Orthopedic Surgeons See Injury Patterns From ATV Injuries

Children continue to account for a disproportionate percentage of morbidity and mortality from ATV-related accidents – up 240 percent since 1997, according to a *Journal of Pediatric Orthopaedics* report published by pediatric orthopaedic surgeons [1] at Le Bonheur Children's Hospital. The surgeons – who studied data from the Kids' Inpatient Database – found spine-related injuries from all-terrain vehicles in the United States are more common in older children and in females, unlike males in most trauma studies. ATV-related spine injuries in children and adolescents are high-energy injuries with a high rate of associated spine and non-spine injuries.

With increases in use and power of ATVs, there have been dramatic increases in both the number and severity of ATV-related injuries. The Kids' Inpatient Database (KID), a national database that is part of the Healthcare Cost and Utilization Project (HCUP), showed a 240 percent increase in the number of children admitted to a hospital for an ATV-related injury between 1997 and 2006. During the same time period, there was a 476 percent increase in the number of children with ATV-related spine injuries.

"We want to encourage physicians to be aware of the potential for associated injuries, including abdominal trauma, thoracic trauma, closed head injury, other spinal fracture, appendicular skeletal fracture, or neurologic injury. Of special interest was the frequency of non-contiguous spinal fracture because a second spinal injury may be missed because it is in a separate region of the spine as the first injury," said Jeffrey R. Sawyer, M.D., Associate Professor, The University of Tennessee-Campbell Clinic Department of Orthopaedic Surgery. Sawyer is a spokesperson on ATV injuries for the American Academy of Orthopaedic Surgeons.

In another study, Sawyer and his colleagues William C. Warner Jr., M.D. [2], and Derek Kelly, M.D. [3] reviewed 53 spine injuries in 29 children (1.8 injuries per child) over a five-year span. The physicians reviewed records and radiographs of children and adolescents who presented to Le Bonheur Children's Hospital in Memphis, Tennessee with injuries from ATV accidents. The children had an average age of 15.7 years; 16 (or 55 percent) had associated non-spine injuries and 13 had multiple spine injuries, contiguous in nine and non-contiguous in four.

Four patients, all younger than age 15, had neurological injuries. Children older than 16 had significantly lower pediatric trauma scores and were more likely to have a thoracic spine fracture than younger children. Younger children were more likely to have a lumbar fracture. Fourteen patients required surgery for their injuries; seven for spine injuries and seven for non-spine injuries.

This study was the lead article in the July/August 2012 issue of *The Journal of Pediatric Orthopaedics*. Their conclusions were:

- ATV-related spine injuries in children and adolescents are high-energy injuries with a high rate of associated spine and non-spine injuries.
- ATV-related spine injuries are different from other ATV-related injuries in children in that they are more common in older children and females.
- Musculoskeletal injuries are the most common ATV-related injuries in children; orthopaedic surgeons need to be aware of these differences
- Orthopaedic surgeons should have a high index of suspicion for associated injuries, including additional and often non-contiguous spine injuries.

“Parents need to know that ATVs are not toys but motor vehicles, which can weigh more than 500 pounds. Unlike motor vehicles they lack safety features such as airbags. If you wouldn't let your 12-year-old drive the car then why would you let them operate an ATV? We all too frequently see children unnecessarily severely injured and killed on ATVs,” said Sawyer.

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