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The Effect of Carfilzomib and Bortezomib Based Regimes on Cardiotoxicity in Multiple Myeloma Patients at Cooper University Hospital

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OSTEOPATHIC
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The Effect of Carfilzomib and Bortezomib Based Regimes on Cardiotoxicity in Multiple Myeloma Patients at Cooper University Hospital

Ami Patel MPH, Tulin Budak-Alpdogan MD, Stalam Tapati MD

Introduction

- Multiple myeloma (MM) is a cancer of plasma cells, which is a white blood cell that normally produces antibodies.
- Treatment in patients younger than 65 years old is typically high dose chemotherapy, usually with bortezomib-based regimens or lenalidomide-dexamethasone, followed by a stem cell transplant.
- For patients with relapsed myeloma, carfilzomib is usually the treatment of choice.
- Carfilzomib is a highly selective, irreversible proteasome inhibitor that binds to the 20S proteasome. Several studies have illustrated that carfilzomib has been associated with cardiovascular adverse events (CVAE).
- Current literature on the role and effect of bortezomib on cardiotoxicity is contradictory.
- Past studies have shown benefits of using carfilzomib in MM patients, leading to improved response rates and overall survival.
- There is scarce research on the risk factors associated with the development of cardiotoxicity with carfilzomib.

Objective

To determine the incidence of cardiovascular adverse events (CVAE) associated with carfilzomib and bortezomib utilization and to assess risk factors for carfilzomib related cardiotoxicity.

Significance

More research needs to be done in this area to further understand the best candidates for the Carfilzomib and Bortezomib and if there are any modifiable factors to decrease the risk of cardiotoxicity in these patients.

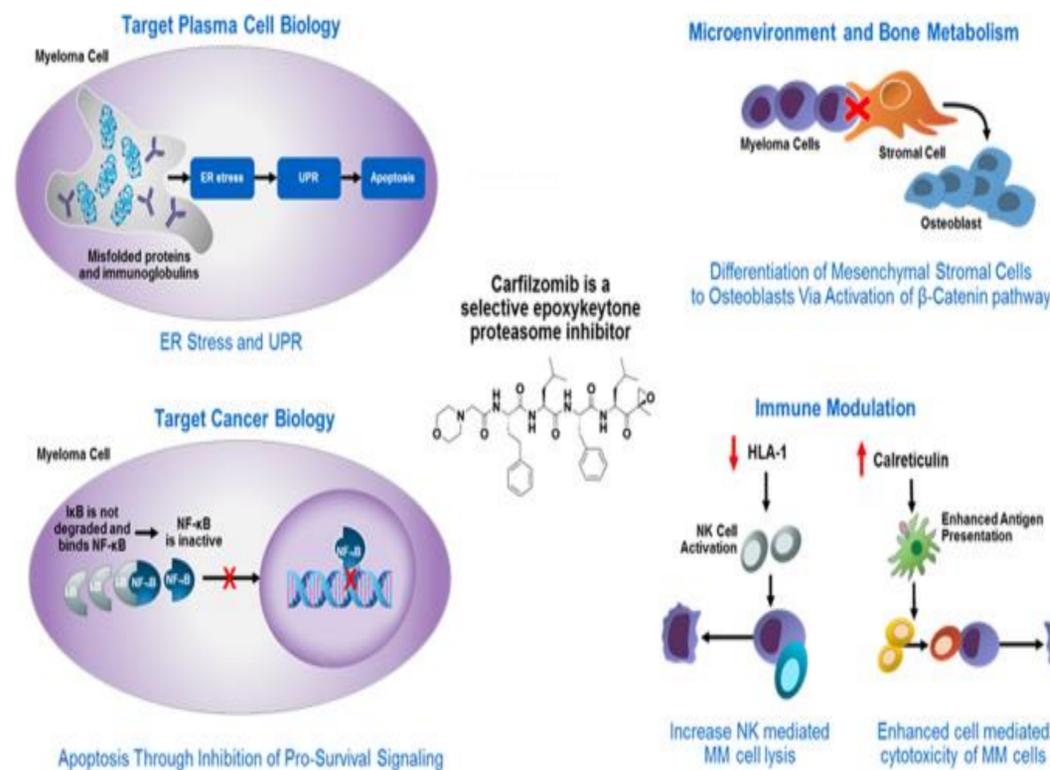


Fig 1. The cellular effects of Carfilzomib (Landgren et al., 2019)

Hypothesis

Patients with baseline systolic and diastolic dysfunction have higher incidence of cardiotoxicity with carfilzomib use compared to patients without prior cardiovascular conditions.

Methods

- **Study design:** Retrospective study of adult multiple myeloma patients from 2014-2020, treated at Cooper University Hospital.
- **Main Outcome and Exposure:** Cardiotoxicity and carfilzomib/bortezomib based medical therapy.
- **Data extraction:** Patients will be identified based on their diagnosis from the Cooper tumor registry. Patients who show a history of therapy with the study intervention will be used in our study. Further data will be extracted using EPIC.
- **Analysis:** Patient factors will be analyzed using the Wilcoxon rank-sum test for continuous variables and chi-square test for categorical variables.
- Subsequently multivariate analysis will be performed to identify risk factors for developing post intervention cardiac adverse events.
- Cumulative incidence of Cardiac adverse events will be compared between bortezomib and carfilzomib using the log-rank test.

Limitation

- Data extraction may be prone to human error due to variations in coding.

Acknowledgments

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