other fungi including *Penicillium*. **Methods:** We developed a set of real-time PCR assays for species-specific detection of 5 medically important species (*A. fumigatus*, *A. flavus*, *A. nidulans*, *A. niger*, *A. terreus*) that covers >99% of all *Apsergillus* infections. In addition to BLAST analysis, we evaluated cross-reactivity with other *Aspergillus* species, and other fungi. Blood specimens were spiked with serially diluted conidia to establish the dynamic range of detection. Additionally, to evaluate the clinical utilities of these assays, we retrospectively analyzed blood from 60 HSCT patients whose specimens were sent for routine CMV testing. **Results:** We identified individual ITS1 regions that are specific for each of the 5 *Aspergillus* species but are conserved among the strains within the species. Using scorpion technology, each assay amplified and detected the species-specific sequence only and no cross-reactivity was detected when it was challenged with other fungal genomic DNA. These assays can detect as few as 100 conidia/mL of whole blood. Of 60 patients analyzed, 2 patients (3%) were *Aspergillus*-positive. One patient was positive for *A. flavus* (1.11 &ttimes; 10^3 copies/mL), and 1 patient was coinfected with *A. flavus* (6.40×10^2 copies/mL) and *A. niger* (2.70×10^3 copies/mL). **Conclusions:** Developing a real time PCR assay for species-specific identification of *Aspergillus* is a major challenge because of significant genomic sequence homology among thousands of common environmental fungi such as *Penicillium*. Using scorpion real time PCR assays, we have identified *Aspergillus* infections at the species level in HSCT patients. Currently, we are evaluating diagnostic utilities of these assays on retrospective and prospective HSCT patients.

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ROLE OF QUANTITATIVE VIRAL LOAD MONITORING OF BK VIRUS IN HEMORRHAGIC CYSTITIS COMPLICATING HSCT PATIENTS

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Background: Hemorrhagic cystitis (HC) causes significant morbidity in hematopoietic stem cell transplantation (HSCT) patients that could often be life-threatening in post-engraftment. Its incidence varies from 7 to 68%. *Polyoma* virus BK (BKV) is known to be associated with the development of HC, however, its diagnosis could be difficult. We developed a rapid, sensitive, specific, and quantitative real time PCR assay and used it for monitoring BKV infections in HSCT patients with HC. **Methods:** Primers and a TaqMan® probe were designed to specifically amplify and detect an 83-bp fragment of the BKV Agno gene. We used this assay to detect and monitor BKV infections in 421 clinical specimens from 86 BMT patients with HC. **Results:** The real time quantitative BKV PCR assay is specific and does not cross-react with other viruses. Out of 421 clinical specimens from 86 BMT patients, 134 plasma specimens were from 35 patients, 283 urine specimens were from 78 patients, 4 tissue specimens were from 4 patients, and 27 patients had both urine and plasma specimens. Overall 288 (68%) specimens from 65 patients (76%) were positive for BKV. More specifically, out of 35 patients with plasma specimens, 18 (51%) had viremia, and out of 78 patients with urine specimens, 62 (79%) had viruria. Of the 27 patients with both plasma and urine, 14 (52%) had both viruria and viremia, and 12 (44%) had viruria. Two patients with viruria and viremia also had BKV in tissue, while another 2 patients with viruria, but not viremia, were negative in tissue. Urine viral loads (range 2.5×10^2–9.9×10^7, mean 7.7×10^7, median 1.6×10^6) were significantly higher than plasma (range 4.0×10^2–1.5×10^6, mean 1.2×10^6, median 6.1×10^4). Nineteen patients with HC serially monitored for BKV infections for over 3 months showed correlations between BKV loads and clinical symptoms. Interestingly, 4 patients had viruria with increasing BKV loads that ended up with viremia later, indicating that early BKV screening of urine may provide an early diagnosis so that treatment therapy can be instituted to avoid severe HC complications in HSCT patients. **Conclusions:** Real time BKV PCR assay provides a rapid, sensitive, and specific diagnosis of BKV infections in HC complicating HSCT patients. Furthermore, quantitative monitoring helps in determining the severity of infections and measuring the effectiveness of treatment therapy. Currently, we are monitoring BKV infections in a controlled study on HSCT patients with HC.

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COMPARISON OF HEATH-RELATED QUALITY OF LIFE IN SIBLING ALLOGENEIC TRANSPLANT DONORS USING BONE MARROW OR PERIPHERAL BLOOD

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Purpose: We have programmed a study to evaluate the difference in health-related quality of life (QOL) in stem cell transplant donors harvested by marrow aspiration (BM) or by blood apheresis after peripheral stem cell mobilization with G-CSF (PB). **Methods:** Seventy-four healthy sibling donors from 6 institutes entered the study. The method of harvest was voluntarily selected by each donor after information about risks and benefits of both procedures. Standard laboratory tests and subjective QOL assessments by Short-Form 36 (SF36) were performed 4 times; on the day before operation or G-CSF administration, the seventh day, the fourth week, and 3 months after harvest. SF 36 includes 8 categories of assessment; physical functioning (PF), role-physical (RP), role-emotional (RE), body pain (BP), general health perception (GH), vitality (VT), social functioning (SF), and mental health (MH). **Results:** Thirty-two BM donors and 42 PB donors entered. When QOL assessments before procedure were compared, scores of PF, RP, BP, SF, RE, and MH were lower ($P < .05$, by Mann-Whitney test) in BM donors than in PB ones. Lowest scores of QOL were observed on the seventh day after procedures in both groups. Statistical differences of scores were significant in PF (65.7 ± 10.2 vs 90.8 ± 14.5), RP (50.5 ± 27.9 vs 83.8 ± 22.2), RE (54.5 ± 30.2 vs 85.1 ± 19.9), VT (54.4 ± 23.2 vs 68.0 ± 25.1), SF (61.5 ± 26.5 vs 84.6 ± 20.1), and MH (67.6 ± 19.6 vs 78.8 ± 16.0) between two groups (BM vs PB, respectively). Scores of QOL returned to the base value at the fourth week in both groups. QOL scores of PF, RP, SF, and MH were higher than the base value by paired *t*-test in BM donors at 3 months after harvest. **Discussion:** Previous blood storage and mental stress before anesthesia and operation appeared to be the causes of decrease in QOL scores before harvest in BMT donors. Decrease in scores of PF, RP, BP, and RE at the seventh day indicates both procedures provide physical stress on donors, however, grade of decrease was higher in BM donors than in PB donors. **Conclusions:** BM donors feel more stress on emotion and mental health as well as physical condition than PB donors.

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EXTRACORPOREAL PHOTOPHERESIS (ECP) IN CHILDREN WITH REFRACTORY CHRONIC GVHD: FEASIBILITY AND EFFICACY

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Since 2003, we have used ECP for salvage therapy of pediatric cGVHD. We developed an algorithm for children of different weights to guide the need for pRBC transfusion prior to ECP: if >40 kg, transfuse for hematocrit (hct) <26%; if 25–40 kg, transfuse for hct <32%, if <25 kg, transfuse for hct <35%. Extracorporeal Volume (ECV) is graphed and maximum number of cycles and bowl size is determined. Generally, the 125 mL bowl is used. Patients <25 kg receive NS bolus prior to first cycle and prior to second cycle as needed. Volume of NS bolus is calculated as