TRENDS IN MORTALITY OF RENAL FAILURE IN ADULT MULTIPLE MYELOMA PATIENTS: A CDC DATA ANALYSIS (1999–2020)

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Introduction

Multiple myeloma (MM) is a malignancy of plasma cells and is a significant contributor to hematologic cancer-related mortality worldwide. One of its severe complications is renal failure, which occurs in approximately 20–50% of patients at the time of diagnosis [1]. Patients with renal failure have increased early mortality, poorer response to treatment, and reduced survival [2]

Aim

Our study evaluates two decades of national mortality data to identify patterns and disparities in renal failure-related deaths among adults with MM in the U.S.

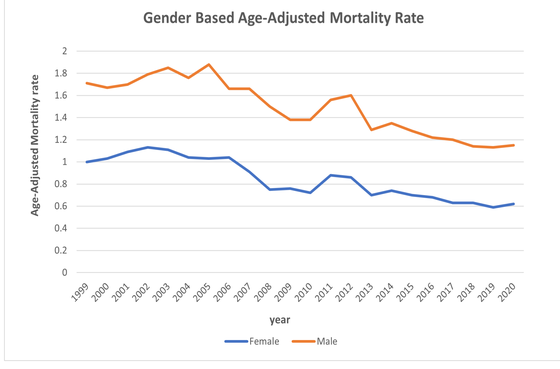
Methods

We analyzed national mortality data using the CDC WONDER database (CDC, 2020), including adults (25 to 85+ years). Deaths were identified using the ICD-10 Code C90.0 (Multiple Myeloma) AND N17 – N19 (Renal failure). Age-adjusted mortality rates calculated per 100,000 were abstracted by sex, race/ethnicity, census region, state and urbanization. Temporal trends were assessed using Join-point regression models. Annual percentage changes in AAMR were estimated using Monte-Carlo Permutation and 95% confidence intervals using the Parametric Method. A two-tailed t-test was employed to measure the statistical significance of APC.

Results

From the year 1999 till 2020, the mortality trends initially showed an uprise, for multiple myeloma due to renal failure (ages 25 to 85+) followed by a declining pattern across various racial groups, genders, census regions as well as state and urbanization levels. From 1.26 per 100,000 in 1999 to 1.02 per 100,000 in 2020, the AAMR dropped as a whole. For men , the rates climbed until 2005 (APC = 1.65%), fluctuated for years, then took a sharper downward turn after 2012 (falling between 1.88% and 7.32% annually).For women, the increase lasted only until 2002 (APC = 3.64%), followed by a steady yearly drop of 3.57%. Among the racial groups, Asian, Black and Hispanic communities revealed a consistent downward trend started in 1999, reducing yearly by 3.11%, 2.98%, and 2.69%, respectively. Whereas the White populations showed a rising trend at first, with deaths rising 5.22% per year until 2002, then dropping 2.98% per year afterwards. In terms of regional shifts, Northeast and West improved steadily, cutting deaths by 2.36% and 3.06% each year.

The Midwest and South both saw early increases (2.72% and 2.73% yearly peaks in 2003) before reversing course with yearly declines of 2.97% and 2.82%.



Summary

From 1999 till 2020 the mortality from MM due to renal failure initially followed a rising trend and then declined among all geographic and demographic groups. These early rises were most evident in males, White population, the Midwest and South as well as small metro areas. These varying trends emphasized the need for targeted strategies to lower the renal-related mortality in high-risk multiple myeloma patients.

Clinical Implication

These findings stressed the need for targeted attempts to reduce renal failure-related mortality in MM, particularly among males, White individuals, and those in the Midwest, South, and small-metro areas. Imbalances in care and access suggests a need for better renal monitoring, early and prompt intervention, and region-specific strategies to better manage high-risk communities and populations

References

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