Oral Cefdinir, a Low Bioavailable Antibiotic Compared to Alternative Oral Antibiotics for Gram Negative Bacteremia

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Abstract

To explore whether cefdinir is an appropriate alternative antibiotic agent in gram negative blood stream infections who meet criteria for oral antibiotic step-down therapy as compared to other oral antibiotics.

This is a single centered, retrospective cohort study conducted between January 2017 and October 2023 which includes adults with gram-negative bloodstream infections who were administered oral antibiotic step-down therapy. The primary outcome is the incidence of treatment failure of cefdinir compared to other oral antibiotics within 30 days of completing oral therapy. Treatment failure is a composite of 30-day all-cause mortality or 30-day recurrence in gram-negative bloodstream infection.

A total of 366 patients were included in this study, with 153 patients allocated to the cefdinir group and 213 patients to all other oral antibiotics. The most used intravenous (IV) antibiotics were ceftriaxone, piperacillin/tazobactam, cefazolin, cefepime, and levofloxacin. Ceftriaxone was the most utilized IV antibiotic. The most used oral antibiotics were cefdinir, levofloxacin, cephalexin, sulfamethoxazole/trimethoprim, and amoxicillin/clavulanate, with cefdinir being the most frequently administered oral antibiotic. The 30-day all-cause mortality was 0% for cefdinir and 0.5% for all other antibiotics, with the one death in the other antibiotics group unrelated to antibiotic treatment. The 30-day recurrence of bacteremia was 1.3% in the cefdinir group and 0.5% for all other oral antibiotics. Secondary outcomes including length of stay, length of antibiotic treatment, and 90-day development of *Clostridoides difficile* were similar between cefdinir and other oral antibiotics, with no statistically significant differences observed ($p>0.05$).

The results of this study suggest that cefdinir, despite its low bioavailability, has demonstrated comparable efficacy and safety to other oral antibiotics in the treatment of gram-negative bacteremia. This study suggests that it may be able to effectively treat gram-negative bacteremia following IV antibiotics. This is likely due to factors such as the drug's mechanism of action, ability to penetrate infected tissues, and its overall pharmacokinetic profile. It is important to note that the choice of antibiotic should be determined based on individual patient factors, such as the severity of the infection, the causative pathogen, and the source of the infection.