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ATV-Related Trauma in the Pediatric Population

Benjamin Giertych¹, Vincent R Morrow¹, Umer Rizwan², Grace C Danby³, John P Lubicky¹, Gerald Hobbs¹, Daniel R Grant¹

Affiliations

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Abstract

Background: All-terrain vehicles (ATVs) are prevalent in Appalachia and cause significant morbidity and mortality in the pediatric population. This study investigated the injury types and severity in pediatric patients over a 15-year period.

Methods: A retrospective chart review was performed on pediatric ATV-related traumas presenting to our institution from 2005 to 2020. Patients were divided into 3 age groups (0-7, 8-12, and 13-17 y) to evaluate differences in accident demographics, hospitalization, Glasgow Coma Scale, Injury Severity Score, substance use, characterization of orthopaedic and nonorthopaedic injuries, and procedures performed.

Results: Inclusion criteria were met by 802 patients. Males represented 71.7% (n=575) and females 28.3% (n=227); the mean age was 12.4 years. The majority (88.5%, n=710) of patients admitted following their accident had a mean stay length of 3.3 days. Of admissions, intensive care unit admission was required by 23.8%, n=191 (mean stay 4.0 d). There were 7 fatalities. The vast majority of accidents occurred between May and September (79.2%, n=635). In patients with documented helmet status, 45% (n=271) were helmeted. Roughly half of all patients (n=393) sustained a fracture (excluding fractures to the head), 370 sustained an injury to the head/face, 129 sustained intra-abdominal/intra-thoracic injuries, and 29 sustained injuries to all 3 systems. The most common fractures involved the forearm (n=98), femur (n=65), and spine (n=59). The most common open fractures were the tibia (n=12), humerus (n=8), and forearm (n=8). The oldest group was more likely than the middle or younger groups to sustain spine (P <0.0001), pelvis (P =0.0001), hand (P =0.0089), and foot (P =0.0487) fractures. Ethanol testing was positive in 5.0% (n=25) of the oldest group and cannabinoids were present in 6.8% (n=34). The youngest group was significantly more likely to sustain a fracture of the humerus than the middle or older groups (P <0.0001). Orthopaedic surgical management was required in 24.4% (n=196) of patients.

Conclusions: Pediatric ATV accidents present a significant source of morbidity and mortality. Further intervention is necessary to minimize pediatric ATV injuries.

Level of evidence: Level IV-Retrospective Case Series.

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