Excited Delirium and CEDs

(more Miami mayhem…)

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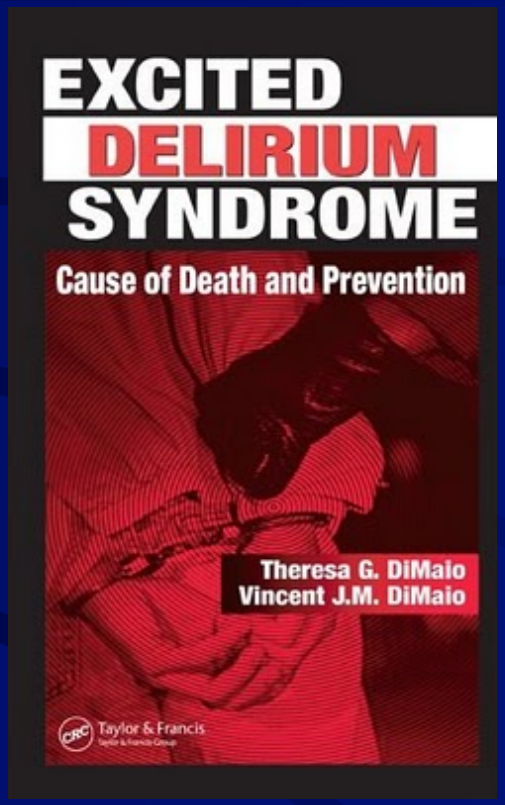
Scenarios

- **Miami, summer, mid-1980s: Crack cocaine wave**
  - **Wildly agitated male running around naked, now under arrest, suddenly quiet in the back of police car… x 8**
- **Everywhere:**
  - **Agitated behavior, law enforcement take down by taser or physical force**
- **Miami:**
  - **Wildly agitated male, tased, glucose = 20**
  - **25 yr old man, wildly agitated but restrained by PD, given Narcan in back of Rescue truck…**
  - **Local ED "we don't use physical restraints here"**

Excited Delirium, AKA…

Toxic delirium
Agitated delirium
Drug psychosis
Manic excitement
Psychomotor excitement
Acute exhaustive mania
Overtly psychotic

AKA ##!#*#!#*!!!!**



Delirium is a medical condition

- Intermittent, waxing & waning Δ in mentation with Sx confusion, disorientation, hallucinations
- Periods of lucidity
- Unpredictable change from lucidity to delirium
- Commonly seen in elderly with acute illnesses (e.g., infection) or change of place (hospital stay)
- Not that rare at any age due to acute medical conditions or adverse drug reactions

Excited Delirium is a Medical Emergency

Psycho-physiologic meltdown

S Superhuman strength
T Thought disorder (fear, panic. incoherent)
R Resisting violently
O Overheating (hot skin = Really Bad)
N (feels) No pain
G Get help

Dilated pupils, hallucinations, hyper VS (↑ P, ↑ RR, ↑BP)
Kicking/screaming/cussing & attached to 4 angry LE Officers

Causes of Excited Delirium

Drug-related:

- Stimulant drugs
  - Cocaine
  - Amphetamines
  - Club drugs
- Hallucinogens
- Other ODs, e.g., aspirin
- Adverse drug reaction
  - Benzodiazepines
  - Anticholinergics
- Drug withdrawal
- HYPOGLYCEMIA
- HEAD TRAUMA
- HYPOXIA
- HYPOVENTILATION
- SHOCK
- Purely psychiatric
  - New dx
  - Off meds
- Other medical delirium
  - Infection
  - Dementia

Complications

- Seizures
- Coma
- Trauma
- CNS hemorrhage
- Volume depletion
- Abnl –lytes, acidosis
- Heat stroke
- Respiratory arrest
- Rhabdo & renal failure
- Infection

