LPS ($P = 0.003$, 0.003 , and 0.039 , respectively), R848 ($P < 0.001$, 0.039 , and <0.001 , respectively) and ZYM ($P = 0.039$, 0.003 , and 0.003 , respectively), as well as for MCP1 in response to R848 or ZYM ($P = 0.039$ for both). In the cohort with CMV infection, cytokine responses to TLR ligands were even lower during the acute CMV infection when compared with the end of prophylaxis, although this was significant only for IL10 production after R848 stimulation ($P = 0.034$). There was no influence of CMV viral load or duration of viremia on cytokine levels.

Conclusion. Response to non-CMV antigens during CMV infection was blunted supporting the clinical observation in transplant recipients that CMV infection increases susceptibility to bacterial, fungal, and other viral infections. However, inherent differences in patients that are neither directly related to CMV nor to their net level of immunosuppression also contribute to this increased susceptibility, as cytokine levels at the end of prophylaxis were lower among patients with compared with those without subsequent CMV infection.

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This abstract has been withdrawn at the author's request.

1534. Prevalence and Outcome of Neutropenic Enterocolitis Among Pediatric Acute Myeloid Leukemia Patients: A Developing Country Experience

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Background. Neutropenic enterocolitis (NEC) is a life-threatening disease with substantial morbidity and mortality, seen primarily in patients with hematologic malignancies. The frequency of NEC has increased with the widespread use of chemotherapeutic agents such as the taxanes, which cause severe gastrointestinal mucositis.

Methods. This was a retrospective study at the National Cancer Institute, Cairo University. The computerized records were screened for ultrasound or computerized tomographic scan requests for abdominal pain for all acute myeloid leukemia inpatients (2012–2016). Retrospective case note analysis was used to collect clinical data for patients with features of Typhilitis. D 30 morbidity was reported.

Results. The incidence of NEC among our inpatients was 24% (49/203). Forty-three children had radiologically confirmed typhilitis, and six had clinical features alone. Most (93%) patients were profoundly neutropenic (ANC <100). All of the patients were subjected to conservative management. All of them needed ICU admission. Eighteen children had a variable period of bowel rest, including 12 patients

who were supported with total parenteral nutrition. Three patients had laparotomy that revealed extensive colonic bowel necrosis (1), perforated bowel loop (1), and a perforated appendix (1). Two out of three cases of Laparotomy were diagnosed with Mucormycosis. 30-Days mortality was 44.8% (22/49). Relapsing typhilitis in subsequent courses was observed in 6/27 (22%) patients. Fulminant Gram-negative sepsis without surgical intervention was the leading cause of death in this cohort.

Conclusion. The diagnosis of typhilitis was based on clinical features, supported by radiologic evidence in almost half of the study group. Surgical intervention should be reserved for specific complications or where another surgical pathologic condition cannot reasonably be ruled out. Though rare, fungal infection should be suspected specially in cases with worsening signs of typhilitis despite broad antimicrobial coverage.

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1535. Utility of CT Abdomen in Evaluation of Neutropenic Fever in Patients with Hematological Malignancies

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Background. Infections is a serious complication of severe neutropenia and is associated with significant morbidity and mortality. Pan CT scan or CT abdomen is frequently ordered to identify infection source in neutropenic fever. However, utility of CT abdomen in this clinical scenario has not been systematically analyzed.

Methods. We retrospectively reviewed all adults hospitalized at our institution with neutropenic fever from January 2006 to December 2016 and had CT abdomen for source identification. Demographic, clinical, imaging, and outcome data were abstracted and analyzed using descriptive statistics.

Results. Overall, 156 patients (61.5% males) met the study criteria. The most common underlying hematologic malignancies were leukemia in 83 (53.2%) and malignant lymphoma 46 (29.5%). Others included multiple myeloma, myelodysplasia, and benign hematological malignancies. The most common presenting symptoms, besides fever, at the time of CT abdomen were chills (33.5%), abdominal pain (23.9%), nausea (23.2%), diarrhea (20.6%), cough (19.5%), shortness of breath (12.3%), and skin rash (18.4%). Initial CT abdomen was positive in 45 (28.8%). Repeat CT abdomen was obtained in 22 (14.3%) for persistent fevers and had positive findings for infection source in 85.7%. Sources of infection identified on CT abdomen were involving gastrointestinal tract (46.7%), hepatobiliary system (24.4%), urinary tract (21.1%) and peritoneum (7.8%). In terms of microbiology, a causative organism was identified in blood in 53 (34.9%), urine in 15 (9.9%), stool in 15 (9.9%), and respiratory secretions in 8 (5.3%). Causative pathogens included Gram-positive bacteria in 30 (62.5%), Gram-negative bacteria in 23 (47.9%) and Anaerobes in 5 (10.4%) cases. CT abdomen finding resulted in antimicrobial changes in 75 (59.5%) of patients and procedural intervention in 14 patients (9.3%).

