IMPACT OF DARATUMUMAB ON STEM CELL MOBILIZATION AND ITS EFFICACY AND SAFETY IN MULTIPLE MYELOMA PATIENTS UNDERGOING AUTOLOGOUS STEM CELL TRANSPLANTATION: A META-ANALYSIS

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Introduction

Daratumumab, an **anti-CD38 monoclonal antibody**[1] , has been FDA-approved for transplant-eligible multiple myeloma patients. However, the impact of its use in conjunction with autologous stem cell transplant (ASCT), especially on stem cell mobilization and treatment outcomes, remains under-explored.

Aim

To compare clinical outcomes between the multiple myeloma patients who received daratumumab alongside **ASCT** and those who did not.

Objectives

To determine the stem cell yield, plerixafor use, stringent complete response (sCR),achievement of minimal residual disease (MRD) negativity at a 10^{-5} threshold, progression-free survival (PFS), all-cause mortality, and grade 3 or 4 adverse effects in multiple myeloma patients who received daratumumab as compared to those who did not.

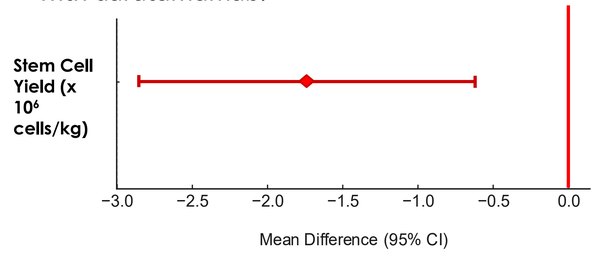
Methods

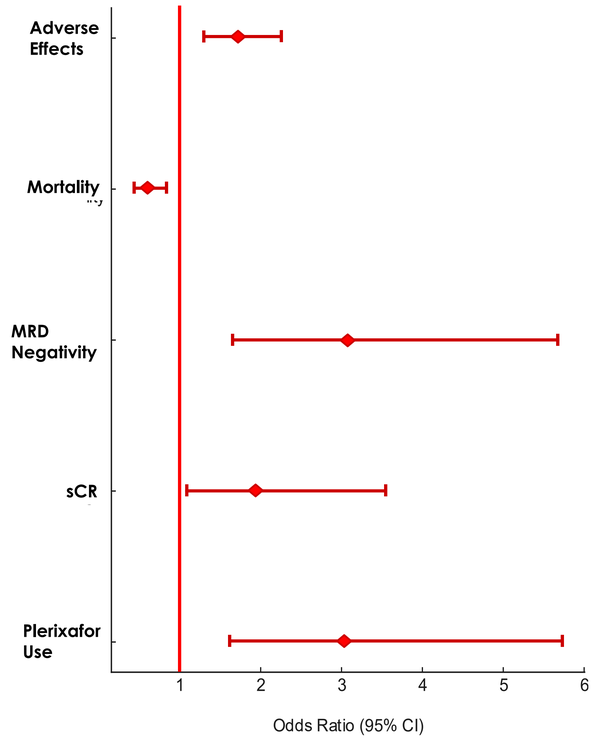
Three databases (PubMed, Cochrane, and Embase) and two trial registers (ClinicalTrials.gov and WHO ICTRP) were searched using text words and controlled vocabulary for “daratumumab” and “stem cell transplant” until April 2025. Outcomes were analyzed in RevMan Web. Either a Mantel-Haenszel or inverse variance method was used, with a random- or fixed-effects model depending on the statistical significance of the heterogeneity.

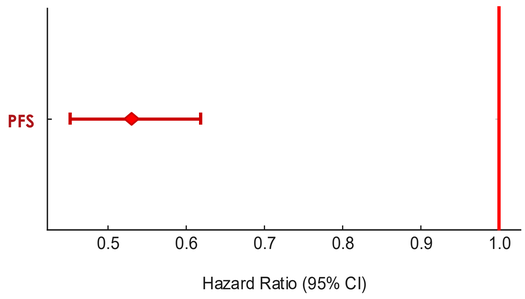
Results

Eighteen randomized studies (reporting results from four large RCTs) and ten cohorts were included.

- **Stem cell yield** was lower (MD=-1.74 x 10^6 cells/kg; P=0.003), and **plerixafor use** was more frequent (OR=3.03; P=0.005) with daratumumab.
- The **sCR** (OR=1.95; P=0.04) and **MRD negativity** (OR=3.06; P=0.008) rates were higher, and **PFS** was longer (HR=0.53; P<0.00001) with daratumumab.
- **All-cause mortality** rate was lower (OR=0.60; P=0.005), and **grade 3/4 adverse events** were more frequent (OR=1.71; P=0.0002) with daratumumab.







Summary

The addition of daratumumab improves response to anti-cancer therapy, prolongs PFS, and reduces mortality. However, it is also associated with a **lower stem cell yield** that demands an increased use of mobilizers, such as plerixafor. It is also associated with more frequent grade 3 or 4 adverse effects.

Discussion

Since daratumumab impairs stem cell mobilization, any regimen making use of it in patients undergoing ASCT must take measures to enhance stem cell mobilization and manage adverse effects. Although much of the pooled data was extracted from observational studies, these studies agreed with the data from the included randomized trials. Furthermore, our findings are significant enough to warrant further randomized trials to investigate them.

References

1.Kim K, Phelps MA. Clinical Pharmacokinetics and Pharmacodynamics of Daratumumab. Clin Pharmacokinet. 2023 Jun;62(6):789-806.

The author(s) declare no conflicts of interest related to this poster presentation.

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