<u>Cardiac:</u>

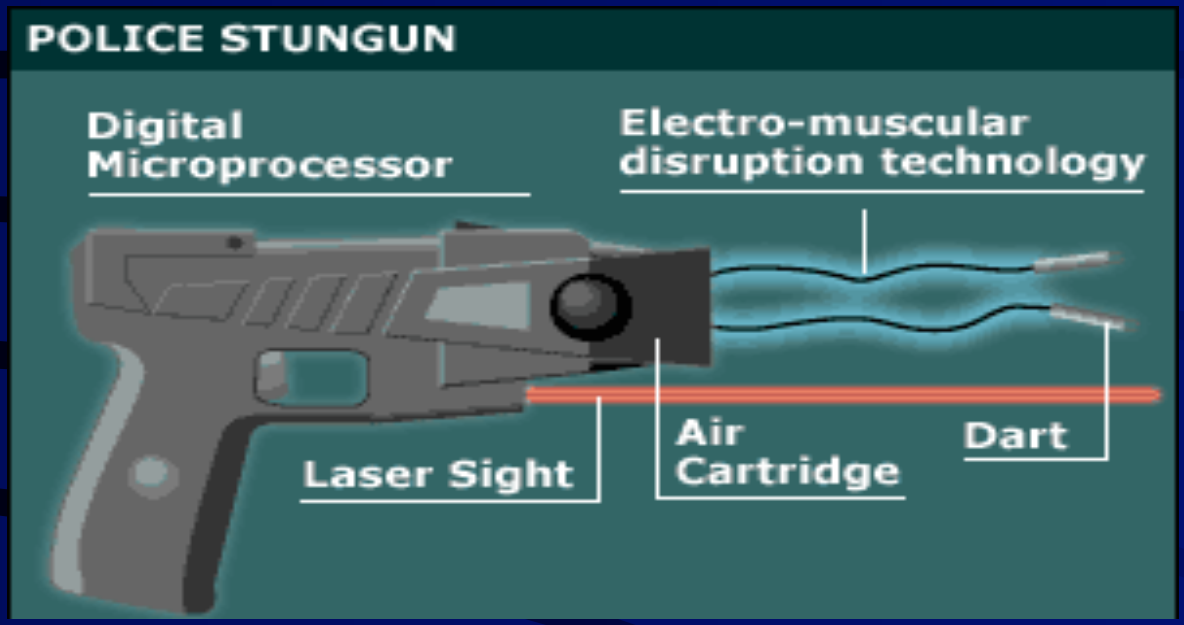
- Tachyarrhythmias
- Bradyarrhythmias
- Severe hypertension
- Shock
- Cardiac arrest (any rhythm)
- Acute MI / ischemia

