1554. Reactivation of Varicella Zoster Virus in Solid Organ Transplant Recipients: Identification of Risk Factors Using Data Mining Tools
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Background. We created a retrospective database of solid-organ transplant (SOT) recipients using innovative data mining tools. This study describing the epidemiology of Varicella Zoster Virus (VZV) reactivation in SOT serves as a proof of concept of such techniques in clinical research.

Methods. The study design was a retrospective single-center cohort study. Using data mining tools, information was extracted from the electronic medical record and merged with data from the Scientific Registry of Transplant Recipients. First SOT from January 1, 2010–December 31, 2016 were included. Charts of subjects with ICD9/10 codes related to VZV/Herpes infections; positive VZV PCR, DFA or cultures; and recipients of acyclovir, valacyclovir or famciclovir were manually reviewed. The cumulative incidence was calculated using the Kaplan–Meier method. Cox proportional hazards models were used to identify risk factors for VZV reactivation among heart transplant (HT) recipients.

Results. A total of 1,076 SOT recipients met inclusion criteria (203 heart, 395 lung, 280 kidney, 198 liver). Forty-nine patients experienced at least one episode of VZV reactivation; median time post-transplant was 2.25 years (IQR 1.44–4.20 years). The cumulative incidence was 11.9% at 8 years post-transplant. Heart transplant (HT) recipients were at highest risk (Figure 1), with an 8-year cumulative incidence of 26.3% (Figure 2). Thirty-nine of 49 (80%) patients presented with localized disease and 4/49 (8%) with disseminated disease. In multivariable analysis, no risk factors for PHN were identified.

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Associated with CMV infection before 12 months (HR [95% CI] = 4.74 [1.67–13.47]). Postherpetic neuralgia (PHN) occurred in 23/49 (47%), recurrence in 3/49 (6%), and other complications in 11/49 (22%). In univariable analysis, no risk factors for PHN were identified.
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1555. A New Perspective About Disseminated Adenovirus Infection and Its Outcomes in Pediatric Solid Organ Transplantation
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Background. Adenovirus (AdV) in solid-organ transplants (SOT) was historically associated with increased morbidity and mortality. Detection of AdV at ≥ 2 sites is predictive of invasive disease in other immunocompromised populations; however, data is lacking for SOT.

Methods. All SOT in children ≤18 years from January 2005 to June 2017 (n = 1,024). We evaluated host and viral risk factors associated with disseminated AdV infection (defined as AdV from ≥ 2 sites or DNAemia alone) and the clinical spectrum of disease.

Results. Ninety-two patients had 116 AdV infections. Overall prevalence was 9% with one death. Thirty-nine percent of patients had disseminated infection and of those, 44% received cidofovir. Patients with disseminated infection were more likely to be ≥2 years compared with ≥2 years (P = 0.003), infected in first-year post-transplant compared with >1 year (P = 0.05), and to present with fever compared with no fever (P = 0.02). No difference was observed for organ subtypes, presence of gastrointestinal or upper respiratory tract symptoms, peak DNAemia, mean viral load (mean 3.9 logs vs. 4.0 logs) between patients with dissemination compared with without dissemination. For patients who received a biopsy, dissemination was not different between patients with a positive biopsy vs. negative biopsy (46% vs. 54%). Cidofovir was given to 64% of the positive biopsy patients. No difference for age at infection or time to infection was observed between the treated and not treated groups.

Conclusion. Our data shows that younger age at infection, shorter time to infection and clinical fever are risk factors for disseminated adenovirus infection in pediatric SOT patients, supporting primary infection and enhanced immunosuppression as main factors that allow viral dissemination. Some patients with high viral loads and biopsy-proven disease were not treated with cidofovir with very low mortality, reflecting a broader spectrum of infection than previously recognized. Our data begins to define a high-risk clinical and viral phenotype for adenovirus dissemination, which can inform management strategies.

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1556. Infectious Disease Complications with Use of Checkpoint Inhibitors in Solid Organ Malignancies
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Background. Immune checkpoint inhibitors (ICIs) are innovative cancer immunotherapies used for solid-organ and hematologic malignancies. ICIs are known for their immune-related adverse events (irAE) but there are limited reports on infectious complications of immunosuppression for these complications. The purpose of this study was to describe the spectrum of infections in patients with melanoma, renal cell carcinoma or non-small cell lung cancer receiving ICI.

Methods. Retrospective review of City of Hope patients with melanoma, renal cell carcinoma or non-small cell lung cancer on nivolumab, pembrolizumab, and/or ipilimumab from January to November 2017 and received two or more doses of ICI. Pt demographics and Charlson’s comorbidity index were assessed; age, sex, prior chemotherapy, steroid use, and type of immuno-suppression for irAE. Microbiology records were used to identify infections.

