

POSTER 30

Socioeconomic Status and Presentation of Pathologic Fractures

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BACKGROUND: Socioeconomic disparities have been shown to influence presentation and outcomes in cancer patients. Patients who present with pathologic fractures have poorer outcomes when compared to those who are treated prophylactically for bone lesions. Studies have shown worse survival rates, perioperative complications, in-hospital mortality, quality of life, and longer/costlier hospital stays in the former. Despite the strong association between socioeconomic status and stage at presentation of cancer, no studies to date have investigated a similar correlation with presentation of bone metastases.

PURPOSES: This study aimed to investigate the relationship between socioeconomic status and presentation of skeletal metastases in patients with impending and realized extremity fractures. Secondary analysis investigated additional potential risk factors for presentation as a pathologic fracture.

METHODS: We conducted a retrospective cohort study of patients treated surgically for pathologic fractures or impending fractures at a single academic medical center from 2015 to 2021, treated by one of two fellowship-trained oncologic orthopedic surgeons (N=263). Patients were included if they underwent surgical fixation of a pathologic fracture, or if they were prophylactically stabilized for a bony metastatic lesion at risk of fracture. Both benign and malignant lesions were included in the analysis. Exclusion criteria included pathologic fractures secondary to osteomyelitis or bisphosphonate usage. Cohorts were compared based on demographics, insurance status, comorbidities, primary cancer type, and location(s) of metastasis or fracture. The Area Deprivation Index (ADI), a validated measure of socioeconomic status based on geographic location, was used to quantify socioeconomic status based on patients' addresses.

RESULTS: 141 patients presented with an impending pathologic fracture and 122 presented with a realized fracture. The groups did not differ by age, sex, race, BMI, comorbidities, or insurance status. The ADI was nearly identical between cohorts (56.37 vs. 56.5, $p=0.967$), despite the ADI correlating with both race ($p<0.001$) and insurance status ($p<0.001$). On secondary analysis, location ($p<0.001$) and primary cancer type ($p=0.033$) were significantly and independently correlated with presentation. On bivariate logistic regression, upper extremity lesions (OR = 6.84, 95% CI 3.48 – 13.43) and multiple myeloma/lymphoma patients (OR = 2.30, 95% CI 1.25 – 4.22) were more likely to present with pathologic fractures. This remained significant on multivariate analysis for both upper extremity lesions (OR = 2.83, 95% CI 1.01 – 7.89) and multiple myeloma/lymphoma (OR = 2.061, 95% CI 1.051 – 4.041).

CONCLUSION: Despite a well-defined association between socioeconomic status and cancer presentation, there is no correlation between socioeconomic status, insurance status, or race with presentation of bone metastases as pathologic fractures. Upper extremity and multiple myeloma/lymphoma lesions are independently and significantly more likely to present as a pathologic fracture. Strong consideration should be given to prophylactically stabilize these lesions when they present.