Abstract:

Objective: Children undergoing hematopoietic stem cell transplant (HSCT) are prone to infections, especially when hospitalized for the transplant or additional medical care. These infections are perceived to increase patient's mortality risk, but data are lacking. We conducted this study to assess the burden and the impact of hospital acquired infections (HAI) on mortality risk among pediatric HSCT patients.

Methods: This retrospective study included 169 patients that received allogeneic HSCT between 1/1/2011-7/6/2017 at Children's National Hospital, a tertiary referral center. Clinical and laboratory data were reviewed for one-year after transplant to determine HAI and survival status. The HAI incident rates stratified by bloodstream, respiratory, and gastrointestinal infections were then compared between deceased patients and survivors.

Results: Including transplant, 169 patients sustained 499 hospital admissions for total of 10,523 patient days and 112 HAI episodes, resulting in a HAI rate of 10.6 per 1000 patient-days. Within one-year after transplant,38 (22%) patient died, 30 (17.5%) with non-relapse related causes. Unadjusted univariate analysis revealed mortality correlated with cell source (p=0.035), donor type (p= 0.002), respiratory viral infections (p=0.015), and CLABSIs (P<0.001). Adjusted analysis revealed CLABSI and respiratory adenovirus infection independently increased mortality risk by 3-fold (Hazard Ratio : 3.22, 95% CI:1.30-8.00) and (HR: 3.32, 95% CI: 1.22 - 9.06), respectively.

Conclusions: In light of the high frequency of multiple factors contributing to mortality we are unable to determine the degree HAI contributed mortality. However, our findings suggest preventing CLABSIs and respiratory adenovirus infections are crucial to improve the one-year survival among pediatric HSCT patients.

Reference:

Hanisch BR, Cohen W, Jacobsohn D, Song X. Impact of Hospital Acquired Infections on Post-Transplant One Year Mortality in Pediatric Bone Marrow Transplant Patients . Am J Infect Control. 2020;S0196-6553(20)30707-0. doi:10.1016/j.ajic.2020.07.020