Results. Thirty-nine infectious episodes (35 bacterial, four viral) were identified among 111 patients. Four bacteriaemia (two B. cereus, coagulase-negative staphylococcus, 1. S. aureus), 13 urinary tract (10 Gram-negative rods, 3 Gram-positive cocci), one intra-abdominal, eight skin and soft-tissue infections (one S. aureus, one Actinomyces radingue, one E. faecalis, and one E. cloacae). There were two probable viral pneumonias (two rhinovirus, two enterovirus) and no fungal infections. Fourteen (12.6%) infections were defined as serious (requiring intravenous antimicrobials and/or hospitalization). There was no association between the specific malignancy or ICI used and risk of infection. Steroid use was significantly associated with serious infections: 12/14 (85.7%) vs. 27/95 (28.4%); P = 0.0003), and no patients had received infliximab or anti-TNF immunosuppressant.

Conclusion. Bacterial infections were most common, and the only risk factor associated with serious infections in our study was steroid use. Type of ICI did not impact the rate of infection.

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1557. Acyclovir-Resistant (ACV-R) Herpes Simplex Virus (HSV) Disease in Patients with Hematologic Malignancies (HM) and Hematopoietic-Cell Transplant (HCT) Recipients
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Background. HSV reactivation is a challenging complication of HM and HCT. ACV prophylaxis effectively decreases the incidence of symptomatic HSV episodes, but may contribute to development of ACV-R HSV disease in this population. Outcomes in patients with ACV-R HSV disease remain poorly characterized.

Methods. We identified adult HM patients and HCT recipients treated at Dana-Farber Cancer Institute who developed clinically significant ACV-R HSV disease between January 1, 2006 and March 1, 2018. HCT recipients typically receive 1 year of ACV prophylaxis after HCT, or longer in those with graft-vs-host disease. Clinical, microbiological and treatment details were collected.

Results. Nineteen patients had 27 episodes of ACV-R HSV disease during the study. Median age was 50 years (range 31–77); 15 (79%) were men. Fifteen (79%) were allogeneic HCT recipients and 4 (21%) had HM (3 CLL, 1 NHL). Thirteen (68%) had a history of HSV reactivation before 1 year is associated with increased risk of VZV reactivation after 1 year in HSCT recipients. CMV infection before 1 year is associated with increased risk of VZV reactivation after 1 year in HSCT recipients. CMV infection before 1 year is associated with increased risk of VZV reactivation after 1 year in HSCT recipients. CMV infection before 1 year is associated with increased risk of VZV reactivation after 1 year in HSCT recipients. CMV infection before 1 year is associated with increased risk of VZV reactivation after 1 year in HSCT recipients. CMV infection before 1 year is associated with increased risk of VZV reactivation after 1 year in HSCT recipients. CMV infection before 1 year is associated with increased risk of VZV reactivation after 1 year in HSCT recipients. CMV infection before 1 year is associated with increased risk of VZV reactivation after 1 year in HSCT recipients. CMV infection before 1 year is associated with increased risk of VZV reactivation after 1 year in HSCT recipients. CMV infection before 1 year is associated with increased risk of VZV reactivation after 1 year in HSCT recipients. CMV infection before 1 year is associated with increased risk of VZV reactivation after 1 year in HSCT recipients. CMV infection before 1 year is associated with increased risk of VZV reactivation after 1 year in HSCT recipients. CMV infection before 1 year is associated with increased risk of VZV reactivation after 1 year in HSCT recipients. CMV infection before 1 year is associated with increased risk of VZV reactivation after 1 year in HSCT recipients. CMV infection before 1 year is associated with increased risk of VZV reactivation after 1 year in HSCT recipients. CMV infection before 1 year is associated with increased risk of VZV reactivation after 1 year in HSCT recipients. CMV infection before 1 year is associated with increased risk of VZV reactivation after 1 year in HSCT recipients. CMV infection before 1 year is associated with increased risk of VZV reactivation after 1 year in HSCT recipients. CMV infection before 1 year is associated with increased risk of VZV reactivation after 1 year in HSCT recipients. CMV infection before 1 year is associated with increased risk of VZV reactivation after 1 year in HSCT recipients. CMV infection before 1 year is associated with increased risk of VZV reactivation after 1 year in HSCT recipients. CMV infection before 1 year is associated with increased risk of VZV reactivation after 1 year in HSCT recipients. CMV infection before 1 year is associated with increased risk of VZV reactivation after 1 year in HSCT recipients. CMV infection before 1 year is associated with increased risk of VZV reactivation after 1 year in HSCT recipients. CMV infection before 1 year is associated with increased risk of VZV reactivation after 1 year in HSCT recipients.