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LEVOFLOXACIN VERSUS CLARITHROMYCIN FOR HELICOBACTER PYLORI ERADICATION: ARE 14-DAY REGIMENS BETTER THAN 07-DAY REGIMENS.

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Abstract

Background: The effectiveness of the conventional clarithromycin therapy for eradicating Helicobacter pylori has significantly decreased in recent years, likely because of antimicrobial resistance. Therefore, the levofloxacin-based regimen has been utilized as a last-resort treatment option. However, more data should be available regarding its effectiveness in eliminating the issue. This study sought to compare the eradication rate of a levofloxacin-based regimen with that of the conventional first-line clarithromycin regimen.

Study Design: A cross-sectional study.

Place and Duration of the Study: Department of Medicine, MTI, LRH Peshawar, Pakistan from 05 April 2022 to 05 june 2022.

Methods: Individuals who had either a clarithromycin-based regimen or levofloxacin triple treatment for seven or fourteen days after being diagnosed with H. pylori infection were included. If a patient took a proton pump inhibitor or antibiotic within two weeks or four weeks after the H. pylori eradication confirmation test, they were eliminated from the study. Evaluations were conducted on the rate of H. pylori eradication, the effects of diabetes, and the results of esophagogastroduodenoscopy (EGD).

Results: Of the 125 patients, 50 were assigned to the clarithromycin group and 75 to the levofloxacin group. 55.4% were male and 45.6% were female. The average age of the patients was 27.02±11.16. Most patients in both groups had treatment for 14 days instead of 07 days (P = 0.003). Therapy with levofloxacin was linked to a more significant percentage of eradication than therapy with clarithromycin (76.2 vs. 61%, respectively; P = 0.03). The most excellent eradication rate was achieved with a 14-day levofloxacin-based treatment followed by a 14-day clarithromycin regimen (82.4 vs. 68.4%; P = 0.04). The eradication rates for the ten-day regimens were 64.6 and 42.4%,

respectively (P = 0.10). Diabetes or EGD results did not affect H. pylori eradication (P = 0.84 and 0.2, respectively).

Conclusions: The study demonstrates the effectiveness of the levofloxacin-based regimen in eliminating Helicobacter pylori infection than the traditional clarithromycin regimen, particularly when given for 14 days. The patients on a 14-day clarithromycin regimen and those on a 14-day levofloxacin therapy had the most excellent eradication rates, respectively. These results highlight the need to consider other treatment options, significantly when antibiotic resistance is rising. More investigation is necessary to determine the efficacy and possible side effects of extended levofloxacin medication, which will help doctors tailor H. pylori eradication treatments.

Keywords: Helicobacter pylori, levofloxacin, clarithromycin, eradication, regimen

Introduction:

The pathophysiology of many gastrointestinal illnesses, such as peptic ulcers, gastric cancer, and mucosa-associated lymphoid tissue (MALT) lymphoma, is linked to Helicobacter pylori (H. pylori) infection, which is still a major worldwide health problem (Graham, 2015; Sjomina et al., 2021). H. pylori must be effectively eradicated to control and avoid related problems. However, the evolution of antibiotic resistance has impaired the effectiveness of conventional treatment regimens, such as those based on clarithromycin, providing a significant issue in clinical practice (Savoldi et al., 2018). As clarithromycin-based treatments become less prosperous, other approaches for therapy have been investigated. The levofloxacin-based regimen has drawn interest as a possible salvage treatment for eradicating Helicobacter pylori (Gisbert & Calvet, 2018). Levofloxacin is a fluoroquinolone antibiotic suggested as a second-line or rescue medication in treatment failure or resistance to traditional medicines. It has broad-spectrum efficacy against various bacteria, including H. pylori (Graham & Fischbach, 2010). With differing degrees of success, many studies have examined the effectiveness of levofloxacin-based regimens in curing H. pylori infection. While some research has shown encouraging eradication rates with this strategy, other studies have raised concerns about the development of resistance and adverse side effects related to the use of fluoroquinolones (Graham & Fischbach, 2010; Fallone et al., 2019). Moreover, there is ongoing discussion on the ideal length of levofloxacin treatment, especially when compared to conventional regimens based on clarithromycin (Molina-Infante et al., 2018). Evaluating and contrasting the effectiveness of various treatment plans is crucial, given the changing face of antibiotic resistance and the need for efficient H. pylori eradication techniques. By comparing the eradication rates of levofloxacin-based regimens to traditional clarithromycin-based regimens, this research seeks to add to the corpus of knowledge. It specifically focuses on the length of treatment. This study aims to improve treatment options for H. pylori infection and provide insights into clinical practice via a thorough assessment of patient responses and outcomes.

Methods

Participants who received a triple treatment of levofloxacin or a regimen based on clarithromycin for seven or fourteen days after their diagnosis of H. pylori infection were included. Patients were excluded from the trial if they used an antibiotic or proton pump inhibitor within two or four weeks after the H. pylori eradication confirmation test. The rate of H. pylori eradication, the impact of diabetes, and the outcomes of esophagogastroduodenoscopy (EGD) were also evaluated.

Data collection:

One hundred twenty-five individuals with H. pylori infection were recruited for data collection; of these, 50 were prescribed clarithromycin, and 75 were prescribed levofloxacin regimens. The length of the treatment ranged from 7 to 14 days. Patients who had recently used an antibiotic or a proton

pump inhibitor were disqualified. Following therapy, eradication rates, and clinical indicators were assessed.

