

Letter to the Editor

RE: Myocardial Infarction After TASER Exposure *J La State Med Soc* 2010;162:291-295

TO THE EDITOR:

We read with interest the report by Baldwin et al, "Myocardial infarction after TASER exposure."¹ Unfortunately, they do not establish a reasonable causal relationship between the TASER exposure and the subject's myocardial infarction (MI). They propose that the "most plausible explanation" for the MI in the subject was transient spasm of the right coronary artery caused by the exposure, yet they provide no physiologic explanation for this conclusion and ignored other likely explanations.

A literature search does not support the authors' theory yielding 381 human subjects in 10 studies with negative serum troponins after TASER exposures to the thorax ranging from several seconds up to 30 seconds, including some simultaneous exposures, and under a variety of conditions including exertion and alcohol intoxication.²⁻¹¹

The authors also ignored the fact that the subject was engaged in a physical altercation prior to his myocardial infarction. In a paper by Ho et al, a 10-second TASER exposure was compared to several arrest-related stressors and physiologic variables were measured. Simulated combat and fleeing caused much more significant physiologic changes than the TASER exposure.⁸

Finally, the authors do not consider the other possible risk factors. The subject was a weightlifter who used at least one over the counter weightlifting supplement, Finalex. Anabolic steroid use has been associated with premature cardiovascular complications including acute myocardial infarctions from vasospasm.¹² In addition, other performance-enhancing supplements such as pre-workout and fat burner supplements that are ubiquitous in gyms contain significant sympathomimetic substances that can cause coronary vasospasm. Case reports of myocardial infarctions and arrhythmias in young, otherwise healthy persons using such supplements have been reported.¹³⁻¹⁶

We think the authors' conclusion ignores other possible factors, lacks literature support, and offers no specific pathophysiologic mechanism. We feel the title of the paper is misleading and lacks scientific discipline.

REFERENCES

- Baldwin DE, Nagarakanti R, Hardy S, et al. Myocardial infarction after TASER exposure. *J La State Med Soc* 2010;162:291-295.
- Vanmeenen KM, Cherniack NS, Bergen MT, et al. Cardiovascular evaluation of electronic control device exposure in law enforcement trainees: a multisite study. *J Occup Environ Med* 2010;52:197-201.
- Moscato R, Ho J, Dawes D, et al. Physiologic effects of prolonged conducted electrical weapon discharge on intoxicated adults. *Am J Emerg Med* 2010;28:582-587.
- Ho J, Dawes D, Bultman L, et al. Prolonged TASER use on exhausted humans does not worsen markers of acidosis. *Am J of Emerg Med* 2009; 27:413-418.
- Sloane CM, Chan TC, Levine SD, et al. Serum troponin I measurement of subjects exposed to the Taser X26. *J Emerg Med* 2008;35:29-32.
- Vilke GM, Sloane CM, Bouton KD, et al. Physiological effects of a conducted electrical weapon on human subjects. *Ann Emerg Med* 2007;50:569-575.
- Ho J, Miner J, Lakireddy D, et al. Cardiovascular and physiologic effects of conducted electrical weapon discharge in resting adults. *Acad Emerg Med* 2006;13:589-595.
- Ho J, Dawes D, Nelson R, et al. Acidosis and catecholamine evaluation following simulated law enforcement "use of force" encounters. *Acad Emerg Med* 2010;17:e60-68.
- Dawes D, Ho J, Reardon R, et al. The physiologic effects of multiple simultaneous electronic control device discharges. *West J Emerg Med* 2010;11:49-56.
- Dawes D, Ho J, Reardon R, et al. The cardiovascular, respiratory, and metabolic effects of a long duration electronic control device exposure in human volunteers. *Forensic Sci Med Pathol* 2010;6:268-274.
- Ho JD, Dawes DM, Reardon RF, et al. Human cardiovascular effects of a new generation conducted electrical weapon. *Forensic Sci Int* 2011;204:50-57.
- Sharifkazemia MB, Kojury J, Shahrzad S, et al. Nandrolone-induced myocardial infarction in a professional soccer player. *Iranian Cardiovasc Research J* 2007;1:106-110.
- Smedema JP, Muller GJ. Coronary spasm and thrombosis in a bodybuilder using a nutritional supplement containing synephrine, octopamine, tyramine and caffeine. *S Afr Med J* 2008;98:372-373.
- Thomas JE, Munir JA, McIntyre PZ, et al. STEMI is a 24-year-old man after use of a synephrine-containing dietary supplement: a case report and review of the literature. *Tex Heart Inst L* 2009;36:586-590.
- Gange CA, Madias C, Felix-Getzik EM, et al. Variant angina associated with bitter orange in a dietary supplement. *Mayo Clin Proc* 2006;81:545-548.
- Stephensen TA, Sarlay R. Ventricular fibrillation associated with use of synephrine containing dietary supplement. *Mil Med* 2009;174:1313-1319.

