230. Nontyphoidal Salmonella from Clinical and Retail Meat Sources Reveal Antimicrobial Resistance Genes for Ceftriaxone and Ciprofloxacin

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Session: P-11. Basic and Translational Science

Background. Pennsylvania participates in the National Antimicrobial Resistance Monitoring System (NARMS), which includes monitoring of Nontyphoidal Salmonella (NTS), a leading cause of bacterial foodborne illnesses in the United States.

Methods. Clinical NTS isolates submitted to the Pennsylvania Department of Health (2015-18) were tested for susceptibility to 15 antimicrobial agents and analyzed by whole-genome sequencing (WGS). Concurrently, we conducted a prospective microbiological survey of NTS in retail meat products (chicken breasts, ground turkey, and pork chops) with susceptibility testing and WGS.

Results. A total of 426 clinical Salmonella isolates from humans analyzed for antimicrobial susceptibility, 65 (15.3%) had decreased susceptibility to ciprofloxacin (DSC). Ampicillin resistance was observed in 39 (9.2%) and 15 (3.5%) were ceftriaxone-resistant. Ten ceftriaxone-resistant isolates had genetic elements that confer resistance to third generation extended-spectrum cephalosporins (ESC) [\( \text{bla}_{ESCMX} \) n=8 and \( \text{bla}_{CTX-M-16} \) n=2]. The \( \text{bla}_{CTX-M-16} \) positive isolates had a mutation in \( \text{gyrA} \) that confers fluoroquinolone resistance. Thirteen clinical isolates carried plasmid-mediated fluoroquinolone resistance genes (PMQR) [\( \text{gyrB91}, \text{gyrB51}, \text{gyrA1} \)]. We detected NTS in 131 (3.8%) of 3480 meat samples tested. 7 (5.3%) were resistant to amoxicillin-clavulanate (AMC), ceftriaxone, and decreased susceptibility to ciprofloxacin (DSC) to nine antimicrobial classes tested. 7 (5.3%) had DSC, while 38 (29%) and 21 (16%) were resistant to ceftriaxone, a third-generation cephalosporin (ESC) [\( \text{PMQR}_{\text{n=8}} \) and \( \text{PMQR}_{\text{n=2}} \)]. The \( \text{PMQR}_{\text{n=8}} \) positive isolates had a mutation in \( \text{gyrA} \) that confers resistance to third generation extended-spectrum cephalosporins (ESC) [\( \text{bla}_{CMY-2} \) n=8 and \( \text{bla}_{CMY-9} \) n=2]. The \( \text{PMQR}_{\text{n=2}} \) positive isolates had a mutation in \( \text{gyrA} \) that confers resistance to third generation extended-spectrum cephalosporins (ESC) [\( \text{bla}_{CTX-M-16} \) n=8 and \( \text{bla}_{CTX-M-16} \) n=2].

Conclusion. NTS isolated from patients, resistance to ceftriaxone, a third-generation cephalosporin preferred for severe infections in children, increased from zero in 2015 to 5.8% in 2017. Overall, DSC increased in isolates from human sources while in strains from meat sources, DSC increased from zero in 2015 to over five percent in 2018.

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232. Safety and Effectiveness of Intravenous to Oral De-escalation Compared to Concomitant Vancomycin Therapy in Orthopedic Infections

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Session: P-12. Bone and Joint

Background. The Oral versus Intravenous Antibiotics for Bone and Joint Infection (OVIVA) trial determined oral antibiotics administered during the first six weeks of therapy were non-inferior to parenteral antibiotics. There was no difference in the incidence of serious adverse events. The objective of this study was to evaluate the safety and effectiveness of de-escalating to oral therapy compared to continuing parenteral vancomycin therapy in patients with orthopedic infections in a real-world setting.

Methods. We conducted a single-center, retrospective cohort study of patients discharged between April 1, 2018 and April 1, 2020 with an orthopedic infection, a prescription for at least four weeks of parenteral vancomycin, and documented follow-up. The primary outcome was incidence of adverse events defined as provider documentation of the outcome resulting in therapy changes. The secondary outcome was incidence of 6-month treatment failure defined as repeat surgical intervention or therapy escalation.

Results. One hundred fifty-seven patients were included. Twenty-nine (18.5%) patients were de-escalated to oral therapy. Three (10%) patients in the oral therapy group had an adverse event compared to 35 (27%) in the intravenous group (p=0.058). Of the 35 patients with an adverse event in the vancomycin group, eight were due to parenteral access-related complications. Treatment failure occurred in three (10%) patients in the oral therapy group compared to 27 (21%) patients in the vancomycin group (p=0.29). Three (10%) patients in the oral therapy group had an unplanned readmission compared to 25 (20%) patients in the vancomycin group (p=0.24).

Baseline Characteristics, Unplanned Readmission Rates, and Incidence of Adverse Events and 6-Month Treatment Failure

| Characteristic or Outcome | Oral De-escalation (n=29) | Concomitant IV Vancomycin (n=128) | P-value |
|---------------------------|--------------------------|----------------------------------|--------|
| Indication                |                          |                                  |        |
| Prosthetic Joint infection, n (%) | 6 (21) | 55 (43) | 0.03 |
| Native Joint infection, n (%) | 7 (24) | 7 (5) | 0.002 |
| Osteomyelitis, n (%) | 11 (38) | 35 (27) | 0.26 |
| Concomitant Osteomyelitis, n (%) | 4 (14) | 29 (22) | 0.26 |
| Total Duration of Therapy, days, median (IQR) | 42 (40-54) | 42 (42-58) | 0.37 |
| Comorbid Therapy, n (%) | 29 (100) | 118 (92) | 0.12 |
| Comorbid Antimicrobial, n (%) | 16 (55) | 63 (49) | 0.56 |
| Antibiotic Allergies Present, n (%) | 3 (10) | 40 (30) | 0.62 |
| Unplanned Readmissions, n (%) | 3 (10) | 25 (20) | 0.24 |
| Adverse Reaction, n (%) | 0 (0) | 15 (12) | 0.32 |
| Treatment Failure, n (%) | 3 (10) | 27 (21) | 0.29 |

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