



Multiple Myeloma Epidemiology in the Bronx, New York: 2016 to 2022

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Abstract

Multiple Myeloma (MM) incidence in the Bronx is notably high, driven by a large diverse population and risk of environmental toxin exposures. We reported the epidemiological findings of newly diagnosed MM cases from 2016 to 2022 at Montefiore Medical Center, New York. Our data showed the distribution by race was 2.8% in Asian, 49.0% in African American, and 37.8% in Caucasian. The mortality of patients with diagnosis of multiple myeloma was 26.7%. A higher proportion of patients with newly diagnosed multiple myeloma resided in the Bronx, New York.

Keywords: Multiple myeloma; Hematologic malignancies; Cancer

Introduction

Multiple Myeloma (MM) is an aggressive plasma cell dyscrasia that is on the rise in the United States and other developed countries [1]. According to the latest Global Cancer Observatory data, multiple myeloma represents 15% to 18% of all hematologic malignancies, making it the second most common hematologic malignancies. Higher incidence rates are observed in men than women, and the median age at diagnosis is 69 years. Numerous genetic events and environmental factors appear to trigger the progression of multiple myeloma [2].

Methods

We reviewed the epidemiologic data of patients with newly diagnosis of multiple myeloma at Montefiore Medical Center from 2016 to 2022. The epidemiologic data included age, sex, race, year of myeloma diagnosis, residency (either in the Bronx or outside of the Bronx), and patients' outcome and mortality. The analysis was presented as mean and standard deviation or median and interquartile range for continuous variables, as appropriate, and as frequencies and percentages for categorical variables. All analyses were performed using SAS version 9.4 (SAS Institute, Cary, NC).

Results and Discussion

Our study investigated 853 patients with newly diagnosed myeloma at Montefiore Medical Center from 2016 to 2022. The mean age at diagnosis was 66.6 years old. The distribution by race was

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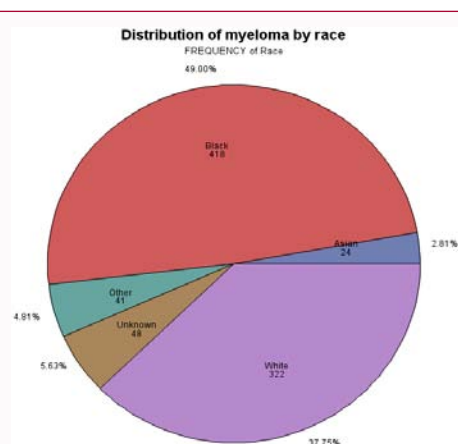


Figure 1: Distribution of patients with newly diagnosed multiple myeloma by race. Distribution of 853 patients with newly diagnosed multiple myeloma at Montefiore Medical Center from 2016 to 2022 according to recorded race. Black patients comprised 49.0% (n=418), White patients 37.8% (n=322), Asian patients 2.8% (n=24), patients classified as Other 4.8% (n=41), and patients with unknown race 5.6% (n=48).

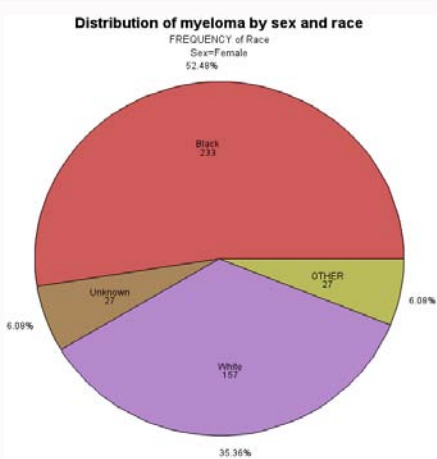


Figure 2: Racial distribution of female patients with newly diagnosed multiple myeloma. Racial distribution among female patients with newly diagnosed multiple myeloma from 2016 to 2022. Among the 444 female patients, 233 were Black, 157 were White, 27 were classified as Other, and 27 had unknown race.

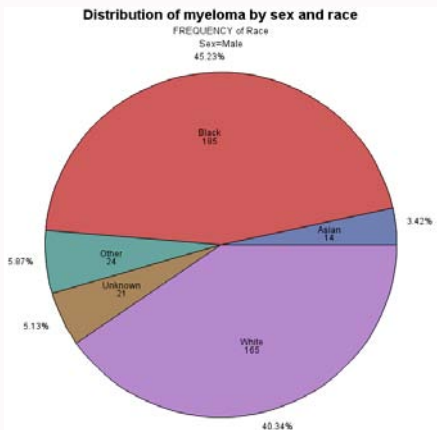


Figure 3: Racial distribution of male patients with newly diagnosed multiple myeloma. Racial distribution among male patients with newly diagnosed multiple myeloma from 2016 to 2022. Among the 409 male patients, 185 were Black, 165 were White, 14 were Asian, 24 were classified as Other, and 21 had unknown race.

