of the cohort received cidofovir.

### Methods

We describe the characteristics of BKPyV-associated HC in HCT recipients in the modern era of immunosuppression. BKPyV-associated HC is a morbid disease in need of improved management strategies; patient-centered estimates of outcomes are crucial for evaluating new agents.

| BKPyV- HC | n = 149 (%) |
|-----------|-------------|
| Clots in urine* | 92 (60) |
| Dysuria* | 124 (81) |
| Frequency* | 91 (59) |
| Urgency | 68 (44) |
| Flank pain* | 22 (14) |
| Abdominal pain* | 30 (20) |
| Median duration of symptoms in days (IQR) | 25 (14–49) |
| Median duration of hematuria or urine clots in days (IQR) | 18 (12–39) |
| Median duration of phenazopyridine or oxybutynin use in days (IQR) | 19 (8–34.5) |
| Need for pain medication* | 109 (71) |
| Need for Foley placement | 49 (32) |
| Need for continuous bladder irrigation | 26 (17) |
| Need for surgical intervention | 9 (6) |

*At presentation.

Any time during course.

### Disclosures

S. Pergam, Merck: Consultant, Consulting fee; Chimerix: Consultant, Consulting fee; A. Limaye, Novartis: Consultant, Consulting fee; M. Boesch, Vir Biotechnology: Consultant and Grant Investigator, Consulting fee and Research grant; Chimerix Inc: Consultant, Grant Investigator and Investigator Consulting fee, Research fee and Grant and Research support.

### 1561. Outcomes of Resistant or Refractory CMV Infection in Recipients of Allogeneic Hematopoietic Cell Transplant

Annette Artas, MD; Samuel L. Aiuti, PharmD; Marjorie Batista, MD, PhD; Firas El Chaar, MD; Amrita Prayag, MD; Lynn El Haddad, PhD; Victor Mulanovich, MD; Ella Ariza-Heredia, MD and Roy Chemaly, MD, MPH; 1The University of Texas MD Anderson Cancer Center, Houston, Texas; 2Division of Pharmacy, The University of Texas MD Anderson Cancer Center, Houston, Texas; 3University of Maryland Greenebaum Cancer Center, Baltimore, Maryland

**Session:** 151. Viruses and Bacteria in Immunocompromised Patients

**Background:** Resistant or refractory CMV infections are not well defined and may be associated with high morbidity and mortality in allogeneic hematopoietic cell transplant (allo-HCT) recipients. Susceptibility of resistant CMV infections is usually based on suboptimal responses to antiviral agents.

**Methods:** We performed a single-center retrospective chart review (January 2010 to September 2017) of Allo-HCT recipients who had CMV genotypic testing performed for suspected antiviral resistance. Based on the results, we categorized patients as having either refractory CMV (defined as CMV viremia that fails to decrease after antiviral therapy) or resistant CMV infection (defined as refractory infection with identification of genetic mutations in the UL97 and/or UL54 genes correlating with in vitro antiviral resistance). Primary outcome was all-cause mortality.

**Results:** CMV genotypic resistance analysis was performed in 97 patients. Of those, 23 had resistant (11 had UL54 gene, 10 had UL97 gene, and two had both UL54 and UL97) and 74 had refractory CMV infections. The majority of patients had AML (53%), underwent matched unrelated donor transplantation (43%), and received ATG during conditioning (64%). Patients with resistant CMV infections had a greater number of prior episodes when compared with those with refractory infections and had a longer time from transplant to suspicion of resistance ($P < 0.01$). Overall, the incidence of CMV disease was $42\%$ (25 vs. 58\% affecting the lungs and 56 vs. 17\% the GI tract, in resistant vs. refractory infections, respectively). All-cause mortality was 57\% (61\% resistant vs. 55\% refractory) and CMV-attributable mortality was 11\% (9\% resistant vs. 12\% refractory).

**Conclusion:** Our data showed that resistant CMV infections are associated with a higher rate of CMV disease. However, both resistant and refractory CMV infections had increased all-cause mortality and similar CMV-attributable mortality. There was no difference in outcomes between allo-HCT recipients who had resistant or refractory CMV infections. New treatment strategies for resistant or refractory CMV infections are needed.

**Disclosures:** S. L. Aiuti, Merck: Speaker’s Bureau, Consulting fee; E. Ariza-Heredia, Oxford Immunotec: Grant Investigator, Research grant; R. Chemaly, Merck: Consultant, Research grant; Chimerix: Consultant, Research grant; Novartis: Investigator, Research grant; Oxford Immunotec: Consultant, Research grant.

