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Clinical Reviews

EXCITED DELIRIUM SYNDROME (EXDS): DEFINING BASED ON A REVIEW OF THE LITERATURE

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☐ **Abstract—Background: Patients present to police, Emergency Medical Services, and the emergency department with aggressive behavior, altered sensorium, and a host of other signs that may include hyperthermia, "superhuman" strength, diaphoresis, and lack of willingness to yield to overwhelming force. A certain percentage of these individuals will go on to expire from a sudden cardiac arrest and death, despite optimal therapy. Traditionally, the forensic community would often classify these as "Excited Delirium" deaths. Objectives: This article will review selected examples of the literature on this topic to determine if it is definable as a discrete medical entity, has a recognizable history, epidemiology, clinical presentation, pathophysiology, and treatment recommendations. Discussion: Excited delirium syndrome is characterized by delirium, agitation, acidosis, and hyperadrenergic autonomic dysfunction, typically in the setting of acute-on-chronic drug abuse or serious mental illness or a combination of both. Conclusions: Based upon available evidence, it is the consensus of an American College of Emergency Physicians Task Force that Excited Delirium Syndrome is a real syndrome with uncertain, likely multiple, etiologies.** © 2012 Elsevier Inc.

☐ **Keywords—excited delirium; in-custody death; sudden death; TASER; restraint; agitated delirium**

INTRODUCTION

The term "Excited Delirium" has been used to refer to a subcategory of delirium that has primarily been described retrospectively in the forensic literature. It has also been referred to as "Agitated Delirium" and is closely associated with the "Sudden Death in Custody Syndrome." Originally, the concept of excited delirium was described in the forensic literature and has been synonymous with death, but over time the term has made its way into the emergency medicine, psychiatric, law enforcement, prehospital, and medicolegal literature. It

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has generally been used to describe patients displaying altered mental status with severe agitation and combative or assaultive behavior that has eluded a unifying, prospective clinical definition. For the remainder of this article, these kinds of cases will be referred to as the Excited Delirium Syndrome (ExDS).

The difficulty surrounding the clinical identification of ExDS is that the spectrum of behaviors and signs overlap with many other clinical disease processes. Treatment interventions targeting these alternate diagnoses (e.g., acute hypoglycemia) may potentially alleviate the clinical presentation of the ExDS. Faced with the lack of a clear definition and cause, as well as the infrequency of events such that individual practitioners are unlikely to encounter large numbers of cases, the decision to identify ExDS as a syndrome instead of a unique disease has been delayed, somewhat similar to the decades-long controversy over Sudden Infant Death Syndrome.

The problem is that a small percentage of patients with ExDS progress to sudden cardiopulmonary arrest and death. Although many of the current deaths from ExDS are likely not preventable, there may be an unidentified subset in whom death could be averted with an early directed therapeutic intervention. In fact, it is impossible at present to know how many patients with this type of clinical presentation have received a therapeutic intervention that halted a terminal progression, or whether this is a spectrum of severity to a disease state that causes death to only a few of its victims.

In response to increased reports and lay media coverage of sudden deaths in severely agitated subjects, along with lack of clarity and consistency among the medical community regarding ExDS, the American College of Emergency Physicians (ACEP) convened a Task Force of experts in the field of excited delirium. Experts included emergency physicians published in the field, forensic pathologists researching in the field, and tactical Emergency Medical Services (EMS) physicians. The expertise was extended to include researchers knowledgeable in Sudden Death in Custody Syndrome, positional asphyxia, conducted energy devices, and tactical medicine. This Task Force was charged with reviewing the body of literature available and coming to a consensus, if possible, to define two major questions:

1. Does the entity commonly referred to as "excited delirium" exist as a separate disease?
   And if it does,
2. Can it be better defined, identified, and treated?

In this article, the Task Force provides a review of the history and epidemiology of ExDS along with a discussion of the potential pathophysiology, clinical and diagnostic characteristics, differential diagnoses, and treatment. The goal is to determine if ExDS is a disease, and if so, to educate those who have to provide care for the victims, which would include medical and public organizations, including first responders, law enforcement, physicians, and other health care providers.

METHODS

ACEP convened a consensus group of experts in the field of ExDS who have conducted research on or are nationally recognized as having specific expertise in ExDS. The group was selected by assessing all ACEP members who have published significant writings beyond case reports in the areas of Sudden Death in Custody Syndrome, positional asphyxia, conducted energy devices, and tactical medicine. These individuals were invited to participate and queried for other "experts" in the field and those individuals were also invited. All but one of the invitees participated. The group met by teleconference three times and communicated electronically, and subsequently met in person on two separate occasions: a 2-day retreat dedicated to the review and drafting of a consensus paper, and a second time to finalize the working document.

The medical literature was reviewed to include key word and topic searches on excited delirium, agitated delirium, acute exhaustive mania, sudden in-custody death, in-custody death syndrome, TASER (TASER International Inc., Scottsdale, AZ), electronic control devices, conducted electrical weapons, positional restraint, restraint asphyxia, positional asphyxia, and less lethal weapons. Additionally, other special reports, text books and chapters, agency reports, and governmental reviews were evaluated. The task force reviewed these materials for appropriateness to the topic and the quality of the work. Studies included for the final review were limited to randomized controlled trials, clinical trials, prospective and retrospective cohort studies, and meta-analyses in human subjects. Case reports, case series, and general review articles were not included for the selection criteria for formal rigorous review but were utilized for the compilation of the published signs and symptoms.

DISCUSSION

ExDS History

For more than 150 years, there have been case reports that do not use the exact term "excited delirium," yet describe a similar constellation of symptoms and features. These cases discuss clinical behavior and outcomes that are strikingly similar to the modern-day concept of ExDS (1). These historical cases occurred primarily within institutions that housed mentally disturbed individuals in protective custody due to their violent and aggressive