Multiple Myeloma and COVID-19: Trends in Mortality in the United States from 1999 to 2022

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Background

Multiple Myeloma (MM) is a hematologic malignancy marked by immune dysfunction, making patients especially vulnerable to infections, including COVID-19. While MM-related mortality has shown gradual improvement over recent decades, the combined impact of MM and COVID-19 on mortality patterns in the United States has not been well characterized. Understanding these trends is essential for informing healthcare strategies aimed at reducing disparities and improving outcomes among high-risk populations.

Methods

The CDC WONDER database was used to extract age-adjusted mortality rates (AAMRs) per 100,000 individuals for MM and COVID-19 across the US from 1999 to 2022. AAMRs were analyzed using the Joinpoint Regression Program to calculate annual percent changes (APCs) and average annual percentage changes (AAPCs).

Discussion

Our analysis showed a pre-pandemic decline in MM mortality, followed by an increasing trend in mortality in patients with COVID-19 during the pandemic era. The observed pre-pandemic decline aligns with therapeutic advancements documented in SEER data, which show steady improvement in 5-year survival rates for myeloma prior to 2020.1 The significant surge in MM and COVID-19 mortality reflects both the lethal synergy between MM-related immunosuppression and SARS-CoV-2 infection.2 The higher mortality in males may stem from sex-based differences in immune response and higher comorbidity prevalence, factors previously implicated in general COVID-19 outcomes.2 Racial disparities in co-mortality, particularly the elevated burden among NH Blacks (AAMR: 0.53), likely arise from multifactorial inequities, including overrepresentation in essential occupations with high exposure risk, reduced healthcare access, and higher baseline MM incidence linked to genetic and socioeconomic factors.3 These findings underscore the critical need for integrating pandemic preparedness with chronic disease management, particularly for immunocompromised populations in high-risk demographic groups.

Aim

Our study aims to explore mortality trends and disparities related to Multiple Myeloma and COVID-19 from 1999 to 2022 in the United States.

Results

Between 1999 and 2022 in the US, a total of 325,917 deaths were attributed to MM (AAMR: 4.00; 95% CI: 3.93–4.07). From 2020 to 2022, a total of 1,092,343 deaths occurred due to COVID-19 [89.16 (88.86–89.45)], and 3,027 due to both conditions combined [(0.24 (0.22–0.25)]. The AAMRs for MM decreased from 4.51 in 1999 to 3.66 in 2019 [APC: -1.15% (95-1.34 to -0.95)]. The AAMRs for combined deaths rose slightly over the three years: from 0.20 in 2020 to 0.23 in 2022 [APC: -67.91% (-71.89 to -63.37)] with a peak in 2021 (0.27). This 2021 surge aligns with individual disease trends—MM had an AAMR of 3.89 in 2021 versus its overall average of 3.78 during the COVID era (2020-2022), while COVID-19 peaked at 115.61 compared to its average of 89.16. Sex-based analysis showed males had nearly double the AAMR compared to females (0.314 vs 0.169). By race, non-Hispanic (NH) Blacks had the highest AAMR (0.53), followed by Hispanics (0.29), NH Whites (0.21), and NH Asians (0.09). NH Blacks showed a declining trend, with AAMRs decreasing from 0.59 in 2020 to 0.44 in 2022. Conversely, NH Whites were the only group with an overall rise, increasing from 0.17 to 0.21 over the same period.

Conclusion

These findings reveal increasing mortality trends from MM and COVID-19. Males and NH Blacks had higher mortality rates, while NH Whites were the only race with an overall rise.

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The authors declare no conflict of interest

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