Conclusion. While routine use of CT abdomen for evaluation of neutropenic fevers is low yield, CT findings can help identify a source of infection, necessitating change in antimicrobial therapy or procedural intervention, in patients with abdominal symptoms or persistent fever despite broad-spectrum antimicrobial therapy.

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1536. Donor-Derived *Mycobacterium tuberculosis* Infection After Solid-Organ Transplantation: A Comprehensive Review

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Background. Donor derived *Mycobacterium tuberculosis* (DDTB) has occasionally been reported after solid-organ transplantation (SOT).

Methods. To characterize DDTB, MEDLINE OVID, and EMBASE were reviewed from inception to December 31, 2016 using key words donor-derived infection, tuberculosis and solid-organ transplant.

Results. A total of 36 cases of proven (17), probable (8) and possible (11) DDTB were identified among 16 lung, 13 kidney, six liver, and one heart recipient. Most patients were male (21/35, 60%); median age was 48 (range 23–68) years. Median time to DDTB was 2.7 (0.2–29) months after SOT. Donor residence in TB-endemic area (13/28, 46.4%) was common. Fever was the most frequent symptom (20/36, 56.5%). DDTB was classified as pulmonary (36%), extra-pulmonary (28%) or disseminated (36%), with common involvement of the allograft (31/36, 86%). Diagnosis was made by smear or culture (30/36, 83.3%). Three (10/24, 41.7%) or four-drug therapy (13/24, 54.2%) was given for median of 10.5 (range, 6–24) months. Graft loss, all-cause and TB-attributable mortality occurred in 18% (4/22), 25% (9/36) and 44% (4/9), respectively.

Conclusion. DDTB presents early as febrile illness after SOT, and carries a high mortality risk. Donors should be screened, with particular attention to risk factors.

Table 1: Summary of Characteristics of Donors and Recipients With DDTB

Characteristics	N (% or range)
Age, year	48 (23–68)
Gender, M (N = 35)	21 (60)
Type of transplant	
Kidney	13 (36.1)
Liver	6 (16.7)
Lung/heart–lung	16 (44.4)
Heart	1 (2.8)
h/o T-cell depleting agent (N = 9)	5 (55.6)
h/o acute rejection (N = 19)	11 (57.9)
Immunosuppressive regimen w/	8 (38.1)
Cyclosporine (N = 21)	
Donor characteristics, N = 28	
Deceased	24 (85.7)
Living	2 (7.1)
Not specified	2 (7.1)
Donor risk factor for TB ^a	
Latent or active TB	5
Residence in endemic country	13
Socio-economic ^b	5
None	5
Type of TB	
Pulmonary	13 (36.1)
Extrapulmonary	10 (27.8)
Disseminated	13 (36.1)
Type of DDTB	
Proven	17
Probable	8
Possible	11
Clinical presentation (N = 33)	
Fever	20 (60.6)
Other ^c	13 (39.4)
Time to diagnosis, med in months	2.7 (0.2–29)
Diagnosis, N = 34 ^a	
AFB smear or culture	30
Histopathology	8
PCR	2
Outcome	
Graft loss or failure (N = 22)	4 (18)
Death	9 (25)

^amay have more than one. ^bHomelessness, incarceration, alcohol abuse, and travel.

^cPain (2), cough/dyspnea (3), Effusion (1), nephritis (1), nausea (1) no symptoms (5), NR, not reported.

