1183. A Prospective Epidemiological & Immunological Study of Cytomegalovirus infection in SLE Patients Receiving Immunosuppressant
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Session: P-53. Microbial Pathogenesis

Background. Cytomegalovirus (CMV) infection has been emerging among autoimmune disease patients. CMV-specific cellular immunity has been shown to be correlated with CMV clearance in transplant recipients, however, this correlation has not been assessed in autoimmune disease patients. We aimed to investigate the epidemiology and clinical variables of CMV infection focused on CMV-specific cellular response of CMV infection in active systemic lupus erythematosus (SLE) patients receiving immunosuppressant.

Methods. A prospective cohort study of active SLE patients who received immunosuppressant and underwent preemptively monitored for CMV infection by quantitative real-time PCR (Abbott RealTime CMV assay). Clinical variables were collected. CMV-specific cellular immune responses were measured by an enzyme-linked immunosorbent assay (Quantiferon-CMV) and intracellular cytokine assay. Clinically significant CMV infection was defined as CMV disease or plasma CMV DNA loads > 1,000 IU/mL.

Results. We included 45 active SLE patients in our cohort. Among 39 evaluable patients, there were 36 (92%) female patients with a median age of 28 (IQR 24-44) years. A median SLEDAI score was 16 (IQR 9-20). Seventy-four % had renal involvement. Methyldoxicosone was the most common immunosuppressant regimen (94.4%). Among six (93.3%) patients with CMV-sero-positive. Clinically significant CMV infection occurred in 6 (25.6%) patients included asymptomatic CMV infection (79.3%), CMV syndrome (17.3%), and CMV tissue invasive disease (3.4%). Among 197 blood samplings, there were 16 (8.1%) episodes of clinically significant CMV infection. The distributions of QuantiFERON-CMV status were reactive, positive, and indeterminate (33% vs. 44% vs. 22%); p = 0.56), respectively. The percentage of CMV-1E1-specific NKT cells in those with clinically significant CMV infection were lower than those without infection (0.18% vs. 1.93%, p = 0.03). In multivariate analysis, neurological involvement was associated with clinically significant CMV infection (OR 7.9, 95% CI 1.5-41.9, [p = 0.015]).

Conclusion. Active SLE patients with neurological involvement who received in- tense immunosuppressant are at risk of CMV infection. Lack of CMV-specific NKT cell response tends to be associated with CMV infection.

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1184. Activity of anti-pseudomonal antibiotics among all Pseudomonas aerugi
nosa (PSA) at an academic medical health system, including β-lactam, multi-drug (MDR) and extensively drug resistant (XDR) strains
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Session: P-53. Microbial Pathogenesis

Background. PSA with MDR and XDR are a growing threat, and appropriate initial treatment of this organism is critical. C/T is a novel antibiotic with broad gram-negative in vitro susceptibility among surveillance studies. However comprehensive susceptibility analyses of C/T among PSA clinical isolates in comparison with other anti-PSA antibiotics remain limited, since routine clinical C/T susceptibility testing is not typically performed.

Methods. This study assessed all adult inpatient cultures positive for PSA from 32 months at an academic health system. Antimicrobial susceptibility was prospectively performed using Kirby Bower disk diffusion and interpreted by BIOMIC V3 during routine clinical care. Initial susceptibility testing included C/T along with amikacin, aztreonam, cefepime, ciprofloxacin, doripenem, gentamicin, imipenem, meropenem, piperacillin/tazobactam, and tobramycin. MDR and XDR isolates were identified using established definitions. The primary outcome was to quantify C/T resistant PSA (includes intermediate and resistant strains). Secondary outcomes were to determine resistance to other anti-PSA antibiotics and to identify C/T activity among isolates with MDR, XDR and pan-β-lactam resistance (PBLR = all β-lactams except C/T).

Results. A total of 2990 PSA isolates from 2339 cultures in 1311 individual patients were collected. Most cultures were from the lung (45%), followed by urine (30%), and body fluids (10%). For the primary outcome, 121/2990 (4%) of PSA isolates were C/T resistant. All PSA blood cultures were susceptible to C/T. Table 1 summarizes in vitro activity of all anti-PSA agents evaluated. C/T had the greatest percent susceptibility across all culture locations including MDR/XDR PSA isolates with median MICs of 8 µg/mL. For PBLR strains 35/66 (53%) were susceptible to C/T with a median MIC of 8 µg/mL.

