Traumatic Brain Injury Among Newly Admitted Adolescents in the New York City Jail System

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ABSTRACT

Purpose: Relatively little is known about the prevalence of traumatic brain injury (TBI) among adolescents who come into contact with the criminal justice system.

Methods: We undertook screening for TBI among newly admitted adolescents in the New York City jail system using a validated TBI screening tool. A convenience sample of 300 male and 84 female screenings was examined.

Results: Screening revealed that 50% of male and 49% of female adolescents enter jail with a history of TBI. Incidence of TBI was assessed using patient health records, and revealed an incidence of 3,107 TBI per 100,000 person-years.

Conclusions: Elevated prevalence and incidence of TBI among incarcerated adolescents may relate to criminal justice involvement as well as friction in jail. Given the large representation of violence as a cause of TBI among our patients, we have begun focus groups with them to elicit meaningful strategies for living with and avoiding TBI.

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IMPLICATIONS AND CONTRIBUTION

The high prevalence and incidence of TBI among adolescents in the New York City jail system may represent an important opportunity to rethink how to prevent adolescent entanglement with criminal justice, as well as how to manage adolescents’ needs while incarcerated.

Traumatic brain injury (TBI) represents a significant source of morbidity and mortality among adolescents [1]. It represents a clinical entity with a largely social and familial impact and intervention. In correctional settings, high rates of TBI have been reported among adult inmates [2]. Traumatic brain injury has been identified as an important variable in youth delinquency [3]. However, relatively little is known about the prevalence among adolescents in jail settings [4]. As part of an injury surveillance and reduction program begun in 2010, we undertook screening of adolescent inmates arriving in jail for the presence of TBI in 2012.

Methods

Traumatic brain injury prevalence was determined by screening newly arrived adolescent inmates using the Traumatic Brain Injury Questionnaire. The screening queries patients about head injury history, with circumstances as symptoms graded by frequency and severity, yielding a Total Symptom Severity Scale (TSSS) and a Total Symptom Frequency Scale (TSFS) [5].

Over 12 months, a convenience sample of newly admitted, English-speaking adolescents (300 male and 84 female) were screened. Other data used in the analysis (TBI incidence, mental health services, recidivism, solitary confinement, and injuries) were abstracted directly from the jail electronic health records.

Analysis

Head injuries were categorized by group: (1) no head injury history or only one minimal/suspected injury; (2) multiple minimal or suspected head injuries but no loss of consciousness or posttraumatic amnesia; and (3) at least one injury with loss of consciousness and/or posttraumatic amnesia, which is the accepted definition of TBI. This analysis represented routine...
public health surveillance and was thus exempt from institutional review board oversight.

## Results

At least one head injury was reported by 259 (67.4%) of the 384 screened inmates. The most frequent injury circumstances were assault (55.5%) and fall-related (41%). A total of 125 inmates (32.5%) were in group 1, 68 (17.3%) in group 2, and 191 (49.7%) in group 3 (Table 1). Group 3 patients used significantly more in-jail mental health services and scored significantly higher on severity and frequency scales. Females in group 3 were significantly more likely to use mental health services (75.0% vs. 48.0%; p = .002); and TSSS and TSFS were significantly higher for girls in group 3 than for boys in the same group (TSSS: 2.2 vs. 1.56, p < .0001; and TSFS: 2.79 vs. 1.86, p < .0001). Males in group 3 were significantly more likely to recidivate than females (73.3% vs. 37.5%; p < .0001). Risk of head injury per 100,000 person-years for adolescents was 21,757, and of TBI was 3,107 (Table 2). A total of 26% of screened patients were ever in solitary confinement in their incarcerations.

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### Discussion

Our observation that approximately half of adolescents arriving in the New York City jail system have a history of TBI is well in excess of 32% reported elsewhere [6]. We observed that female adolescents in group 1 had significantly higher TSSS than for boys in the same group (TSSS: 2.2 vs. 1.56, p < .0001); and TSFS: 2.79 vs. 1.86, p < .0001). Males in group 3 were significantly more likely to recidivate than females (73.3% vs. 37.5%; p < .0001). Risk of head injury per 100,000 person-years for adolescents was 21,757, and of TBI was 3,107 (Table 2). A total of 26% of screened patients were ever in solitary confinement in their incarcerations.

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### References


CHS Monthly Injury Report [internal document]. Among the 1500-2000 monthly injury visits in the NYC Jail system, rates of blow to the head are consistently higher for injuries associated with security staff (as opposed to inmate fights), for adolescents and for patients in solitary confinement.