Clinical Efficacy of a Daratumumab-Based Regimen in Relapsed or Refractory Acute Leukemia – A Systematic Review

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Introduction

- Relapsed or refractory (R/R) acute leukemia, encompassing both acute myeloid leukemia (AML) and acute lymphoblastic leukemia (ALL), poses a significant therapeutic challenge.
- This is due to limited effective treatment options and poor survival outcomes. CD38, a transmembrane glycoprotein, is commonly overexpressed on leukemic blasts.
- This provides a rationale for the use of Daratumumab, an anti-CD38 monoclonal antibody approved in multiple myeloma, in R/R acute leukemia.
- This systematic review aimed to evaluate the clinical efficacy and safety of daratumumab-based regimens in patients with R/R acute leukemia.

Methods

- A comprehensive literature search was performed across PubMed, and Google Scholar to May 2025.
- Studies were included if they reported clinical outcomes of daratumumab used alone or in combination for R/R AML or ALL.
- Data on patient demographics, treatment regimens, response rates, and adverse events were extracted.
- Quality assessment was conducted using modified Newcastle-Ottawa Scale. Descriptive synthesis was used due to heterogeneity and limited number of studies.

Results

Between 1999 and 2020, a total of 9254 FL-related deaths were reported in the U.S.

- The overall AAMR increased from 0.42 per 100,000 in 1999 to 1.95 in 2020, with a corresponding AAPC of 7.70% (95% CI: 7.26 to 8.13).
- Age-specific trends revealed the most pronounced increase in individuals aged 85 years and older (AAPC: 10.38%; 95% CI: 9.57 to 11.21), followed by those aged 75–84 years (AAPC: 7.68%; 95% CI: 6.86 to 8.52) and 65–74 years (AAPC: 5.40%; 95% CI: 4.79 to 6.00).
- By sex, females exhibited a rising trend with an AAPC of 6.79% (95% CI: 6.17 to 7.41). Racial stratification showed that White individuals had the highest increase (AAPC: 7.83%; 95% CI: 7.28 to 8.37). Regionally, the Midwest demonstrated a highest upward trend (AAPC: 7.62%; 95% CI: 6.73 to 8.51), followed by the West (AAPC: 7.44%; 95% CI: 6.78 to 8.10) and South (AAPC: 6.37%; 95% CI: 5.62 to 7.12).
- Additionally, mortality rose sharply in non-metropolitan areas (AAPC: 7.86%; 95% CI: 7.05 to 8.68) than metropolitan areas (AAPC:7.71% 95% CI: 7.17 to 8.26).

Conclusion

- Unlike other hematologic malignancies that have seen declining death rates, follicular lymphoma mortality has steadily increased over the past two decades.
- The most substantial increases occurred among the oldest age groups, White individuals, and residents of non-metropolitan and Midwestern regions.
- Targeted interventions are needed to mitigate mortality and address disparities.

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