Law Enforcement Response to Excited Delirium: More Lethal Weapons

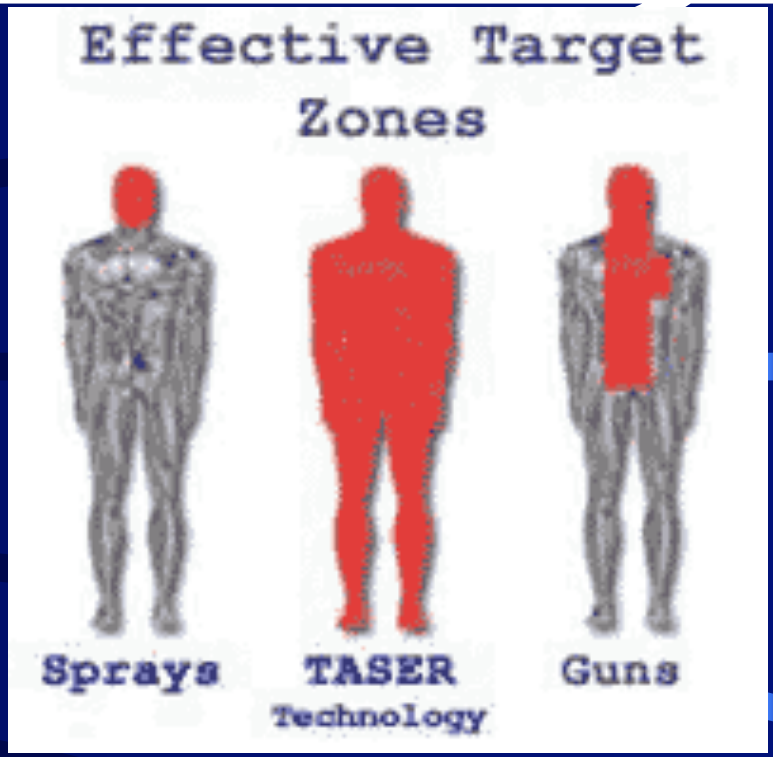
Less Lethal Weapons

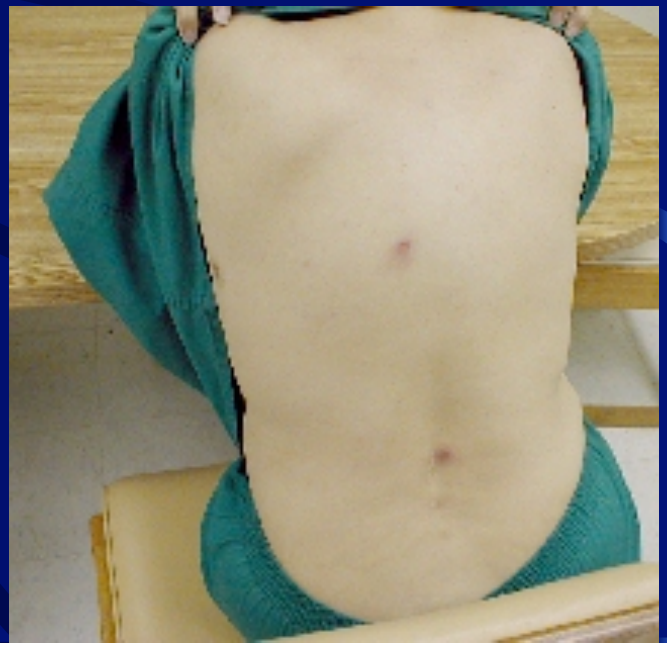
- Conducted electrical weapons/devices
  - Stun guns: TASER, Stinger, others
- Specialized projectiles
  - Rubber bullets, bean bags
- Riot control agents ("tear gas")
- Nets

TASERs



- Effective temporary incapacitation by "electro-muscular disruption" but no LOC
- Not similar to usual electrical injuries


Effective Target Zones
Sprays
TASER Technology
Guns



CEDs and EMS

- **EMS personnel need to know about CEDs**
  - **Basic function**
  - **Scene safety**
  - **Safe to touch patient**
  - **Medical risks, if any**
  - **Specific management**
- **Crucial: recognition & treatment of excited delirium as a medical emergency**
- **Local EMS, law enforcement, and EDs must jointly work on local CED policies, protocols**

CEDs:

- Officer Injuries ↓↓
- Suspect Injuries ↓↓
- Use of lethal force ↓↓↓
- Safe and effective when used appropriately

Physiologic effects

Muscle:	**Involuntary contractions**
	Minimal contribution to rhabdo
CNS:	**No effect (awake), no seizures**
Cardiac:	**High safety index for VF in animals**
	Normal subjects—no rhythm or ECG interval changes, mild ↑HR
	Pig study ↑troponin (not signif.)
OB/Gyn:	**No clear causation of fetal demise**
Lungs:	**No likely effect**
Metabolic:	**↓ pH, ↑ pCO2, ↑lactate, ↑K, ↑Na only with massive overuse (pig model)**

CED Stats & Safety

- ~ 10,000 LE agencies with CEDs
- ~120,000 privately owned stun guns
- ~150,000 training uses on LE officers
- >100,000 “real life” uses
- Ever-growing medical literature supports excellent safety profile
- In-custody deaths remain hot topic in the media, city commissions, lawsuits

CEDs: Medical Research

- In custody deaths after TASER use
  - Ordog 1987, Kornblum 1991, Bleetman 2004
  - Deaths too delayed to be electrical
    - Ho 09
    - Swerdlow 09: VF in 7%, brady-asystole or PEA in 93%
- Classroom use:
  - No deaths or serious concerns
  - Vertebral compression fxs have occurred
- USC: 0 Taser deaths, 50% deaths with GSW