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1537. Reactivation of Latent Cytomegalovirus Infection in Patients with Rheumatologic Disease: A Case–Control Study

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Background. While there are emerging reports of cytomegalovirus (CMV) disease in patients with underlying rheumatic conditions, the disease burden, risk factors and clinical sequelae in this population are poorly understood. We sought to describe a cohort of patients with underlying rheumatic disease and CMV infection, then compare those with systemic lupus erythematosus (SLE), the largest subgroup, using case–control methodology to identify risk factors for reactivation and differences in outcomes.

Methods. Adults with rheumatic disease and CMV reactivation diagnosed by viral load, viral culture or histopathology from Tufts Medical Center between 2000 and 2015 were identified. Due to SLE cases comprising 43% of the total, these patients were matched 3:1 with SLE controls based on age, sex and year of admission.

Results. Fourteen patients with rheumatic disease and CMV were included (six SLE, four rheumatoid arthritis, two sarcoid, one psoriatic arthritis, one microscopic polyangiitis). Seven patients had viremia alone and the remainder had tissue-invasive disease (four gastrointestinal, three pulmonary). Thirteen (93%) received corticosteroids within 3 months prior to CMV reactivation. Fever (86%) was the most common symptom. Coinfections were seen in eight (57%), including four with bacteremia. Thirteen (93%) were treated with antiviral therapy for a median of 33 days (range 13–171). Relapse occurred in three patients and four died during hospitalization. Six patients with underlying SLE and CMV reactivation were compared with 18

controls. Cases received significantly more corticosteroids during the 8-week period prior to admission (median 36.5 vs. 2.5 mg/day, $P = 0.006$), had longer hospitalizations (median 46.5 vs. 6.5 days, $P = 0.006$) and more frequent co-infections (67% vs. 17%, $P = 0.04$). There were no significant differences in symptoms at presentation.

Conclusion. CMV reactivation occurs in patients with rheumatic disease, and can result in severe clinical sequelae that may be difficult to distinguish from a flare of the underlying disease. Patients with CMV were more likely to have received high doses of corticosteroids, and developed more co-infections during their hospitalization. Clinicians should consider this diagnosis during the evaluation of a febrile illness in the rheumatologic population.

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1538. High Mortality of Cytomegalovirus (CMV) Pneumonia in Hematopoietic Cell Transplant Recipients

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Background. CMV infection remains a leading cause of morbidity and mortality in allogeneic hematopoietic cell transplant (allo-HCT) recipients. CMV can cause tissue-invasive disease, especially pneumonitis, with poor outcomes.

Methods. We performed a retrospective study in HCT recipients who had CMV pneumonia between January 2014 and December 2017. The microbiology laboratory records were queried to identify patients with CMV pneumonia based on CMV viral culture and CMV viral load (VL) in plasma and in bronchoalveolar lavage (BAL). Data on demographics, clinical characteristics, management and mortality were collected.

Results. A total of 23 patients were diagnosed with CMV pneumonia and nine (39%) were male, with a median age of 59 years (range 18–83), and median time from HCT to CMV pneumonia of 104 days (range 25–1,177). Most patients had an allo-HCT (20, 87%) and three (13%) had an autologous HCT. All patients except one were CMV seropositive, 13 (57%) were on steroids and eight (42%) had GVHD. The median plasma CMV VL at diagnosis was 137 IU/mL (range: 0–6,586) while the median VL in BAL was 1,700 IU/mL (range 79–64,800) (Figure 1). Foscarnet was the most common antiviral agent used (12, 52%) followed by ganciclovir (7, 30.4%). Seventeen (81%) patients received combination therapy with IVIGs with a mean number of doses of 4 (range, 1–7). All-cause mortality was 87% and CMV-associated mortality was 52%. The median VL in BAL in patients with CMV-associated mortality was higher (12,340 vs. 2,863 IU/mL, $P = 0.059$) than the remaining cohort.

Conclusion. CMV pneumonia remains a significant cause of mortality after HCT. The correlation between CMV VL in BAL and plasma was poor. High CMV VL in BAL was associated with fatal outcome.

Figure 1: Comparison between median of CMV Viral load PCR in plasma and BAL by Mann-Whitney test. ♦ Median CMV PCR Viral Load, Abbreviation: BAL, Bronchoalveolar lavage; IU, International Unit.

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1539. Diagnosis of *Yersinia enterocolitica* in Cancer Patients With Diarrhea in the Era of Molecular Diagnostics for Gastrointestinal Infections

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