LEVOFLOXACIN VERSUS CIPROFLOXACIN PROPHYLAXIS IN PEDIATRIC CANCER PATIENTS AT HIGH RISK OF INFECTION

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IRB Number: STUDY00001506

Describe role of Submitting/Presenting Trainee in this project (limit 150 words):

I along with Joy Bartholomew and Amy Johnson performed chart review on eligible study patients and input this data into REDcap. Following chart review, Ashley Sherman performed statistical analysis. I then wrote the following abstract with the aid of Joy Bartholomew, Dr. Johnson, Dr. Schuster, and Dr. Gamis.

Background, Objectives/Goal, Methods/Design, Results, Conclusions limited to 500 words

Background:

Patients with cancer and those undergoing chemotherapy are at risk of developing bacterial infections due to myelosuppression. Patients undergoing the most intensive chemotherapy regimens are at a higher risk for morbidity and mortality due to profound neutropenia. Antibacterial prophylaxis is given to reduce the incidence of infection in those at highest risk. Starting March 1, 2016 our institution used ciprofloxacin for antibacterial prophylaxis however recent literature, including the COG trial ACCL0934, supports using levofloxacin in certain high risk (HR) populations due to greater efficacy in reducing neutropenic fever (NF) and bacteremia. Therefore, we switched to this April 1, 2019. and used this change in our standard of care (SOC) as an opportunity to evaluate instances of NF and bacteremia between the two fluoroquinolones.

Objectives/Goal:

To determine if there is a significant difference in the incidence of NF and bacteremia in patients with malignancies at HR for infection [defined as acute myeloid leukemia (AML), relapsed acute lymphoblastic leukemia/lymphoma (ALL), infant ALL, Down Syndrome ALL, Burkitt lymphoma, and those who have undergone autologous or allogenic HSCT] in those who have received levofloxacin compared to ciprofloxacin prophylaxis.

Methods/Design:

This is a retrospective chart review study of patients at HR for infection and who received bacterial prophylaxis with levofloxacin and/or ciprofloxacin. We reviewed charts individually and collected data including patient demographics, details regarding antimicrobial prophylaxis and the incidence of NF and bacteremia.

Results

A total of 132 patients were included. Median age was 6 years, 58% were male, and 62% were White. There were 85 patients who received ciprofloxacin encompassing 13 months prior to the switch in SOC and 47 patients who received levofloxacin in the 15 months after SOC change. Observation periods were equivalent for both groups ($p=0.47$). Patients were found to have 1+ instances of NF in 82.4% of those who received ciprofloxacin and 68.1% of those who received levofloxacin ($p=0.06$). Additionally, 42.4% of patients who received ciprofloxacin experienced bacteremia whereas this occurred in 29.8% of patients who received levofloxacin ($p=0.15$). There was also a significant reduction in median number of NF episodes in the levofloxacin recipients ($p=0.04$). The impact on PICU and hospital utilization, treated related mortality, or potential rises in fungal or Clostridioides difficile infections is also reviewed.

Conclusions:

Our data shows that the use of levofloxacin more effectively prevented neutropenic fever and bacteremia than ciprofloxacin in children with high-risk malignancies.