



Introduction

The TASER® C2™ is a conducted electrical weapon (CEW) designed for civilian self-defense. The intended effects is human incapacitation through involuntary muscle contraction. There have been numerous studies on the law enforcement versions of TASER® devices performed.

However, the TASER C2 operates on a slightly different circuit than the law enforcement versions do. This is the presentation of the first human work examining the TASER C2 device.

Methods

Volunteers received a 20 - 30 second CEW discharge to the thorax. Venous blood was drawn before, after, and again at 24 hours post-exposure and analyzed for biomarkers of acidosis and cellular damage using point-of-care testing technology.

Respiratory data was measured before, during, and immediately after the exposure utilizing a breath by breath analyzer. Electrocardiograms were obtained before and after the exposure. Descriptive statistics were applied to the data.

Results

Five subjects were exposed, four had a 20-second exposure and 1 had a 30-second exposure. The median baseline respiratory rate was 17, range 12 to 20, and during the CEW exposure was a median of 17, range 6 to 68.

Median baseline minute ventilation was 15.1 L/min, range 13.8 to 19.1, and during the exposure was 17.2 L/min, range 15.8 to 29.9. No elevations in troponin were noted.

Median baseline pH was 7.36, range 7.32 to 7.38, after the exposure it was 7.32, range 7.30 to 7.39, and at 24 hours was 7.34, range 7.24 to 7.39.

Median baseline potassium was 3.8, range 3.4 to 3.9, after the exposure it was 3.5, range 3.4 to 3.8, and at 24 hours was 4.0, range 3.5 to 4.1.

Median baseline lactate was 2.3, range 0.8 to 2.9, after the exposure it was 4.7, range 3.2 to 8.1, and at 24 hours was 2.3, range 1.4 to 2.4.

Median CPK at baseline was 145, range 95 to 177, after exposure it was 141, range 92 to 174, and at 24 hours was 171, range 136 to 206. No ECG changes were noted.

	Baseline		During Exposure	
	Median	Range	Median	Range
Respiratory Rate	17	12 - 20	17	6 - 68
Minute Ventilation (L/min)	15.1	13.8 - 19.1	17.2	15.8 - 29.9

Discussion Points

- Designed for civilian self-defense
- Varies discharge pulses per second to confuse an assailant
- Electrical discharge runs for 30-seconds with a one-second break during the discharge sequence
- Intended to allow user to flee from danger

	Baseline		Post Exposure		24 Hours Post Exposure	
	Median	Range	Median	Range	Median	Range
pH	7.36	7.32 - 7.38	7.32	7.30 - 7.39	7.34	7.24 - 7.39
Potassium	3.8	3.4 - 3.9	3.5	3.4 - 3.8	4.0	3.5 - 4.1
Lactate	2.3	0.8 - 2.9	4.7	3.2 - 8.1	2.3	1.4 - 2.4
CPK	145	95 - 177	141	92 - 174	171	136 - 206

Conclusions

A 20 - 30 second TASER C2 exposure does not appear to have significant deleterious effects on human physiology. Our study suggest that this device has a reasonable risk/benefit ratio when used in circumstances in which a person has a sufficient fear of personal injury from assault.

