

Introduction

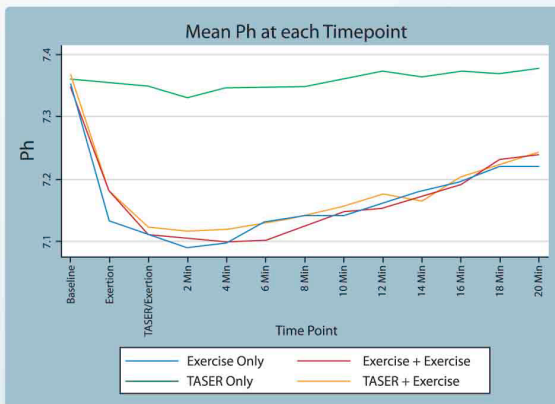
The TASER® Electronic Control Device (ECD) is used by police to control agitated subjects and is theorized to worsen acidosis that could lead to sudden cardiac arrest. The alternative to an ECD use is a continued struggle. It is not known which is worse.

We evaluated prolonged ECD exposures on exhausted humans and compared this to continued simulated struggle.

Methods

This was a prospective human study. Baseline serum pH and lactate were obtained. Subjects underwent one of four protocols: Exertion to exhaustion; Exertion to exhaustion plus a prolonged (15-second) ECD application; Exertion to exhaustion plus one additional minute of exertion; Prolonged ECD application.

Following exertion or ECD application, blood sampling occurred at two-minute intervals up to 20-minutes. Exertion was accomplished by anaerobic exercise. Descriptive statistics were used, and values were compared using k-sample test for quality of means. Linear regression was used to determine association between pH and lactate over time.



Results

40 subjects enrolled, with 10 in each group. No baseline difference between these groups were found, and no difference in the groups who performed exercise were found.

There was a difference in median pH and lactate between groups after an ECD exposure or additional exercise, and at all subsequent time points.

The ECD device only group had significantly improved pH and lactate values when compared to the exercised groups.

Conclusion

Acidosis is worse from continued exertion when compared to an ECD application. This does not support an association between TASER device applications and sudden death to worsening acidosis. It does support a worsening acidosis from continued exertion.