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S616 • OFID 2020:7 (Suppl 1) • Poster Abstracts
Table 1

| Agent       | C. elegans (n=290) | C. glutanicum  (n=159) | C. jejuni (n=94) | C. perfringens (n=160) | C. succiniciput (n=100) | C. sporogenes (n=540) | PAO1 (n=540) |
|-------------|--------------------|-------------------------|------------------|-------------------------|-------------------------|-----------------------|---------------|
| Susceptibility | 51.0% (n=148) | 61.0% (n=98) | 63.8% (n=62) | 56.8% (n=93) | 60.0% (n=60) | 53.0% (n=297) |
| MIC (mg/L)   | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |

Table 1. Susceptibility rates by antibiotic categorized by strain and MSSA/CoNS organism, (%).

Conclusion. C/T susceptibility testing during routine care over a 2.5-year period revealed 96% susceptibility among PTA. C/T showed the highest susceptibility among all anti-PSA antibiotics for all culture locations and for MDR and XDR isolates. Given the high rates of resistance to traditional anti-PSA agents, the value of new agents with high rates of in vitro susceptibility in the gram-negative armamentarium is high.

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1185. Association Between Blood Product Transfusion and Development of Hospital Acquired Infections or Mortality in Patients Admitted to the Hospital Wards. A Retrospective Case-Control Study Arun Nattakom, MD1, Ayutyanont Napatkamon, PhD2, Sabhaыта Sharna, MD2, Timothy Collins, MD2, Chimezie Ubaaudo, MD2, Hoveda Mufti, MD2, 1HCA Healthcare, Nashville, TN; Riverside Community Hospital, Riverside, CA; University of California, Riverside, CA, Riverside, California

Session: P-53. Microbial Pathogenesis

Background. Transfusion of blood products has been shown to be associated with increased mortality and risk of infections in critically ill patients and following cardiac surgery [1-2]. However, there is scarce data evaluating this association in patients admitted to hospital wards. Here we seek to see if transfusion of blood products carries the same risk of infection and mortality in more stable patients.

Methods. This was a retrospective case-control study of patients admitted to the internal medicine wards who received packed red blood cells (PRBC), fresh frozen plasma (FFP) or platelet transfusions, using data from the HCA Healthcare administrative database from 2016 to 2019. Patients admitted with an infection, on steroids or other immunosuppressant medications were excluded. ICD-10 codes at discharge were used to determine hospital acquired infections (HAI). The presence of HAI was defined by an inpatient stay of at least 24 hours, with a new ICD-10 code for an infection that was not present at admission.

Results. A total of 1952 subjects were included in the study analysis. Of these, 563 or 33.4% had a HAI during their admission. Adjusted multivariable model showed that transfusion of blood products, with a OR 2.10 (95%CI 1.27 95%CI 0.90-1.75) was not associated with increased odds of mortality in transfused vs. non-transfused patients.

Conclusion. Primary outcome of study was presence of HAI, while secondary outcome was mortality in transfused vs. non-transfused patients. A multivariable logistic regression was used to determine hospital acquired infections (HAI). The presence of HAI was determined. Primary outcome of study was presence of HAI, while secondary outcome was mortality in transfused vs. non-transfused patients.

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1186. Cefazolin inoculum effect predicts reduced susceptibility to other antibiotics and patients outcome in MSSA endovascular infections Dan Smelter, PhD1; Sue McClone, n/a2; Warren Rose, PharmD, MPH3; University of Wisconsin-Madison School of Pharmacy, Madison, Wisconsin; 2School of Pharmacy, Madison, Wisconsin; 3University of Wisconsin-Madison, Madison, WI

Session: P-53. Microbial Pathogenesis

Background. MSSA Infective endocarditis (IE) is inherently a high-burden infection with up to a 30% mortality rate. Cefazolin is an appealing treatment option for IE with low toxicity and a favorable dosing scheme. However, cefazolin has been associated with treatment failure in IE, attributed to an inoculum effect. The specific mechanism underlying the cefazolin inoculum effect (CIE) remains undetermined, but CIE has been linked with bleb expression and agr dysfunction. This study aims to determine whether CIE is linked to reduced susceptibility to other antibiotics and worse outcomes regardless of therapy in MSSA endovascular infections.

Methods. Sixty-four MSSA strains were collected from patients with endovascular infections not treated with cefazolin. To determine CIE phenotype, strains were cultured and MICS assayed for cefazolin, nafcillin, and vancomycin at 10 CFU/mL for high-inocula (HI) and 10^7 CFU/mL for standard-inocula (SI). This study defined CIE as a ≥ 4-fold increase in MIC at HI compared to SI, with at least a MIC of 4 mg/L at HI. Nitrocefin disks identified bleb expression, and beta lysin disks were used to determine hemolysin type and agr function. Patient outcomes of mortality and bacteremia duration were assessed across cohorts.

