the possibility of an alternative route of infection, other than the ascending route.

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