

TASER USE IN RESTRAINT-RELATED DEATHS

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ABSTRACT

Objective. The Taser is an electric weapon capable of releasing significant amounts of electricity in rapid pulses, causing uncontrollable muscle contraction. Use of this weapon has dramatically increased over the past decade, and it is now commonly used by law enforcement officers nationwide. Emergency medical services providers are, likewise, seeing more patients who have recently been subjected to application of a Taser. We examined the autopsy reports of patients who died after application of a Taser in an attempt to identify high-risk interactions. **Methods.** This is a case series of Taser-related deaths. Fatalities occurring over four years beginning in January 2001 were identified through an Internet search, and autopsy reports were requested. Reports were analyzed for patient demographics, preexisting cardiac disease, toxicology, evidence of excited delirium, restraint techniques used, and listed cause of death. **Results.** Of 75 cases identified, 37 (49.3%) had autopsy reports available for review. All cases involved men, with ages ranging from 18 to 50 years. Cardiovascular disease was found in 54.1%. Illegal substance use was found on toxicology screening for 78.4%; within that group, 86.2% were found to have been using stimulants. A diagnosis of excited delirium was given for 75.7% of the cases. Use of a Taser was considered a potential or contributory cause of death in 27%. **Conclusions.** This is the largest review of Taser-related fatalities reported in the medical literature. The findings are consistent with prior studies, suggesting a high frequency of restraint-related and excited delirium-related fatalities. **Key words:** emergency medical services; restraint; physical; fatal outcome; law enforcement.

PREHOSPITAL EMERGENCY CARE 2006;10:447-450

INTRODUCTION

The Thomas A. Swift Electric Rifle (Taser; TASER International, Inc., Scottsdale, AZ) is a weapon first made commercially available in 1974 and now increasingly used by law enforcement officers to control violent, hostile, threatening, or uncooperative suspects who are resisting arrest. Metal barbs from the Taser are fired from a

distance (from zero to 25 feet), delivering 26 W of electricity in rapid pulses over five seconds. This causes uncontrollable muscle contraction, briefly incapacitating the individual and facilitating definitive restraint.^{1,2} The individual can then be incarcerated or transported to a hospital emergency department for medical evaluation. Law enforcement use of Tasers has increased dramatically in the past decade, with more than 7,000 law enforcement agencies actively using Taser technology.³

With increased deployment of the Taser by law enforcement agencies, numerous injuries and deaths have been temporally associated with Taser use, although no direct link to fatal injury has been made.⁴⁻⁶ Emergency medical services (EMS) exposure to patients recently subjected to application of a Taser is likewise on the rise. Due to an appreciation for the potential risks associated with Taser use, some law enforcement departments have instituted a protocol for calling EMS immediately whenever a Taser is used. Paramedics and emergency medical technicians should be familiar with Tasers, because important triage decisions, life-threatening patient conditions, and critical initial evaluations and interventions will almost exclusively occur in the field, just after patient restraint.

The objective of this study was to identify factors associated with sudden death in the setting of recent Taser use. We hope that this may help EMS providers consider potentially life-threatening conditions when encountering a patient recently subjected to application of a Taser.

METHODS

Study Design/Setting

This is a case series of Taser-related deaths occurring in the United States between January 2001 and January 2005. Data were collected using a convenience sample design.

Selection of Participants

News reports of deaths associated with Taser use were identified by Web-based searches (www.google.com and Lexis-Nexis using the following key words: Taser/death, Taser/fatality, and Taser/homicide). Letters requesting autopsy reports were then sent to the medical examiners for the counties and states in which these Taser-involved deaths occurred.

Received March 21, 2006, from the Division of Emergency Medicine, Department of Medicine, University of Washington Medical Center, Seattle, WA (JS); and Department of Emergency Medicine, Harvard Medical School, Boston, MA (HRH). Revision received May 17, 2006; accepted for publication May 20, 2006.

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doi: 10.1080/10903120600884863

Data were extracted directly from autopsy reports. Variables collected from these reports included demographic information (age, race, gender, body mass index), medical examiner-listed cause of death, preexisting heart disease, diagnosis of excited delirium, toxicology findings, type of restraint, and medical examiner estimation of the role of the Taser in the fatality.