### 1562. Impact of Skin Biopsy on Diagnosing Infections and Changing Treatment in Cancer Patients with New Skin Rash

Niyati Jakhraria, MD; Kristen Stafford, PhD, MPH; and David J. Riedel, MD, MPH; 1Infectious Diseases, University of Maryland Medical Center, Baltimore, Maryland; 2Department of Epidemiology and Public Health, University of Maryland School of Public Health, Baltimore, Maryland; 3Infectious Disease, University of Maryland, Baltimore, Maryland

**Session:** 151. Viruses and Bacteria in Immunocompromised Patients

**Background:** Skin lesions in immunosuppressed cancer patients have a broad differential of infectious and non-infectious causes. Rash may be an early indication of serious systemic infections that are otherwise difficult to diagnose; hence, skin biopsy with culture and histopathology plays a vital role in establishing a diagnosis. Our study aims to determine the yield of skin biopsy in identifying infections and its impact on diagnosis and therapy.

**Methods:** We performed a retrospective review of all cancer patients admitted to University of Maryland from August 2010 to October 2017 who had a skin biopsy for new rash. We classified the skin lesion as infectious if the biopsy pathology or culture showed a pathogenic organism.

**Results:** Of 269 patients biopsied for new skin lesions, 43 (16\%) were caused by infectious agents (84\%) and 126 (47\%) were non-infectious. Among non-infectious causes, 29\% were due to graft vs. host disease, 9\% cancer, 9\% drug reaction, 4\% Sweet syndrome, and 29\% were nondiagnostic. The median WBC count trended toward significantly lower in the infectious group (1,100\(\mu\)L vs. the non-infectious group (2,700\(\mu\)L; $P = 0.08$). Of the 33 infectious lesions, 21 (49\%) were fungal, 13 (30\%) bacterial, seven (16\%) viral and one (2\%) mycobacterial. Sixty-seven percent patients had absolute neutrophil counts <1000\(\mu\)L, 40\% were ferrile, and 28\% had a stem cell transplant. The majority of infections (58\%) were identified by skin biopsy alone. Change in diagnosis after biopsy was significantly more likely in patients with infectious skin lesions than non-infectious (47\% vs. 28\%, respectively; $P = 0.02$). Patients with a biopsy-confirmed infectious cause were five times (95\% CI 2.70–10.22) more likely to have a change in therapy post biopsy compared with patients with a non-infectious cause. The sensitivity and specificity of provider diagnosis prior to biopsy was 86 and 81\%, respectively. The positive predictive value of pre-biopsy provider diagnosis was low at 46\%.

**Conclusion:** Skin biopsy of new rash in immunocompromised cancer patients frequently reveals systemic infections (especially fungal) and often leads to a change in diagnosis and therapeutic management.

**Disclosures:** No reported disclosures.

### 1563. Relationship of Cumulative Viral Burden of Adenovirus with Mortality in Allogeneic Hematopoietic Cell Transplant Recipients with Early Adenovirus Viremia

Yoon Joe Lee, MD, MPH; Zixuan Chen, BA; Miguel-Angel Perales, MD; Susan Prockop, MD; and Genoveva Papanicolaou, MD; 1Infectious Diseases Service, Department of Medicine, Memorial Sloan Kettering Cancer Center, New York, New York; 2Adult Bone Marrow Transplantation Service, Department of Medicine, Memorial Sloan Kettering Cancer Center, New York, New York; 3Pediatric Bone Marrow Transplantation Service, Department of Pediatrics, Memorial Sloan Kettering Cancer Center, New York, New York

**Session:** 151. Viruses and Bacteria in Immunocompromised Patients

**Background:** High peak adenovirus (ADV) viral loads (VL) have correlated with higher mortality in allogeneic hematopoietic cell transplant (HCT) recipients. ADV viral dynamics may inform trial design of new treatment strategies. We examined the relationship between cumulative viral burden expressed as average area under the curve (AAUC) and mortality.

**Methods:** We identified 62 HCT in MSK monitored by plasma ADV qPCR (Vircor-Eurofins) who had >1 value of ADV VL 2100 copies/mL <100 days post-HCT. AAUC was calculated as the sum of the area of trapezoids of ADV VL (log

**Results:** Of 62 patients, 24 (39\%) were children, 40 (65\%) had acute leukemia or myelodysplastic syndrome, 50 (81\%) received myeloablative conditioning, 41 (66\%)...
received TCD HCT and 11 (18%) received cord blood allograft. 67% of children and 82% of adults had maximum ADV VL >1,000 copies/mL. The median maximum VL was 2.8 log_{10} copies/mL in Q1, 4.4 log_{10} copies/mL in Q2, 5.0 log_{10} copies/mL in Q3, 5.3 log_{10} copies/mL in Q4, respectively. Figure shows survival estimate by AAUC Q. Higher AAUC was associated with lower survival. After adjusting for covariates, AAUC (hazard ratio [HR] 1.9; 95% confidence interval [CI] 1.2–3.0, P = 0.0065) were associated with mortality. Among other covariates, only aGVHD was associated with mortality (HR 11.7; 95% CI 1.4–98.9, P = 0.049).

