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“Geriatric Gunshot Wounds: A Lethal Trend”

Introduction: The proportion of the population in the United States over the age of 65 is increasing year over year with the aging of the baby boomer generation, however, there is a relative paucity of literature on trauma outcomes in this population. Even more pronounced is the lack of literature on the outcomes of gunshot wound trauma in this age group, as rates of gun violence increase in the United States. This study aimed to investigate trends in gunshot wound trauma in the geriatric population.

Methods: A retrospective chart review across the years 2016 to 2022 was performed on patients aged 65 years old or older presenting with gunshot wound trauma to an American College of Surgeons (ACS) Verified Level 1 Trauma Center. Variables included demographics, date of injury, anatomic location of injury, mechanism of injury (assault, intentionally self-inflicted, accidental), injury severity score (ISS), hospital length of stay (LOS), operative intervention, tracheostomy, gastric tube, long-term care placement, and mortality rate. Chi-square analysis, univariate analysis of variance, and binary logistic regression analyses were conducted using SPSS software, with a significance value cutoff of $p < 0.05$.

Results: Of the 4,152 gunshot wound patients reviewed, 1.5% met the inclusion criteria for data analysis ($n=66$). Of the 66 patients included in the study, there was a mortality rate of 31.8% ($n=21/66$). There was a significant association of location of wound site with mortality rate, with a statistically significant increase in mortality associated with injury to the head and extremities ($p < 0.001$). An increase in the incidence of gunshot wounds was observed in the year 2020 ($n=16$), relative to baseline ($n=8$, $p < 0.05$). This increase continued into 2021 ($n = 18$). In 2020, assault surpassed intentional self-injury as the primary injury type (34.4% to 67.6%, $p < 0.05$). ISS, operative intervention, and LOS were predictive of mortality outcome ($p < 0.05$). Increased ISS (OR=1.45, CI: [1.16, 1.82]) and operative intervention (OR=74.53, CI: [1.12, 4938.61]) were associated with increased mortality ($p < 0.05$). However, a longer LOS was associated with decreased mortality (OR=0.77, CI: [0.61, 0.97], $p < 0.05$). There were no significant differences in overall mortality noted with respect to age, tracheostomy usage, gastric tube usage, or long-term care placement.

Conclusion: This review of geriatric gunshot trauma patients presenting to an ACS Verified Level 1 Trauma center highlights an increase in incidence of gunshot wounds over the course of the study, as well as an increase in assault as the mechanism of injury. Longer length of stay in the hospital and operative intervention were associated with decreased mortality, supporting the value of surgical intervention on mortality outcome. More research is needed in order to better understand the increasing rates of gunshot wound violence in the geriatric population and in order to optimize mortality benefits in this vulnerable group.