Administration of QTc prolonging medications in emergency department patients with prolonged QTc

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QTc prolongation is associated with fatal arrhythmias including torsades de pointes (TdP) and sudden cardiac death. Many medications given in the ED prolong QTc; thus, recognition of QTc prolongation may alter medication choice.
Methods

Retrospective chart review of all ED patients who received an ECG for any reason during the 5 month period of June 2009 – October 2009 at a large volume, tertiary care center.

**Inclusion Criteria:** Patients with a computer generated QTc $\geq 460$ ms.

**Exclusion Criteria:** Bradycardia (HR $< 60$ bpm)  
Tachycardia (HR $> 100$ bpm)  
QRS $> 120$ ms  
Non-sinus or paced rhythm  
Patients who left without being seen or against medical advice

ED electronic medical records were reviewed for medications administered in the ED. QTc prolonging medications were defined as those listed by the Arizona Center for Education and Research on Therapeutics (AzCERT) and were classified as Class 1 (causes TdP), Class 2 (prolong QTc and reported to cause TdP), and Class 3 (prolong QTc and could cause TdP) as defined by AzCERT.

Statistical Analysis - Data is expressed as proportion $\pm$ 95% confidence intervals. Data was compared among groups using a Chi-squared test.
RESyOns

11,359 Patients

8957 pts (80%) Normal QTc

402 pts (20%) QTc ≥ 460 ms

1318 pts (55%) Excluded

1084 pts (45%) Eligible

615 pts (57%) QTc 460-479

274 pts (25%) QTc 480-499

195 pts (18%) QTc 500+

Excluded Patients

QRS > 120 ms 559 pts
Tachycardia 581 pts
Bradycardia 151 pts
Non-sinus rhythm 239 pts
Paced rhythm 182 pts
LWBS or AMA 27 pts

% of all pts 5.4% 2.4% 1.7%
Drug Classes Administered

### Patients Receiving Medications

- **Azithromycin**
- **Haloperidol**
- **Droperidol**
- **Amiodarone**
- **Erythromycin**
- **Sotalol**
- **Methadone**
- **Ondansetron**
- **Famotidine**
- **Fosphenytoin**
- **Octreotide**
- **Ziprasidone**
- **Risperidone**
- **Moxifloxacin**
- **Levofoxacin**
- **Ofloxacin**
- **Ciprofloxacin**
- **Diphenhydramine**
- **Bactrim**
- **Fluoxetine**
- **Fluconazole**
Conclusion

- Administration of QTc prolonging medications is common in ED patients with prolonged QTc
- Patients with the most prolonged QTc were at highest risk of receiving multiple QTc prolonging medications
- Further studies needed to determine if the administration of QTc prolonging medications in patients with prolonged QTc increases the risk of cardiac dysrhythmias
Bibliography