Prevalence of Double Stranded DNA Viral Infections Among Allogeneic Hematopoietic Stem Cell Transplant Recipients

Authors: Essy Mozaffari[1] PharmD MPH MBA, Jay Lin[2] PhD MBA, Melissa Lingohr-Smith[2] PhD

[1]Chimerix, Inc., Durham, NC

[2]Novosys Health, Green Brook, NJ

Character count: 1,938; Max: 1,950

Background: Viral infections remain a leading cause of morbidity and non-relapse mortality following allogeneic hematopoietic stem cell transplant (allo-HCT). In this study we evaluated the prevalence of double stranded (ds) DNA viral infections post allo-HCT using hospital discharge records.

Methods: Patients who received an allo-HCT between January 2009 and September 2013 were identified from the Premier Hospital database using ICD-9-CM codes. The first allo-HCT procedure was defined as the index event. The frequencies of opportunistic infections, documented by diagnostic codes, were evaluated during the index hospitalization and 12 months after the index allo-HCT hospitalization.

Results: Of patients who received allo-HCT (n=1,617; mean age: 42.5 years) 57% were male and 18% were ≤18 years of age. Most patients received allo-HCT in urban (94%), large (≥600 beds: 72%), teaching hospitals (96%). During the index hospitalization, 851 patients (53%) had a diagnostic code for ≥1 opportunistic infection in their discharge records, and 13% (n=216) had dsDNA viral infections. Among patients with dsDNA viral infections, 51% (n=110) had infections of cytomegalovirus (CMV), 14% (n=30) BK virus, 6% (n=13) adenovirus (AdV), and 38% (n=82) had other dsDNA viral infections (VZV, Herpes, HPV, EBV). Among the patients who survived the index allo-HCT hospitalization (n=1,499), 46% (n=683) had a diagnostic code for ≥1 opportunistic infection and 18% (n=273) had dsDNA viral infections. Among patients with dsDNA viral infections, 73% (n=198) had infections with CMV, 16% (n=45) BK virus, 5% (n=15) AdV, and 27% (n=74) had other dsDNA viral infections.

Conclusions: Based on analysis of hospital discharge records, about three out of every four allo-HCT recipients in this study population had an opportunistic infection during the first year post allo-HCT, this estimate is conservative due to potential undercoding. One out of every 3 opportunistic infections was a dsDNA viral infection. Although antimicrobials are initiated post allo-HCT to prevent opportunistic bacterial and fungal infections, the toxicities of current antiviral drugs do not allow their use for routine prevention of viral infections among these severely immunocompromised patients.