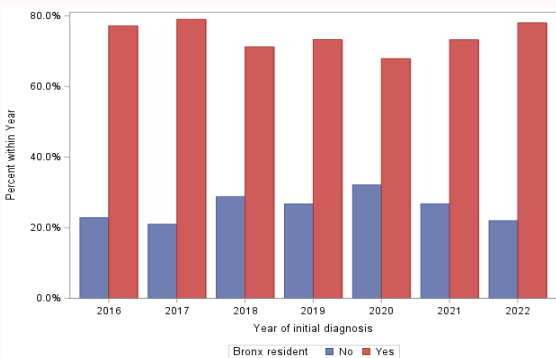


Figure 4: Bronx residency among patients with newly diagnosed multiple myeloma by year of diagnosis. Percentage of patients diagnosed with multiple myeloma from 2016 to 2022 who resided in the Bronx versus outside the Bronx at the time represented in the study records, stratified by year of initial diagnosis. Overall, 634 patients (74.3%) resided in the Bronx and 219 (25.7%) resided outside the Bronx.

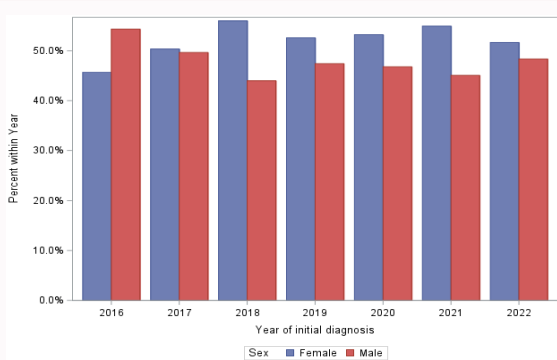


Figure 5: Sex distribution of patients with newly diagnosed multiple myeloma by year of diagnosis. Percentage of female and male patients among those diagnosed with multiple myeloma from 2016 to 2022, stratified by year of initial diagnosis. Overall, 444 patients (52.05%) were female and 409 (47.95%) were male.

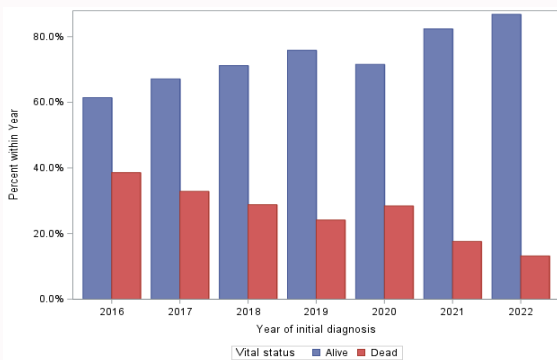


Figure 6: Vital status of patients with newly diagnosed multiple myeloma by year of diagnosis. Percentage of patients recorded as alive or deceased, stratified by year of initial multiple myeloma diagnosis from 2016 to 2022. Overall, 625 patients (73.3%) were alive and 228 (26.7%) were deceased in the study records.

We investigated the patients with newly diagnosed myeloma by year, which was 127 cases (14.9%) in 2016, 143 cases (16.8%) in 2017, 125 cases (14.6%) in 2018, 116 cases (13.6%) in 2019, 109 cases (12.8%) in 2020, 142 cases (16.6%) in 2021 and 91 cases (10.7%) in 2022. Figure 5 showed newly diagnosed myeloma each year in male and female groups. Our record showed 625 (73.3%) patients are alive, and 228 (26.7%) patients have passed away (Figure 6). The mortality of myeloma patients in our record was 26.7%.

African American comprised 49.0% of the myeloma patients in our study. This finding concurred with the prior reports and epidemiologic data that myeloma is more common in African American compared with other racial groups.

Our previous study demonstrated disproportionately high occurrence of MM in patients with military services and toxin exposures [2]. The epidemiologic evidence on toxin exposure and risk of developing MM is complex [3,4]. The Bronx faces severe environmental toxin challenges, driven by industrial facilities, heavy traffic, and unremediated brownfields. Our data demonstrated a higher proportion of patients with multiple myeloma resided in the Bronx, New York.

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