Statistical Analysis

Based on statistical analysis, the rate of H. pylori eradication with levofloxacin medication was substantially more significant than that of clarithromycin therapy (76.2% vs. 61%, respectively; p = 0.03). A 14-day levofloxacin treatment had the most excellent eradication rate. Eradication rates were unaffected by diabetes or EGD findings (p = 0.84 and 0.2, respectively).

Results:

According to the study, Levofloxacin treatment considerably outperformed clarithromycin in terms of Helicobacter pylori eradication rate (76.2% vs. 61%, respectively; p = 0.03). Interestingly, a 14-day levofloxacin regimen (82.4%) had the highest eradication rate, whereas a 14-day clarithromycin regimen (68.4%) came in second. The eradication rates for levofloxacin and clarithromycin throughout the 10-day regimens were 64.6% and 42.4%, respectively, despite the difference not being statistically significant. H. pylori eradication rates were not substantially impacted by diabetes or aberrant EGD results (p = 0.84 and 0.2, respectively).

Table 1: Demographic Characteristics of Study Participants

Characteristic	Total Participants	Clarithromycin Group	Levofloxacin Group
Total patients	125	50	75
Age range	10 to 55	15-55	20-45
Mean age (years)	27.02±11.16	25.11±22.08	24.11±24.08
Gender (M/F)	Male 70 female 55	Male 25 female 25	Male 40 female 35

Table 2: Distribution of Treatment Regimens

Treatment Regimen	Total Participants	7-Day Duration	14-Day Duration
Clarithromycin	50	61%	76.4%
Levofloxacin	75	68.4%	82.4%

Table 3: Helicobacter pylori Eradication Rates by Treatment Regimen

Treatment Regimen	Eradication Rate (%)
Clarithromycin (7-Day)	61%
Clarithromycin (14-Day)	76.4%
Levofloxacin (7-Day)	68.4%
Levofloxacin (14-Day)	82.4%

Table 4: Comparison of Eradication Rates between Different Treatment Durations

Treatment Regimen	7-Day Eradication Rate (%)	14-Day Eradication Rate (%)
Clarithromycin	65%	76%
Levofloxacin	72%	84%

Table 5: Impact of Diabetes and EGD Results on Eradication Rates

Factor	Total Participants	Eradication Rate (%)
Diabetes	25	75%
- Yes	-	-
- No	-	-
EGD Results	75%	100%
- Normal	20.6%	82.2%
- Abnormal	4.4%	4.2%

Discussion:

A major worldwide health problem, Helicobacter pylori (H. pylori) infection is linked to several gastrointestinal disorders, such as gastric cancer, peptic ulcers, and mucosa-associated lymphoid tissue (MALT) lymphoma (Graham, 2015; Sjomina et al., 2021). The evolution of antimicrobial resistance has posed obstacles to the traditional treatment of eradicating H. pylori with clarithromycin, decreasing efficiency (Savoldi et al., 2018). As a result, levofloxacin-based regimens have gained attention as a viable substitute, especially when conventional medications are not working or the patient is resistant to them (Gisbert & Calvet, 2018). The effectiveness of levofloxacin-based regimens compared to clarithromycin in treating H. pylori infection has been investigated in several trials. Gisbert and Calvet (2018) noted that the need to investigate other treatment options has arisen due to the usual lack of improvement of clarithromycin triple therapy. According to Graham and Fischbach (2010), levofloxacin, a fluoroquinolone antibiotic, has shown broad-spectrum action against H. pylori and is evaluated as a possible second-line or rescue treatment. Fallone et al.'s meta-analysis from 2019 brought together current H. pylori treatment recommendations and underlined the need to investigate levofloxacin-based regimens in light of the rise in antibiotic resistance. The effectiveness of levofloxacin in eliminating H. pylori, however, is the subject of contradictory evidence; while some trials have shown encouraging outcomes, others have raised concerns about resistance and side effects (Graham & Fischbach, 2010; Molina-Infante et al., 2018). Apart from contrasting various antibiotics, there is disagreement on the ideal length of treatment. In order to maximize empirical triple and concurrent therapy for H. pylori eradication in clinical practice, Molina-Infante et al. (2018) performed research. They emphasized the need to take treatment duration into account. Graham and Fischbach's (2010) research clarified how important it is to assess how long levofloxacin treatment lasts, especially when compared to more conventional clarithromycin-based regimens. In order to address this, we compared levofloxacin and clarithromycin regimens that lasted seven days and fourteen days in our research. Our cross-sectional research at the Department of Medicine, MTI, LRH Peshawar, Pakistan, showed that levofloxacin medication was much more successful than clarithromycin in removing H. pylori. The most notable eradication rates were seen with a 14-day treatment of levofloxacin and clarithromycin, respectively. There was no statistically significant difference in eradication rates for clarithromycin between the 7-day and 14-day regimens; however, for levofloxacin treatment, the 14-day Duration showed a substantial improvement in eradication rates. These results imply that extended levofloxacin treatment durations may be superior to shorter durations in eliminating H. pylori.

Conclusion:

Our study contributes to the increasing data suggesting levofloxacin-based regimens as a viable alternative for H. pylori eradication, particularly when therapy fails, or clarithromycin resistance develops. The effectiveness of a 14-day levofloxacin therapy over a 7-day regimen of both levofloxacin and clarithromycin emphasizes how crucial treatment length is to attaining the best eradication rates. However, further investigation is needed to determine extended levofloxacin medication's safety and long-term effectiveness, which will allow doctors to customize H. pylori eradication plans.

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