Neuropsychiatric Diagnosis after Fractures Sustained Secondary to Gunshot Wound versus Other Mechanisms in Children

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INTRODUCTION: There is a distinct lack of data on the long-term neuropsychiatric effects of fractures secondary to gunshot wounds (GSWs) as compared to fractures sustained from any other cause, whether accidental or otherwise. This study evaluated rates of post-procedural diagnoses of various neuropsychiatric conditions in children who sustained fractures.

METHODS: We performed a 20-year retrospective cohort analysis with a nationally representative sample of children who sustained fractures during the time period of January 1, 2003 to December 31, 2022. These patients were then separated by mechanism of fracture (GSW versus other mechanisms). A total of 1,638,302 patients were included in this study; of the total group, 5,510 sustained fractures secondary to GSWs while the remaining 1,632,972 sustained fractures by another mechanism. Follow-up duration for these patients was 2 years. Cohort analysis was performed to determine both risk and hazard ratios for post-procedural diagnoses of a variety of neuropsychiatric conditions. Data was compiled using the same platform with further analysis performed using software.

RESULTS: Children who suffered injuries due to GSWs had higher rates of post fracture neuropsychiatric diagnoses. In comparison to those who sustained fractures from non-GSW mechanisms, children with GSW related fractures had higher risk ratios of (among other conditions) major depressive disorder ($RR = 1.595$, $p < 0.05$), schizophrenia ($RR = 1.479$, $p < 0.05$), and insomnia ($RR = 2.03$, $p < 0.05$). Similar findings were noted for other conditions, including future dependence to substances to include nicotine, cannabis, alcohol, and opiates.

DISCUSSION AND CONCLUSION: Children who sustained fractures secondary to gunshots had increased risk and hazard ratios for diagnosis of neuropsychiatric conditions post-procedurally as compared to children who fractured bones due to other mechanisms which indicates the importance of attention to mental health in this group of patients. Pediatric patients presenting with gunshot wound fracture could benefit from multidisciplinary care with preventive measures to address potential future mental health and social issues.