



Pathology Biology Section – 2007

G68 Characteristics of Fatal All Terrain Vehicle (ATV) Accidents

Michele Eichenmiller, MS, James A. Kaplan, MD, David J. Clay, BA, Myron A. Gebhardt, MS, Brandon Lewis, BS, Nabila A. Haikal, MD, James C. Kraner, PhD, Office of the Chief Medical Examiner, 619 Virginia Street West, Charleston, WV 25302*

After attending this presentation, attendees will learn of particular concerns to be considered when investigating fatal ATV accidents.

This presentation will impact the forensic community and/or humanity by focusing attention on the circumstances of fatal All Terrain Vehicle (ATV) accidents, particularly the role of alcohol impairment.

The goal of this presentation is to highlight some of the forensically relevant circumstances surrounding deaths that result from ATV accidents. Emphasizing the factors that are common to these cases will enhance the attendee's attention to pertinent issues to be considered when investigating ATV related deaths.

An all-terrain vehicle or "ATV" is defined as any vehicle fifty-two inches or less in width, having an unladen weight of 800 pounds or less, traveling on three or more low pressure tires with a seat designed to be straddled by the rider, intended for, or capable of travel over unimproved terrain. Using national data from 2002-2004, West Virginia leads the nation with an annual average of 1.7 fatalities per 100,000 people; followed by Kentucky at 0.85. The national average for the same period is 0.17 deaths per 100,000 citizens.

The West Virginia Office of the Chief Medical Examiner investigated the fatalities reviewed in this report. Biological samples were obtained from each of the cases during either internal autopsy or external examination of the body. Over a three-year period (2003-2005), a total of 99 fatal ATV-related accidents occurred in West Virginia. Of the fatalities reviewed, 85 were male and 14 were female. The decedents ranged from 7-80 years of age, with 36 being the average age. Overall, October was the month with the highest incidence (14 cases), followed by May and July with 13 fatalities occurring during each. Toxicological testing included blood alcohol analysis by direct injection GC-FID using *t*-butanol as an internal standard. Samples were also tested for drugs of abuse. However, only alcohol findings are included in this presentation. Other significant observations include the following:

- Fifty-eight percent of the accidents occurred on unpaved roads, with 28% on paved roads. The road surface was not specified in the records available for review in the remaining cases.
- Eighty-four of the fatalities were drivers, while ten were passengers. The position of the decedent was not ascertained in five of the deaths.
- There were ten multi-vehicle and 75 single-vehicle accidents. In fourteen collisions, the number of vehicles involved was not specified.
- Only thirteen individuals were wearing a helmet whereas 51 were not; and of the latter, seven were under the age of 18.
- Excessive speed was documented in the investigative reports of 14 fatalities and was not named as a factor or unknown in the remaining 85 cases.
- Forty-nine percent of the fatalities had blood alcohol concentrations exceeding 0.08%.
- The average blood alcohol concentration was 0.19% + 0.09%. Through the first seven months of 2006, 39 ATV-related deaths had

already occurred in West Virginia, underscoring the need for addressing the problem of ATV safety by state government.

In conclusion, high blood alcohol concentration is a frequent factor in fatal ATV accidents. It is also important to note that the generally steep terrain of West Virginia is an additional concern when operating vehicles with a high center of gravity, such as an ATV. Other ATV-specific accident factors obtained from police and injury-prevention sources will also be presented.

ATV, Fatality, Accident