Analyzing Mortality Due to Malignant Immuno-Proliferative Disorders in the U.S., 1999–2020

M. KHAN[1], U.ASFEEN[2], W.AHMAD[3], A.CHEEMA[3], A.SOFIA[4], A.LAL[5], N.AZIZ[6], S.BALAJI[4], W.NABI[6], V.GONDHI[4]

1. The George Washington University School of Medicine and Health Sciences, Washington, DC, USA
2. MD Anderson Cancer Center, Houston, TX, USA
3. Al-Tibri Medical College,Sindh, Pakistan
4. New York Medical College, Denville, NJ, USA
5. Penn State Hershey Med Center, Hesehey, PA, USA
6. Wychoff Heights Medical Center Program , Brooklyn, NY, USA

Introduction

- Malignant immunoproliferative disorders (MIDs), encompassing conditions such as:
  - Waldenström macroglobulinemia and
  - Heavy chain diseases
- They represent a rare but clinically significant group of hematologic malignancies.
- While therapeutic advances have emerged, population-level mortality trends remain underexplored.

Methods

We analyzed national mortality data from the CDC WONDER database from 1999 to 2020 for adults aged ≥45 years. Deaths were identified using ICD-10 codes C88.0–C88.9.

Age-adjusted mortality rates (AAMRs) per 100,000 were calculated using intercensal population estimates.

Trends were assessed using Joinpoint regression to estimate average annual percent change (AAPC) with 95% confidence intervals (CIs).

Stratified analyses were conducted by sex, geographic region, urbanization, and age.

Results

Between 1999 and 2020, a total of 11,470 deaths were attributed to malignant immunoproliferative disorders in the United States.

The overall age-adjusted mortality rate (AAMR) declined from 0.70 per 100,000 in 1999 to 0.48 per 100,000 in 2020, corresponding to an average annual percent change (AAPC) of –2.32% (95% CI: –3.10 to –1.52).

When stratified by sex, males exhibited higher mortality rates throughout the study period, decreasing from 0.84 to 0.64 per 100,000 (AAPC: –1.71%; 95% CI: –2.41 to –1.02).

Among females, the AAMR declined from 0.55 to 0.36 (AAPC: –2.12%; 95% CI: –4.04 to –0.17).

Geographically, the West and Midwest reported higher AAMRs (0.50 in both).

The most pronounced declines were observed in the Northeast (AAPC: –2.05%; 95% CI: –3.72 to –0.35) and South (AAPC: –2.16%; 95% CI: –3.48 to –0.83).

Metro and non-metro areas had nearly comparable AAMRs (0.43 vs. 0.45).

By age group, individuals aged ≥85 years exhibited the highest AAMR (2.99), while the steepest decline was noted in the 55–64 age group (AAPC: –6.74%; 95% CI: –8.01 to –5.45).

Discussion

Although overall MID-related mortality has declined significantly over the past two decades, disparities persist by sex and geography.

Further research and targeted interventions are needed to improve outcomes in this rare hematologic group.

Contact: Ummul Asfeen, DO
Email: Uzasfeen@mdanderson.org