Background. Non-meningococcal and nongonococcal Neisseria spp. are usually commensal and rarely cause invasive disease in humans. Eculizumab, a terminal complement inhibitor, increases susceptibility to meningococcal disease, but data on atypical Neisseria spp. disease in persons receiving eculizumab are lacking. This case series describes postmarketing reports of disease by commensal Neisseria spp. in patients receiving eculizumab.

Methods. The FDA Adverse Event Reporting System (FAERS) database and the medical literature were searched for cases of disease by any nonmeningococcal and nongonococcal Neisseria spp. in patients receiving eculizumab. Included cases had a diagnosis of disease by any atypical Neisseria spp. with onset on or before January 31, 2018 and ≥1 dose of eculizumab in the 3 months prior to disease.

Results. The search identified seven FAERS cases, including one case also reported in the literature. Patient ages ranged from 4 to 38 years. Five patients had positive blood cultures, of which three had an indwelling catheter for vascular access (n = 2, N. sicca/subflava) or hemodialysis (n = 1, N. cinerea). Two patients with bacterialemia had N. cinerea septic shock with possible cholecystitis, and N. mucosa sepsis with concurrent Streptococcus bacteria after gastroenteritis. The remaining two cases in the series included one with N. sicca bacterial peritonitis associated with a peritoneal dialysis catheter (negative blood cultures, other cultures not specified), and one with a diagnosis of N. flavescens sepsis while neutropenic (specimen source not specified). All seven patients were hospitalized and three had sepsis or septic shock. All cases resolved with antibiotics and supportive care.

Conclusion. We identified seven cases of serious disease caused by atypical Neisseria spp. among eculizumab recipients. Since these organisms are typical inhabitants of the oropharynx and urogenital tract and are not skin flora, the source of disease was unusual. Our data suggest that eculizumab may confer increased risk for disease, usually commensal Neisseria spp. Healthcare professionals are encouraged to treat all Neisseria spp. isolated from sterile sites as pathogenic, and not as contaminants, in patients receiving eculizumab.

The views expressed are those of the authors and do not necessarily represent those of, or imply endorsement from, the U.S. Food and Drug Administration, the Centers for Disease Control and Prevention, or the U.S. government.

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1559. Hematopoietic Cell Transplantation with Post-transplant Cyclophosphamide: Impact of Donor Type on Pre-engraftment Blood-Stream Infections
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Background. The aim of the study was to estimate the cumulative incidence of pre-engraftment blood stream infections (PE-BSI), its predictive factors and the infection-related mortality (IRM).

Methods. Retrospective cohort study on 235 adults who underwent peripheral blood HCT from every donor type with PT-Cy platform, from 2013 to 2017 at San Raffaele Scientific Institute. The Poisson regression was used to estimate the crude incidence rate (IR) of PE-BSI. The Fine-Gray competing risk model was applied to Raffaele Scientific Institute.

Results. Patients' characteristics are reported in Table 1. During 5,316 person-days of follow-up (PDFU), 77 PE-BSI episodes occurred in 72 patients: IR = 1.45 per 100-PDFU [95% confidence interval (95% CI) 1.13–1.77]. The median time to PE-BSI was 13 days (IQR: 7–17) and the estimated CIF of PE-BSI at 30 days was 35% (95% CI: 26–39%; no differences in CIF according to donor type [30% vs. 34% vs. 32%]).

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1560. Clinical Presentation of BK Virus-Associated Hemorrhagic Cystitis (HC) After Hematopoietic Cell Transplantation (HCT)
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Background. BK polyoma virus (BKVpY) has been associated with hemorrhagic cystitis after HCT. Prior studies have examined risk factors for BKPyV-associated HC, but the characteristics of disease, including duration, common presentations, and the spectrum of clinical outcomes, have not been well described. Precise estimates of major clinical endpoints are critical to design clinical trials of novel prevention and treatment agents.
Methods. We retrospectively analyzed HCT patients between 2007 and 2017. Subjects were included if they had macroscopic hematuria (Bedi grade ≥2), a positive urine BKPyV PCR, and at least one plasma BKPyV viral load available after platelet engraftment or Day 28 post-HCT. HC was defined by hematuria and positive urine BKPyV PCR, duration was determined by time to resolution of hematuria. Demographic data, baseline symptoms, and clinical outcomes (e.g., need for bladder irrigation, use of cidofovir) were reviewed.