The single inclusion criterion was an accessible, complete autopsy report of a case where death occurred in association with a Taser injury. The exclusion criteria were any cardiopulmonary arrest that was documented by autopsy history to occur outside the immediate context of in-custody restraint and Taser use (i.e., greater than 24 hours between Taser use and eventual collapse) or any other injury that was cited by the medical examiner as the ultimate cause of death (e.g., head injury or significant gunshot wound). The 24-hour cutoff was chosen to address critiques of prior studies that included cases where patients died days after Taser use.⁷ The time period was also chosen as a reasonable length of time during which cardiac and systemic effects of electrical injury could occur.⁸

The study was approved by the human subjects division of the University of Washington Medical Center with a waiver of consent.

RESULTS

Seventy-five cases of law enforcement Taser-related deaths were identified between January 2001 and January 2005. Of these, medical examiners in 33 cases (47.1%) either failed to respond to requests for autopsy reports or refused to send reports secondary to ongoing investigations. Five cases (6.7%) were excluded for time of death greater than 24 hours from when the Taser was used (four cases) or obvious other cause of death (one case), leaving 37 eligible cases (49.3%) available for review.

Of these 37 cases, all were men. The mean age was 35.6 years and the median age was 36 years, with a range from 18 to 50 years. Eighteen individuals (48.6%) were white, 15 (40.5%) were black, and 4 (10.8%) were Hispanic. The body mass index range was 22.6 to 48.4 Kg/m²; the average was 30.8 kg/m², with a standard deviation of 5.5.

On autopsy, 20 (54.1%) were found to have cardiovascular disease; seven (18.9%) had significant coronary artery disease, five (13.5%) had cardiomyopathy, and eight (21.6%) had both coronary artery disease and cardiomyopathy.

Based on history and autopsy findings, 28 (75.7%) were specifically given a diagnosis of excited delirium by the medical examiner.

Positive toxicologic screens for illegal substances were found in 29 individuals (78.4%). Stimulant use accounted for the vast majority of these cases (26 [86.2%]). Table 1 shows full details of the toxicology findings.

TABLE 1. Toxicology Findings in Taser-Related Fatalities

	n	(%)
Illegal substances	29	(78.3)
Cocaine	17	(45.9)
Methamphetamine	3	(8.1)
Cannabinoids	3	(8.1)
Cocaine and methamphetamine	4	(10.8)
Cocaine and cannabinoids	1	(2.7)
Lysergic acid diethylamide	1	(2.7)
Other mind-altering substances*		
Ephedrine, caffeine	4	(10.8)
Antidepressants	4	(10.8)
Antipsychotics	3	(8.1)
Alcohol	7	(18.9)
Opiates	4	(10.8)
Benzodiazepines	1	(2.7)

*Numbers do not add up to 100% because many individuals had multiple substances.

Only four individuals (10.8%) had completely negative toxicology panels.

The law enforcement use of restraint was mentioned in the autopsy report in 29 cases (78.4%), although 12 of these did not note a specific technique, simply stating that the individual was "restrained." Table 2 describes the restraint techniques utilized. Hobble restraints, hog-tying, prone positioning, and choke holds accounted for 10 (27.0%).

The majority of deaths (17 [48.6%]) were reported to be due to stimulant intoxication, while 12 (32.4%) described no proximal cause but were simply reported as cardiopulmonary arrest, sudden death, or cardiac arrhythmia (Table 3).

Of the 37 autopsy reports reviewed, medical examiners made mention of Taser injuries when analyzing the cause of death 13 times (35.1%). Taser use was described as specifically not a factor in three cases (8.1%), as a potential cause in six cases (16.2%), and as a contributory cause in four cases (10.8%).