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Authors' Response to Letter to the Editor on page 66

AUTHORS' RESPONSE TO LETTER TO THE EDITOR ON PAGE 64:

We appreciate the interest in our report¹ from Dr. Dawes, an external consultant to TASER International, and Dr. Ho, the medical director for the company, who have published extensively on the safety of the Taser device. We agree that in the case reported the cause of myocardial infarction remains uncertain, and we stated so: "The pathogenesis of the myocardial injury in this case remains uncertain."¹ Furthermore, in the title and in the text we simply stated that myocardial infarction occurred after Taser exposure, which is factually correct, and nowhere did we say that Taser exposure caused coronary spasm. Although it is possible that anabolic steroid use may have increased the patient's susceptibility to vasospasm and myocardial infarction, myocardial infarction in a 20-year-old patient, especially one with angiographically normal coronary arteries, is an unusual event, and we feel that it is important to consider that Taser exposure may have played a contributory role.

In our report, we cited several studies in which there were no adverse cardiovascular outcomes associated with Taser exposure in a controlled setting. Other studies have attempted to replicate real-world conditions, examining the effects of Taser exposure in the setting of exercise or alcohol intoxication.^{2,3} However, no study will be able to replicate

all real-world conditions, which may also involve medical co-morbidities, psychiatric illness, intense emotional stress, physical restraint, use of prescribed or over-the-counter medications, and use of illicit drugs. Thus, it is the responsibility of the medical community to report adverse events associated with Taser exposure in real-world scenarios. Optimally, such data would be collected and reported in a systematic fashion.⁴

REFERENCES

1. Baldwin DE, Nagarakanti R, Hardy S, et al. Myocardial infarction after Taser exposure. *J La State Med Soc* 2010;162:291-295.
2. Ho J, Dawes D, Bultman L, et al. Prolonger TASER use on exhausted humans does not worsen markers of acidosis. *Am J Emerg Med* 2009;27:413-418.
3. Moscati R, Ho J, Dawes D, Miner JR. Physiologic effects of prolonged conducted electrical weapon discharge in ethanol-intoxicated adults. *Am J Emerg Med* 2010;28:582-587.
4. Payne-James J, Sheridan B, Smith G. Medical implications of the Taser. Serious harm is rare, but incident reporting needs to be improved. *BMJ* 2010;340:c853.

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LSMS CALENDAR 2011

April 25, 2011

Louisiana Legislative Session Begins

May 11, 2011

LSMS/Alliance Day-at-the-Capitol
Baton Rouge

May 12-13, 2011

Alliance Annual Meeting
Darrow, Louisiana

June 1, 2011

Board of Governors Meeting
LSMS Headquarters

June 18-22, 2011

AMA Annual Meeting
Hyatt Regency, Chicago

LSMS NEWS

Inaugural Alliance Flame of Excellence Award Winner Recognized

Congratulations to Donna Cavanaugh, wife of Shreveport neurosurgeon, David Cavanaugh, MD, the first winner of the Alliance Flame of Excellence Award. Cavanaugh was selected for her contributions as a member and leader to the Shreveport Medical Society Alliance and for her outstanding community service work.

She has been a member of the Alliance since 1989 and cofounded the non-profit organization, ThinkFirst for the Ark-LA-Tex Chapter. Her award will be presented at the Alliance Annual Meeting on May 12, 2011.