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Arrhythmia in bone marrow transplant: Why we should worry

Jieqi Liu[1], **Ahmad Al Turk**[2], **Umar Jamshed, Sejal Kothadia** and **David Vesole**
[1]Rutgers-New Jersey Medical School, USA
[2]Hackensack University Medical Center, USA

Background: The Bone Marrow Transplant Survivor Study indicates that two-thirds of hematopoietic stem cell transplantation (HSCT) survivors will develop a chronic health condition. Arrhythmia has been identified as a complication of HSCT in several single-institution reports, but conclusive data at the national level is lacking. Our study aims to identify the true incidence of arrhythmias, its predisposing comorbidities and associated inpatient outcomes in those who underwent HSCT in the United States between 2008-2012.

Methods: We queried the 2008-2012 Nationwide Inpatient Sample database and identified all hospital admissions where HSCT was performed, excluding those <18 years of age. Data regarding frequency of reported arrhythmias and cardiovascular history were collected and analyzed. Outcomes included length of stay (LOS), mortality and cost adjusted for inflation. Independent sample t test and ANOVA were performed using SPSS 23.

Results: Out of a total sample size of 72,151 undergoing HSCT, there were 8,383 (11%) reported cases of arrhythmias. Autologous HSCT made up 59.7% of the total, but incidence of arrhythmias was comparable between autologous (11.7%) and allogeneic (11.24%). The average LOS was higher in those with arrhythmias compared to those without (27.65 vs 23.59 days, $p<0.001$), and a higher average hospital admission cost was noted in those with arrhythmias by $18,133 ($p<0.001$). The mortality rate is also higher in patients with arrhythmia than without (10.6% vs 3.1%, $p<0.001$). Lastly, 59.7% of those with arrhythmias have a prior cardiac history, with the highest arrhythmia rate noted in those with history of congestive heart failure (CHF, 35%), followed by valvular heart disease (27.6%), peripheral vascular disease (23.1%), and myocardial infarction (18.5%), ($p <0.001$).

Conclusion: More than 10% of all HSCT recipients in the U.S. develop arrhythmias during their hospital stay, which is associated with an increased mortality rate, LOS, and admission cost. A high incidence of arrhythmias is seen in those with prior cardiovascular disease, with the highest noted in those with CHF. Further studies are needed to risk stratify cardiac patients prior to HSCT and cardiac monitoring may be warranted in high risk patients undergoing HSCT.

jliu2678@gmail.com