DISCUSSION

We believe this is the largest description of Taser-related fatalities published in the medical literature to date. One prior study looked at 16 cases, of which three occurred days after Taser use.⁴

Demonstrating a causal relationship between Taser injury and subsequent death is difficult. Among the

TABLE 2. Restraint Techniques in Taser-Related Fatalities

	n (%)
"Restrained"—no mention of technique	12 (32.4)
Handcuffs	6 (16.2)
Hobble or hog-tied/prone	4 (10.8)
Handcuffs/prone	3 (8.1)
Choke hold	3 (8.1)
Beanbag gun	1 (2.7)
No mention of restraint	8 (21.6)

TABLE 3. Cause of Death by Medical Examiner Report

	n (%)
Stimulant intoxication	18 (48.6)
Cardiac arrest/arrhythmia	12 (32.4)
Excited delirium	3 (11.1)
Positional asphyxia	2 (5.4)
Acute congestive heart failure	1 (2.7)
Undetermined	1 (2.7)

autopsy reports for this study, proximal causes of death on autopsy relied heavily on historical information in police reports. This information is recalled from a highly charged, unsafe environment by nonmedical professionals, in a context where the choice of description may influence whether death is called a homicide, justifiable homicide, or accidental death.⁷ We sought to describe conditions and factors associated with Taser use and sudden prehospital death.

Importantly, the Taser is primarily used in cases where suspects are unarmed and violently resisting arrest, a situation already known to be associated with in-restraint death from excited delirium.^{9–11} Excited delirium is broadly defined as a state of agitation, excitability, paranoia, aggression, great strength, and numbness to pain, often associated with illegal stimulant use and psychiatric disease.¹² In these cases, stimulant use, agitation-related acidosis, hypoxia, and/or rhabdomyolysis are believed to contribute to sudden death, especially in patients who are at higher risk due to underlying heart disease.^{9–17} There has been debate as to whether restraint-related deaths in patients with excited delirium could be due to these underlying conditions with the additional stressors of hog-tying, prone positioning, hobble restraint, or other means that could create a "positional asphyxia."^{18–20}

The underlying conditions associated with excited delirium-related deaths in prior studies were overwhelmingly present in the Taser-related deaths reported here. Nearly all subjects demonstrated behavior consistent with excited delirium and/or stimulant use, and many were restrained with manual techniques associated with positional asphyxia. This is not surprising, because Taser weapons were specifically designed to be useful before restraint in situations in which suspects are displaying signs of excited delirium.

It is noteworthy that the rates of heart disease seen in this study are significantly higher than in the general population, where, for example, rates of coronary artery disease for all men are 7%–9%²¹; this is particularly striking given the relatively young age of the study cohort. As has been stated elsewhere, it is likely that such preexisting disease, when combined with stimulant use, struggle against law enforcement, and definitive restraint maneuvers (Taser or otherwise), creates a high-risk situation for restraint-related fatalities.

This case series reinforces that the fatal encounters in which Tasers are used involve patients already at higher risk for sudden death, requiring increased EMS provider vigilance. EMS management of patients recently subjected to application of a Taser should take into account the likelihood of the physiologic results of excited delirium and/or extensive struggle against restraint: hyperthermia, acidosis, rhabdomyolysis, and a hypersympathetic state. Precautions for EMS providers treating patients in these conditions have already been recommended elsewhere and emphasize vigilance in self-protection for providers,¹⁴ restraint that allows for reasonable chest excursion,¹⁴ early and continuous cardiac monitoring,^{10,18} a low threshold to institute trauma precautions,⁵ and use of chemical restraints to avoid further struggle.¹³

LIMITATIONS

Because this report is a descriptive case series, causal links cannot be made. The interpretation of data is limited to establishing factors that may be associated with a risk of sudden death in the setting of Taser use. Limiting our study to easily identifiable cases and available autopsy reports could also have led to unintentional bias. Furthermore, much of the historical information in the autopsy reports was gleaned from police descriptions, which may be biased or incomplete. There was also no access to medical records when paramedic or hospital medical care was given, limiting the availability of information further.

CONCLUSIONS

Our data show that sudden deaths can and do occur after Taser use. A common factor in these deaths is extreme agitation, often in the setting of stimulant drug use and/or preexisting heart disease. This finding is consistent with prior studies of restraint-related fatalities.

The authors thank Richard Campbell, MD, John Pease, MD, Shane Hamman, MD, and Mickey Eisenberg, MD, for assistance in data collection and input.

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