Temporal Trends in Cerebrovascular Mortality Among Patients with Leukemia in the United States: A CDC WONDER Analysis (1999-2020)

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Context

Cerebrovascular disease is a severe complication in patients with hematologic malignancies, especially leukemia. Although they are critical for optimization of the clinical practice and preventive mechanisms, the temporal patterns of the cerebrovascular mortality in this population still lack fundamental characterization.

Objectives

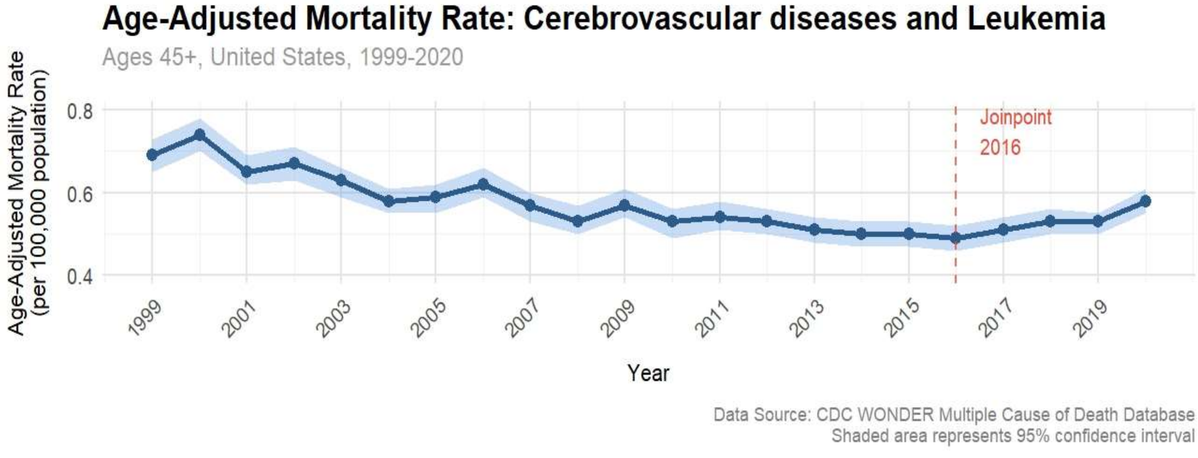
To examine national temporal trends in cerebrovascular mortality among patients with leukemia in the United States, and to quantify differences in mortality by demographic attributes such as sex, age, race, geographic region, and urbanization.

Methods

Data on mortality were extracted from the CDC WONDER database & Joinpoint regression analysis was utilized. Adults aged 25 years and above diagnosed with Leukemia (ICD 10 codes (C91-C95) and died from cerebrovascular diseases (ICD 10 codes (I60-I64, I69). Age-adjusted mortality rates per 100,000 population, annual percent change, and average annual percent change.

Results

There were 26,594 deaths in leukemia patients with cerebrovascular disease between 1999 to 2020 & overall AAMR decreased from 0.69 to 0.58. Joinpoint regression identified 2016 as a significant inflection point, with a steady decline from 1999 to 2016 followed by a significant increase from 2016 to 2020 (AAPC: -1.01%, 95% CI: -1.59% to -0.44%, p=0.0006). Gender stratification revealed persistent declines in female mortality (AAPC: -2.02%, p<0.00001) throughout the study period, while males experienced a reversal in 2016 with subsequent increases (APC: 5.74%, p=0.0004). Age stratification showed stable rates among those aged 25-44 years, significant decreases in the 45-64 age group (AAPC: -1.61%, p=0.001), and a concerning reversal among those 65+ years with increasing rates after 2015 (APC: 3.64%, p=0.008). All ethnic groups demonstrated overall declining trends, with Non-Hispanic Black individuals experiencing the largest improvement (APC: -1.628%, p=0.001). Regional analyses showed significant recent increases in cerebrovascular mortality in the Northeast (AAPC:-1.03%) South (AAPC:-1.12%), and West (AAPC:-0.84%) regions following prior periods of decline.



Conclusion

Since 1999, the death rate from stroke decreased in leukemia patients, with a concerning rise appearing since 2016 for males and people aged 65 and older. Because the risk factors are not the same for all groups, care teams must create targeted preventive steps and monitor stroke risks for people with leukemia.

Keywords

Leukemia, Stroke, Cerebrovascular disease, Mortality, Temporal

AAMR: Age-adjusted Mortality Rate, AAPC: Average Annual Percent Change, NH: Non-Hispanic