**Conclusion.** In this pilot study of 62 HCT recipients comprising of 66% TCD, the cumulative ADV burden was associated with mortality. Larger studies are needed to validate our findings and assess the impact of immune reconstitution and antiviral treatments on outcomes of ADV viremia.

**Disclosures.** G. Papanicolaou, Chimerix: Consultant, Consulting fee, Research grant and Speaker honorarium

---

1564. Lower Rates of Epstein–Barr Virus (EBV) Viremia in Pediatric Solid Organ Transplant (SOT) Recipients Who Received Valganciclovir Prophylaxis

Elizabeth A Moulton, MD, PhD; Manjiree Karandikar, MD, MBS; Sheila Bond, MD; Sandra Burchett, MD, MS; Tanvi Sharma, MD, MPH and Francisco M Marty, MD; Boston Children’s Hospital, Boston, Massachusetts, Division of Infectious Diseases, Boston Children’s Hospital, Boston, Massachusetts, Brigham and Woman’s Hospital, Boston, Massachusetts, Dana-Farber Cancer Institute and Brigham and Women’s Hospital, Boston, Massachusetts

**Session:** 151. Viruses and Bacteria in Immunocompromised Patients

**Background.** Antiviral prophylaxis to prevent PTLD remains controversial, but some data suggest that valganciclovir or ganciclovir ([val]ganciclovir) use in EBV high-risk pediatric renal transplants reduces EBV viremia. We evaluated the impact of [val]ganciclovir on EBV viremia and post-transplant lymphoproliferative disease (PTLD) in pediatric nonrenal SOT recipients.

**Methods.** Retrospective study of 100 patients who underwent a first heart, liver, lung, intestine, or multivisceral SOT between November 2013 and November 2016 at Boston Children’s Hospital who survived without re-transplantation for at least 30 days. Data collected included EBV donor/recipient serostatus, donor’s age >2 years-old (to avoid misclassification of EBV risk due to maternal antibody), antiviral use ([val]ganciclovir or acyclovir), time to EBV viremia (>1,000 copies/mL by whole blood PCR), and time to development of PTLD. EBV high-risk patients were those with donor EBV positive [D+] recipient EBV negative [R–] serologies; intermediate-risk were EBV D+/R–; low risk were EBV D–/R–. Time-to-event analysis using the Kaplan–Meier method was performed and significance (P = 0.05) was evaluated using the log-rank test.

**Results.** High (n = 45) or intermediate (n = 27) EBV risk was associated with increased EBV viremia (P = 0.007, table). EBV viremia was significantly decreased in the subgroup of high-risk patients with donors >2 years old who received [val]ganciclovir vs. those who received no antiviral (n = 23, n = 4, P = 0.03, Figure 1). Most PTLD cases (8/9) occurred in the high-risk group (P = 0.03, Figure 2). Overall, patients who received [val]ganciclovir had less PTLD than those who did not (P = 0.03), but this was not significant in the high-risk subgroup (P = 0.14, Figure 3).

**Conclusion.** Lower rates of EBV viremia occurred in high EBV risk transplant recipients who received [val]ganciclovir, possibly by preventing primary EBV infection. Recipients with high EBV risk have the highest rate of PTLD.

| cases = 100 | EBV Risk | Outcome |
|-------------|----------|---------|
| Organ       | Unknown  | Low     | Intermediate | High | Viremia | PTLD |
| Heart       | 5        | 8       | 13          | 20   | 18      | 5    |
| Liver       | 1        | 11      | 10          | 18   | 6       | 2    |
| Lung        | 2        | 1       | 4           | 4    | 6       | 2    |
| Intestine   | 1        | 4       | 1           | 1    | 0       |      |
| Multivisceral | 1     |         |             |      |         |      |
| Dual organ  | 1        |         |             |      |         |      |
| Total       | 7        | 21      | 27          | 45   | 43      | 9    |
| Antiviral   | 6        |         |             |      | 5       | 2    |
| No Antiviral| 2        | 1       | 3           | 8    | 7       | 3    |
| [Val]ganciclovir | 5      | 13      | 24          | 31   | 31      | 4    |
| Outcome     | Viremia   | 2       | 2           | 14   | 25      | 9    |
|             | PTLD      | 1       | 1           | 14   | 25      | 9    |

Disclosures. G. Papanicolaou, Chimerix: Consultant, Consulting fee, Research grant and Speaker honorarium