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Human Herpes Virus-6 Viremia is associated with poor clinical outcomes in Children following Allogeneic Hematopoietic Cell Transplantation (AlloHCT)- Statistical Noise or a Real problem?

Leah Violago, Evelyn Rustia MD, Zhezhen Jin, Monica Bhatia, Andrew Kung MD. Department of Nursing, New York-Presbyterian Morgan Stanley Children's Hospital, NewYork, New York;

Topic Significance & Study Purpose/Background/Rationale: Human Herpes Virus 6 (HHV-6) is an evolving pathogen in the field of AlloHCT. The impact of HHV-6 viremia on AlloHCT outcomes in children has not been well described. At our center, one patient died from HHV-6 and/or its treatment; another asymptomatic patient had a very high HHV-6 viral load (>1 million copies/ml) that was refractory to treatment with Ganciclovir, Foscarnet and Cidofovir. These two cases prompted us to create a standard operating procedure for HHV6 monitoring in an effort analyze the clinical impact of HHV-6 viremia following AlloHCT.
Methods, Intervention, & Analysis: We monitored weekly HHV-6 PCR starting pre-AlloHCT and up to Day +180 post-transplant from 2008-2012 on 100 children (median age, 8 years; range 0.25-22 years; 35 F/65 M) undergoing AlloHCT for both malignant (n=53) and non-malignant (n=47) diseases. Conditioning regimens consisted of either myeloablative (n=43, 43%), reduced toxicity (n=34, 34%) or reduced intensity (n=23, 23%) regimens with 47% of total patients receiving alemtuzumab and 30% of total patients receiving rabbit anti-thymocyte globulin. Donor sources included matched family donor (n=42, 42%), matched unrelated donor (n=28, 28%) and unrelated cord blood (n=20, 20%).
Findings & Interpretation: The incidence of pre-AlloHCT HHV-6 viremia was 3% (n=3). Following AlloHCT, 18 patients developed HHV-6 viremia and 10 patients had recurrence of viremia. The incidence of peri-AlloHCT (day 0- day+14), early (day +15-day+98) and late HHV-6 viremia (>day +98) was 5%, 14% and 9%, respectively. The average time to clear viremia was 6 weeks (range 1-23 weeks). The median time to platelet engraftment in patients with HHV-6 viremia was delayed in relation to unaffected patients (p=0.004). Furthermore, the incidence of platelet engraftment by day +180 was lower in patients with viremia than in unaffected counterparts (p=0.038). Overall, HHV-6 viremia was associated with higher transplant- related mortality [TRM] (0.003) [Table] though we did not observe any case of encephalopathy or deaths directly related to the HHV-6 itself.
Discussion & Implications: With this study, we demonstrate that HHV-6 is prevalent in children undergoing AlloHCT and that HHV-6 viremia is associated with significant platelet engraftment delay and transplant related mortality. Further clinical sequelae of HHV-6 viremia remain difficult to ascertain. Each PCR test costs $120 resulting in approximately $250,000-300,000 of hospital cost over the four-year study period. . Due to lack of clear understanding of clinical consequences, we no longer routinely perform PCR monitoring of HHV-6. To elucidate the role of HHV-6, univariate and multivariate analysis will be conducted to study various risk factors that may contribute to delayed platelet engraftment and TRM post-AlloHCT in an effort to identify who might benefit from routine HHV-6 PCR monitoring in the future.

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Altered Sexuality and Quality of Life in Female Hematopoietic Cell Transplant Recipients in The First Year Following Transplantation

D.Kathryn Tierney. Stanford University Medical Center, Stanford, California

Topic Significance & Study Purpose/Background/Rationale: Background Alterations in sexuality following hematopoietic cell transplantation (HCT) are common and can negatively impact quality of life (QOL). The etiology of these changes is the result of cumulative physiological and psychosocial insults beginning with the cancer diagnosis.
Methods, Intervention, & Analysis: Methods Women were surveyed a four time points, pre-transplant (T1), 2-3 (T2), 6 (T3) and 12 (T4) months post-HCT. Instruments included 1) Menopause-Specific Quality of Life Questionnaire, 2) Female Sexual Function Index and 3) a visual analog scale to measure QOL. Demographics of the sixty-three participants are shown in table one. Statistical analyses included t-tests, one-way repeated measures ANOVA and multiple regression.
Findings & Interpretation: Results At T4, 51% experienced hot flashes, 59% decreased sexual desire, 46.9% vaginal dryness and 49.2% were avoiding intimacy. At T4, 44.9% reported decreased arousal, 36.7% decreased lubrication, 44.9% difficulty experiencing orgasm, 22.4% dyspareunia and 63.3% reported being dissatisfied with the sexual partner at least half of the time or more. At T4, only 69% of the women had been sexually active in the past month. There was no significant change in mean scores for sexual functioning, sexual satisfaction and vasomotor symptoms from T1 to T4; indicating no improvement in symptoms. A significant decline in mean scores for physical ($p = .011$) and psychosocial ($p = .019$) symptoms was observed over the first year indicating a decrease in symptoms. Mean QOL scores significantly increased ($p = .028$) in the first year, indicating an improvement in QOL. Multiple linear regression analysis indicates that 49.2% (adjusted $R2 = .492$, $p = .000$) of variance in QOL scores at T4 is explained by psychosocial and physical symptoms, sexual satisfaction, QOL score at T1 and education level. Psychosocial symptoms uniquely explains 21.8% ($p = .000$), sexual satisfaction 4.58% (p .023) and education level 5.86% ($p = .01$) of variance in T4 QOL scores.
Discussion & Implications: Implications Nurses can provide anticipatory guidance on potential changes in sexuality to facilitate adaptation by reducing the discordance between expectations and new realities. Based on these findings, treatment strategies targeted at decreasing hot flashes, vaginal dryness and psychosocial symptoms may result in improved QOL.