

All-Terrain Vehicle Accidents in a Rural Family Practice

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The American Medical Association Council on Scientific Affairs has recommended that reducing motor vehicle injuries become a national priority.¹ The all-terrain vehicle (ATV) is a motorized cycle that can cause serious injuries. This year 100,000 ATV-related injuries will be treated in hospital emergency rooms. More than 230 ATV-related deaths have occurred since 1982.^{2,3}

The ATV has become increasingly popular both as a farm implement and as a recreational sports cycle. Advertised for its versatility as a farm workhorse and its ability to provide access to off-road, out-of-the-way terrain, the ATV rides on three or four oversized tires. It is sold in various models with numerous optional features. Most are equipped with four-stroke, 18-hp or 19-hp, 49- to 249-cc engines. Weight varies between 90 and 375 pounds. Top speed may reach 40 to 55 mph.

Between October 1982 and May 1987, 40 ATV accident victims were treated at the Plainville, Kansas, family practice office. This paper presents a review of these accidents and injuries and suggests guidelines to reduce the number and severity of injuries.

METHODS

A chart review of this solo, rural, western Kansas family practice was performed. Forty individuals presented to the office or emergency room between October 1, 1982, and May 1, 1987, with complaints resulting from accidents involving all-terrain vehicles.

RESULTS

There were 36 separate accidents involving 40 patients. Thirty-eight patients were riding the vehicle. Two patients

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were struck by ATVs. Seven accidents occurred during tandem riding. All but one injury occurred while "joy-riding" or racing the vehicle. All but one accident involved a three-wheeler.

Twenty-nine (72 percent) patients were male; 11 (28 percent) were female. Ages ranged from 3 to 58 years. Nineteen (48 percent) patients were aged less than 16 years. Sixteen of these 19 patients aged less than 16 years were driving the vehicle, though they were not eligible for unrestricted driver's licenses in Kansas. Fourteen (35 percent) of the patients were aged 16 to 23 years. Seven (18 percent) were older than 23 years.

The primary injuries sustained are summarized in Table 1. Fifteen (38 percent) of the 40 injuries involved a lower extremity. The other 25 (62 percent) injuries were evenly distributed between an upper extremity (6), thorax and shoulders (7), abdomen and low back (6), and head and face (6).

Sixteen (44 percent) of the 36 accidents occurred when the ATV hit another solid object such as a fence, car, or tree. Eleven (30 percent) occurred when the ATV hit a road surface irregularity such as sand, ice, or dirt rut. The other nine injuries occurred by isolated mechanisms such as accelerating too fast or tipping over while climbing a steep hill.

Twenty-two accidents (61 percent) occurred in open fields, 9 (25 percent) on public roadways, 5 (14 percent) on a racetrack. Only 13 (32 percent) riders were wearing helmets. Nine patients (22 percent) required hospitalization for treatment.

DISCUSSION

The attributes of the all-terrain vehicle that make it attractive for recreational sport result in much of its danger. Horsepower, speed capacity, and ability to travel on rough or uncertain terrain as well as driver immaturity, poor judgment, and risk-taking may be accident precursors. Many riders, especially children and young adolescents, may simply not have the strength and judgment necessary

TABLE 1. PRIMARY INJURY SUSTAINED BY 40 ALL-TERRAIN VEHICLE ACCIDENT VICTIMS

Injury	Patients No. (%)
Abrasions, contusions	
Lower extremity	9 (22)
Upper extremity	5 (12)
Thorax, shoulders	5 (12)
Abdomen, low back	4 (10)
Head and face	2 (5)
Fractures	
Femur	3 (8)
Clavicle	2 (5)
Spine	2 (5)
Hand	1 (2)
Lacerations, amputations	
Lower extremity	3 (8)
Head and face	3 (8)
Concussion	1 (2)

to control the vehicle. Older adolescents and young adults may reach high speeds, encounter road surface irregularities, and be thrown from the vehicle. The instability of a three-wheeler cycle at high speeds and in rough terrain is an important accident risk factor.² Alcohol ingestion may be an independent risk factor.⁴

Laws regulating the use of ATVs vary from state to state. Kansas law does not require registration of all-terrain cycles or licensure of drivers if the vehicle is used on private property. If used on a public road, the ATV and driver are subject to Kansas regulations governing motorcycles. Unrestricted drivers' licenses in Kansas are issued at the age of 16 years. Helmet protection on public roads is mandatory if riders are aged less than 18 years.

It is clear that the all-terrain vehicle has a potential for danger. The following suggestions have been proposed as a means to control serious injury:

1. Legal registration of ATVs and licensure of drivers should be mandatory. Driving an ATV should be restricted to those who hold unrestricted drivers' licenses.⁵ Rider skills courses should be mandatory for ATV operators.²

2. Horsepower and speed limits for ATVs should be considered.⁶ Thirty-two percent of the injuries in this series occurred when the ATV, traveling at an excessive speed, encountered a road surface irregularity.

3. Helmet protection should be mandatory.⁶

4. Education of the public by family physicians and other health care professionals should be conducted. ATV operators, law-enforcement officials, and legislators should be made aware of the hazards posed by the all-terrain vehicle.

Finally, it has been proposed that unless modification of the basic ATV three-wheeler configuration results in a greater degree of stability, manufacture of the ATV should be suspended and vehicles already sold should be recalled.²

References

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