2018 ACMT Annual Scientific Meeting
FIT MedTox Shark Tank Research Forum

Presentation 2

Title: Measurement of QTc interval before and after inpatient azithromycin treatment

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Background: In 2013, the United States Food and Drug Administration (FDA) issued a warning regarding the use of azithromycin and the risk of fatal dysrhythmias. This was in response to a retrospective study published in 2012 by Ray, et al. in which patients who received a 5-day course of azithromycin had an increased risk of cardiovascular related death when compared to those who took amoxicillin, ciprofloxacin, or who did not take any antibiotics. Macrolides, including azithromycin, have the capacity to prolong the QTc interval on electrocardiogram (ECG) via blockade of the human ether-a- go-go- related gene (hERG) encoded rapid delayed rectifier potassium channel (I_{Kr}) of of cardiac cells. Prolongation of the QTc interval may potentially lead to torsades de pointes (TdP). To our knowledge, there are no adequately powered prospective studies evaluating ECGs before, during and after a therapeutic course inpatient azithromycin.

Aims: To evaluate for any possible QTc interval changes on ECG before and after inpatient azithromycin treatment for community acquired pneumonia (CAP).

Methods: On hospital day one, patients receiving azithromycin for CAP will have an ECG performed prior to medication administration. After a full course of azithromycin treatment, study participants will have repeat ECGs completed. A control group will include patients admitted for CAP being treated with any other antibiotic therapy. QTc intervals will be calculated for both cases and controls by blinded physicians using Bazzett's formula. Other data to be collected will include duration of treatment, patient age, past medical history, current list of medications, route of azithromycin administration (oral, parenteral or both), and basic metabolic profile. Pre-treatment and post-treatment ECGs will be compared and analyzed using analysis of covariance (ANCOVA).

Major Limitations/Questions: Limitations include: the possible loss of patients to follow-up, and the use of QTc interval as a surrogate marker to predict TdP. Continued follow-up of patient outcomes will be useful in determining if reported ECG changes are of any clinical significance.