



Physicians Caring for Texans

TexMed 2017 Clinical Abstract

Please complete all of the following sections and include supporting charts and graphs in this document. Submit a total of two documents - this document and the Biographical Data and Disclosure Form to posters@texmed.org by midnight March 17, 2017.

Procedure and Selection Criteria

- Submissions not directly related to quality improvement or research may be accepted and should follow the standardized format outlined below. Content should enhance knowledge in the field of clinical care and be relevant to a given patient population.

PROJECT NAME: Acquired QTc Prolongation in Alcohol Withdrawal Syndrome

Institution or Practice Name: Memorial Family Medicine Residency

Setting of Care: Memorial Hermann Southwest Hospital, Houston, TX

Primary Author: Marc Andres, MD

Secondary Author: Monica Kalra, DO; Geraldine Gossard, MD

Other Members of Project Team:

Is the Primary Author, Secondary Author or Member of Project Team a TMA member (required)?

Yes No

Please provide name(s) and their role in the project:

TMA Member Name: Marc Andres, Monica Kalra, Geraldine Gossard

Poster Title: Acquired QTc Prolongation in Alcohol Withdrawal Syndrome

TexMed Poster Session Specialty Subject Area: Please check if these apply.

Enhanced Perioperative Recovery

Disaster Medicine and Emergency Preparedness

Clinical

Background (15 points max): Describe the purpose for sharing the content. What caused this subject matter to be approached? Why is this content important to share? What is the potential impact if this content is not shared?

Limited information is known about the prevalence of QTc prolongation among patients suffering from alcohol withdrawal syndrome (AWS) despite their known increased risk for cardiovascular complications such as arrhythmia.² Prior research has shown prolongation of the QTc among patients in Switzerland.³ It has been proposed that “cerebral stress” or autonomic hyperexcitability from catecholamine excess is responsible for QTc prolongation.¹ Our goal is to look for correlation between disease severity, age, gender, electrolytes, and incidence of QTc prolongation and subsequent arrhythmia. We hope that identifying a correlation will help us stratify risk for arrhythmias among patients with AWS. Data gathered could potentially influence medical

decision making such as adjunct tests, patient disposition, and medication choices when caring for patients with AWS.

Intended Stakeholders (15 points max): *Identify those individuals, organizations, or interest groups that could be potentially impacted by this information or benefit by obtaining this information.*

Information gathered from our research may help guide physicians who care for patients with Alcohol Withdrawal Syndrome.

Description of Accomplished Work (25 points max): *Provide an overview of the work that was accomplished, including any specific methods, tools or techniques. Also, include any milestones or key accomplishments. Note charts, graphs and tables here and send as addendum with abstract form.*

A retrospective chart review was performed on patients admitted at Memorial Hermann Southwest from January 2016 to November 2016 with diagnosis of alcohol withdrawal syndrome. Patients with EKG or telemetry strips on record and without history of congenital long QT were included in the study. The recorded and measured QTc, serum electrolytes, alcohol levels, and urine drug screen were obtained. We also scanned the records for CIWA score at presentation, history of cardiac disease, and rate of Haldol use. Statistical significance was measured using T-test.

A total of 61 patients were admitted between 1/1/2016 - 11/12/2016 for alcohol withdrawal of which 58 had an EKG or telemetry strip on admission. Of the patients, 42 (72%) patients had a prolonged QTc (greater than 440 males and 460 females) and 16 (28%) patients had a normal QTc (less than 440 males and 460 females). When comparing groups with abnormal QTc vs normal QTc, the average QTc (484 msec vs. 431 msec, $p=0.001$), age (44 vs 37, $p=0.02$), CIWA score (14 vs 10, $p=0.09$), HR (103 bpm vs 96 bpm, $p=0.16$), calcium (8.3 mg/dL vs 8.7 mg/dL, $p=0.06$), potassium (3.4 mEq/L vs 3.4 mEq/L, $p=0.47$), magnesium (1.67 mg/dL vs 1.85 mg/dL, $p=0.10$), alcohol level (0.094% vs 0.070%, $p=0.25$), Haloperidol use (50% vs 38%, $p=0.20$), and prevalence of preexisting cardiac disease (7% vs 0%, $p=0.04$).

Based on our findings, we concluded that patients with AWS are at high risk for acquired QTc prolongation. We found that patients suffering from AWS and prolonged QTc were older, predominantly male, and had higher prevalence of pre-existing cardiac disease. There was no significant difference in serum electrolyte levels, Haloperidol use, CIWA score, and serum alcohol levels among patients with and without QTc prolongation suggesting other causes of QTc prolongation such as cerebral excitation.

Timeframe and Budget (20 points max): *Provide the start and end dates for the work along with any financial implications that were incurred due to the work accomplished. Note charts, graphs and tables here and send as addendum with abstract form.*

The project was completed between 11/2016 – 12/2016. There are no financial disclosures

Intended Use (25 points max): *Describe how this information could be used moving forward to impact patient care.*

Information from this project will be used to raise awareness about QTc prolongation in patients with Alcohol Withdrawal Syndrome. Therefore, physicians caring for such patients should consider obtaining a baseline EKG and serum electrolyte levels on admissions. Physicians should also strongly consider admitting patients with AWS with cardiac monitoring (telemetry) to detect potentially fatal arrhythmias. In addition, physicians should be cautious about using medications that can prolong the QT interval such as antipsychotics, antiemetics, and certain antibiotics when caring for patients with AWS.

References:

1. Andrassy G, Szabo A. What is the cause of QTc prolongation in patients with alcohol withdrawal syndromes?. *Swiss Med Wkly.* 2007 Jan 13;137(1-2):34.
2. Bär KJ, Boettger MK, Koschke M, Boettger S, Grotelüschen M, Voss A, Yeragani VK. Increased QT interval variability index in acute alcohol withdrawal. *Drug Alcohol Depend.* 2007 Jul 10;89(2-3):259-66. Epub 2007 Mar 9.
3. Cuculi F1, Kobza R, Ehmann T, Erne P. ECG changes amongst patients with alcohol withdrawal seizures and delirium tremens. *Swiss Med Wkly.* 2006 Apr 1;136(13-14):223-7.

Addendum:

Table 1. Characteristics of Patients with and without Alcohol Withdrawal Syndrome

	Patients with Normal QTc n=16 Average (SD)	Patients with Abnormal QTc n=42 Average (SD)	p value
Male	14	34	
Female	2	8	
Average age	37 (8)	44 (11)	0.02
Average QTc (msec)	431 (11)	484 (38)	0.001
Average heart rate (bpm)	96 (25)	103 (18)	0.16
Average serum Calcium (mg/dL)	8.7 (0.7)	8.3 (0.8)	0.06
Average serum Potassium (mEq/L)	3.4 (0.5)	3.4 (0.4)	0.47
Average serum Magnesium (mg/dL)	1.85 (0.3)	1.67 (0.5)	0.10
CIWA score	10 (8)	14 (6)	0.09
Rate of Haloperidol use	6/16 (38%)	21/42 (50%)	0.20
Prevalence of known cardiac disease	0	3/42 (7%)	0.04
Serum alcohol level at presentation (%)	0.070 (0.093)	0.094 (0.152)	0.25