Results. BKPyV-HC developed in 149 HCT recipients (97.3% allogeneic, 73% myeloablative conditioning) at a median of 54 days post-transplant (IQR 40–73). Seven percent of patients were co-infected with adenovirus at the time of diagnosis. Symptoms and outcomes are shown in Table 1. Of those with plasma viral load testing at the onset of HC, 91% (112/126) had BKPyV viremia with a median viral load of 2,200 copies/mL (IQR 385–9,300). Twenty-nine percent of the cohort received cidofovir.

Conclusion. 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.

Table 1. Symptoms and outcomes of BKPyV-associated HC

| Symptom                  | n (%)       |
|--------------------------|-------------|
| Clot in urine*           | 92 (60%)    |
| Dysuria*                 | 124 (81%)   |
| Frequent*                | 91 (59%)    |
| Urgency*                 | 68 (44%)    |
| Flank pain*              | 22 (14%)    |
| Abdominal pain*          | 30 (20%)    |
| Median duration of days in IQR | 25 (14–49) |
| Median duration of hematuria or urine clots in days (IQR) | 18 (12–39) |
| 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.

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1561. Outcomes of Resistant or Refractory CMV Infection in Recipients of Allogeneic Hematopoietic Cell Transplantation: Annette Artas, MD; Samuel L. Aitken, PharmD; Marjorie Batista, MD, PhD; Firas El Chaer, MD; Amrita Prayag, MD; Lynn El Haddad, PhD; Victor Mulanovich, MD; Ella Ariza-Heredia, MD and Roy Chemaly, MD, MPH; MD Anderson Cancer Center, Houston, Texas, USA.

Background. Infections after allogeneic hematopoietic cell transplantation (allo-HCT) and acute myeloid leukemia are difficult to control. We investigated the impact of CMV resistant or refractory infections on clinical outcomes.

Methods. Higher peak CMV viral loads and a longer time from transplant to suspicion of resistance (P < 0.01) are associated with a higher rate of CMV disease. However, both resistant and refractory CMV infections have 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 required.

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1562. Impact of Skin Biopsy on Diagnosing Infections and Changing Treatment in Cancer Patients with New Skin Rash: Nyati Jakharia, MD; Kristen Stafford, PhD, MPH; and David J. Riedel, MD, MPH; Infectious Diseases, University of Maryland Medical Center, Baltimore, Maryland, USA.

Background. Biopsy is a critical ancillary test in diagnostic algorithms for skin lesions. We investigated the impact of skin biopsy on diagnosis and therapy in cancer patients with new skin rash.

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 infections. The majority of infections (84%) were non-infectious. Among non-infectious cases, 42% 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/μL) vs. the non-infectious group (2,700/μL, P = 0.08). Of 223 infectious lesions, 21 (49%) were fungal, 13 (30%) bacterial, seven (16%) viral and one (2%) mycobacterial. Sixty-seven percent patients had absolute neutrophil counts < 1,000/μL, 40% were febrile, 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 cause of 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.

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1563. Relationship of Cumulative Viral Burden of Adenovirus with Mortality in Allogeneic Hematopoietic Cell Transplant Recipients with Early Adenovirus Viremia: Yeon Joo Lee, MD, MPH; Zixuan Chen, BA; Miguel-Angel Perales, MD; Susan Froock, MD; and Genovefa Papanicolaou, MD; Infectious Diseases Service, Department of Medicine, Memorial Sloan Kettering Cancer Center, New York, New York; Adult Bone Marrow Transplantation Service, Department of Pediatrics, Memorial Sloan Kettering Cancer Center, New York, New York; Pediatric Bone Marrow Transplantation Service, Department of Pediatrics, Memorial Sloan Kettering Cancer Center, New York, New York.

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Background. Higher 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 at MSK monitored by plasma ADV qPCR (Viracor-Eurofins) who had >1 value of ADV VL ≥200 copies/mL ≤100 days post-HCT. AAUC was calculated as the sum of the area of trapezoids of ADV VL (log– copies/mL) divided by the duration (weeks) of viremia. AAUC was categorized into quartiles (Q). Survival was obtained by the Kaplan–Meier method at 16 weeks from onset of ADV. Cox proportional hazard models were used to evaluate the association between AAUC and mortality. Age, underlying disease, HLA match, peripheral blood cell source, ex vivo T cell depletion (TCD) and acute graft-vs-host disease (aGVHD) were included in the model.

Results. Of 62 patients, 24 (39%) were children, 40 (65%) had acute leukemia or myelodysplastic syndrome, 50 (81%) received myeloablative conditioning, 41 (66%)...