CED Research

Animal Studies:

- **Manthakumar 06: thorax v abd "hit", with (1 VT, 1VF) or w/ 0 IV epi**
- **Lakkireddy 06: with or without cocaine—cocaine increased the safety margin (raised threshold to produce VF)!**

Healthy adults:

- **Ho 06: minimal CV & physiologic effects in resting adults**
- **Ho 07: no respiratory impairment or hypoxia**
- **Ho 09: no signif. acidosis in prolonged use-exhausted humans**
- **Vilke 09: vigorous exercise + TASER vs. not: no significant change in ventilatory or blood markers of physiologic stress**

In Custody Deaths after Tasers

- There's no such thing as Taser-cution
  - Almost all deaths > 5 minutes later
  - Deaths due to underlying excited delirium/ drugs
- Cannot absolutely r/o some combination of tox/metabolic/genes/environment/CED but no likely suspects so far

Tasers: Precautions for LE

For use in aggressively resistant subjects

As possible, avoid in very old/young/frail or pregnant

Review all uses through QM program

Recheck detainee often—sudden quiet is NOT good (use AED if available)

Call EMS early for exc delirium, LOC, trauma etc

Do not zap if:

- Flammable agent on skin (e.g., tear gas)
- Could fall from height, into water, into traffic

Eagles Consortium Consensus

- We support the appropriate use of CEDs by LE personnel under guidelines:
  - International Assoc of Chiefs of Police
  - Police Executive Research Forum
  - And with local collaborative protocols
- Emphasis on early recognition & treatment of Exc Del as medical emergency
- Overall, CEDs reduce use of deadly force and injuries to both LE personnel and combative subjects
- Overall, safe for great majority of subjects
- Value of continuing research and outcome tracking

Don’t forget use of CEDs by the public

- CEDs are not considered firearms in most states, public can easily buy

Exc Delirium: EMS Assessment

- Scene size-up, safety, PPE
  - Adequate backup
  - Victim has been restrained & has no weapon
  - Multiple victims – think HazMat
- Patient assessment
  - ABCs, vital signs
  - Hx of event
  - Glucose check
  - Pulse oximetry
  - Skin temp?
  - Trauma
  - Cardiac rhythm
  - Medic Alert tag
  - SAMPLE
  - CNS, heart, lungs

EMS Treatment:

- Maintain safe physical restraints, position
- Benzo's (IM/IV/nasal) + ?
- Narcan NOT indicated !!!!
- IV fluids (500-1000 cc, recheck, repeat prn)*
- Cool patient as needed (usual Rx + cold saline)
- Cardiac monitoring*
- Transport to nearest ED
- Frequent rechecks

*as possible

More treatment:

- Cardiac arrest: ACLS + assume OD of stimulant (early bicarb) and volume depletion (IVF); check glucose
- Tachyarrhythmias and HTN – wait, usually short
  - Benzos!
  - Sodium bicarbonate for tachys beyond ST
- Seizures – airway, ventilation, benzo, bicarb
- Rhabdo – prevent renal failure with IVF (isotonic NS or LR, don't need bicarb in the field)

Excited Delirium: Outcomes

- Usually full recovery unless:
  - Cardiac arrest: Usual death with multiorgan failure
  - CNS hemorrhage or major trauma
- Most sleep for hours in ED, then normal person who remembers nothing
- Mild rhabdo common, but renal failure RARE

Excited Delirium: Pitfalls to Avoid

- Failure to recognize as medical emergency
  - Failure to transport to ED
  - Transport by police car (needs EMS)
  - Missing hypoglycemia
- Injury to EMS and LE personnel
- Excess trauma to subject during takedown
- Failure to recheck when suddenly quiet
- Unprofessional treatment due to anger

For more info:

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exciteddelirium.org

amnestyinternational.org

ForceScience.org

TASER.com


MAIL