Results. Twenty-four strains exhibit a CIE (38%), with 10 strains having an MIC of ≥ 32 mg/L at HI. Nafcillin and vancomycin also had an inoculum effect, uncoupled from the CIE and occurring at a lower frequency and amplitude at HI. Presence of CIE had a greater association with bleb expression (71% vs 25%) than agr dysfunction (38% vs 25%), with 50% (9/18) of CIE infections were cleared within 48 hours while 77% (15/20) of CIE-negative infections were cleared within 48 hours (P=0.106). However, presence of CIE was not associated with increased mortality (25% CIE-positive vs 35%; P=0.578).

Conclusion. Previous studies for CIE failed to enrich for isolates from endovascular sources, where inocula is known to be high. This study presents one of the largest-endovascular source cohorts for CIE evaluation. It identifies that CIE prevalence (38%) is higher than reports from diverse infection sources (10-36%). CIE appears to predict bacteremia duration with other MSSA treatment options, suggesting mechanisms independent of bleb and agr function for this phenomenon.

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1187. CFTR Function Impacts Proinflammatory Cytokine Expression of Bronchial Epithelial Cells During Pseudomonas aeruginosa and Staphylococcus aureus Infections Melissa S. Phuong, BHSc,1, Subash Sad, PhD2,1, University of Ottawa, Ottawa, ON, Canada

Session: P-53. Microbial Pathogenesis

Background. Cystic fibrosis (CF) is a genetic disease in which opportunistic respiratory infections are common, particularly with P. aeruginosa and S. aureus. It has been suggested that dysfunction in the cystic fibrosis transmembrane conductance regulator (CFTR) could impact host immune response to these infections. The aim of this study was to determine if dysfunction in the CFTR gene could impact host cell death and the expression of proinflammatory cytokines.

Methods. We used two human bronchial epithelial (HBE) cells lines NuLi-1 and CuFi-1, which were recovered from individuals without and with CF, respectively. THP-1 cells were also differentiated into a macrophage phenotype with 50ng/mL PMA, and 10 µM CFTRinh-172 was used to impair CFTR function in these cells. Laboratory reference strains PAO1 and S. aureus 6538 were used to conduct in vitro infections. Host cell death at various MOIs was evaluated using a neutral red uptake assay. CFTR function was measured using ELISA.

Results. No differences in THP-1 cell death or cytokine expression were observed for infections with S. aureus 6538 or PAO1 with and without CFTRinh-172. No differences in cell death for infections with the HBE cells and either bacteria were noted. S. aureus 6538 induced higher levels of IL-1β when infecting CuFi-1 cells in comparison to NuLi-1 cells across all MOIs (P < 0.001) and induced higher levels of IL-6 at an MOI of 100 (P < 0.01). S. aureus 6538 also induced higher levels of IL-8 when infecting CuFi-1 cells in comparison to NuLi-1 at MOIs of 1 and 10 (P < 0.05 and P < 0.01, respectively). Meanwhile, PAO1 induced less IL-6 expression when infecting CuFi-1 cells at an MOI of 1 and 10 (P < 0.01 and P < 0.01, respectively). CuFi-1 cells infected with PAO1 had less IL-8 expression in comparison to infected NuLi-1 cells for all MOIs (P < 0.01), but no differences in IL-1β expression were observed when infecting either cell line with PAO1.

Conclusion. Bronchial epithelial cells with and without functional CFTR appear to respond differently to infections with either P. aeruginosa or S. aureus. Further elucidating how various immune response pathways are impacted by CFTR dysfunction may lead to alternative approaches to therapy to reduce morbidity observed among CF patients.

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1189. Correlation of BK polyomavirus (BKPyV)-specific Immunity and BKPyV Viruria within 6 months after Kidney Transplantation: A Prospective Cohort Study Thomas Van Cripoonly, MD1,2, Surasak Kantachuvadi, MD1,3, Nopporrn Apipawantrakul, MD1,2, Jackrapong Bruninhent, MD1,2, Division of Infectious Disease, Ramathibodi Hospital, Bangkok, Krong Thep, Thailand; 2Ramathibodi Hospital, Bangkok, Krong Thep, Thailand; 3Ramathibodi Hospital, Mahidol University, Ratchathewi, Krong Thep, Thailand; 4Faculty of Medicine Ramathibodi Hospital, Mahidol University, Bangkok, Krong Thep, Thailand

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Background. BK polyomavirus (BKPyV) is a small DNA virus shed in urine of infected individuals but may lead to alternative approaches to therapy to reduce morbidity observed among CF patients.

Results. All Authors: No reported disclosures