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Original Research Article

A Quasi Experimental Study of Helicobacter Pylori Eradication in Afghanistan: Comparison of Treatment Preferences for H.Pylori Eradications, Sequential Therapy Versus Hybrid Therapy

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Abstract

Methods for eliminating Helicobacter pylori infection are often chosen on the basis of strength, on the basis of regional antimicrobial patterns, local recommendations, and drug availability. Health care providers should consult their patients about any use of antibiotics prior to or exposure, and consider that information before choosing the type of treatment. The objective of this study is to determine the comparison of treatment preference's for H.pylori eradication, sequential therapy versus hybrid therapy. The study design was Quasi experimental comparative study. The place and duration of study is Shiekh Zayed university Teaching hospital Khost Afghanistan from June 2020 to March 2021. A Quasi experimental comparative study of patients visiting the Medicine Department was carried out by accessing the patient's peptic ulcer diseases and gastritis. All patients from 16 years to 80 years of age irrespective of their sex, suffering from some peptic ulcer diseases and gastritis problem were included in the study while those who presented for follow-up, Immune-compromised patients, getting anti-cancer treatment were excluded from the study. The data was analyzed by SPSS version 25. Patients with peptic ulcer disease and gastritis diagnosed with H. positive pylori were included for study. Hybrid Treatment group received amoxicillin (1 g bid) and omeprazole (20 mg bid) for 7 days followed by clarithromycin (500 mg bid), and metronidazole (400 mg tid), for the next 7 days. The Sequential Treatment group receiving omeprazole and amoxicillin for 5 days followed by omeprazole, metronidazole and clarithromycin for the next 5 days. Problems, completion rate, compliance of both group were compared. For comparison the treatment preferences CHI Square test evaluation was used. Details have been updated by SPSS version 25. Hybrid treatment show less complications as compared to sequential treatment, i.e 3:9. Among 145 patients the 156 (41.1%) were Male and 224 (58.9%) were Female. The eradication rate of *H. pylori* in peptic ulcer disease patients treated with ST and HT was 83.0% versus 86.8% (*P* = 0.021) by per protocol analysis. By modified INTENTION TO TREAT, the eradication rate was (*P* = 0.031), and by intention to treat analysis it was 67% versus 92.1%. Hybrid therapy achieves the highest rate of elimination of H.pylori as compared to sequential therapies.

Keywords: H.Pylori, Hybrid treatment, Sequential treatment, Afghanistan

INTRODUCTION

The presence of H. Pylori and gastric and peptic ulcer, stomach cancer, and gastrointestinal lymphoid tissue lymphoma are known. Further increase of H. Pylori in patients with ulcerative colitis is found in up to 80 -90% (Huang et al., 2017), especially in under developed countries such as Afghanistan. Numerous studies have

shown that the termination of H. Pylori reduces wound recurrence in patients with ulcerative colitis (Talebi, 2014).

Helicobacter pylori is probably the most common human infection estimated to infect more than 50% of the world's population (Liou et al., 2018). Ten-day concomitant treatment, with a high therapeutic value, is recommended as an alternative to first-line treatment in areas of high clarithromycin resistance including under developing countries (Tai et al., 2015).

A standard three-course treatment involving proton pump inhibitor, clarithromycin, and amoxicillin or metronidazole is the most widely used method of eliminating H. Pylori (Graham and Shiotani, 2012). However, the low rate of termination with Sequential treatment has become a concern.

Factors affecting the outcome of Sequential Treatment leading to lower completion rates than expected would be different levels, duration, etc, selected according to the strength of this concept (Chey et al, 2017). The possible explanation for better Hybrid Treatment elimination may be due to long-term treatment, systemic administration, and amoxicillin-induced lysis of the bacterial cell wall that facilitates the proliferation of macrolides in the cell, thereby improving clarithromycin efficacy in the treatment (Chang et al., 2020).

Antimicrobial resistance is the cause of H pylori infection (i.e., ongoing infection following treatment to eradicate it) (Yuan et al., 2013).

the high elimination of H. Pylori used Sequential Treatment more than Sequential treatment (O'Connor et al., 2019), but the difference was not statistically significant (O'Connor et al., 2019). Currently, Sequential treatment is a standard form of care in H. pylori treatment. H. Pylori and its completion rate was found to be 81.25% (Mahachai et al., 2018). Studies conducted recently have shown that Hybrid Treatment is very effective in eliminating H. Pylori (89.5% vs. 76.7%) compared with ST, in patients with peptic ulcer disease (Di Ciaula et al., 2017; Marcus et al., 2016).

Material AND METHODS

The study was conducted in the department of Medicine at a tertiary care hospital in Shiekh Zayed university Teaching hospital Khost Afghanistan from June 2020 to March 2021. The study was approved by the ethics committee of the institute and has been performed in accordance with the ethical standards of Shiekh Zayed university Teaching hospital Khost Afghanistan. A Quasi experimental comparative study study of patients visiting the Medicine Department was carried out by accessing the patient's peptic ulcer diseases and gastritis. All patients from 16 years to 80 years of age irrespective of their sex, suffering from some peptic ulcer diseases and gastritis problem were included in the study while those who presented for follow-up, Immune-compromised patients, getting anti-cancer treatment were excluded from the study. The data was analyzed by SPSS version 25.

Patients with peptic ulcer disease and gastritis diagnosed with H. positive pylori were separated from the Hybrid Treatment group who received amoxicillin (1 g bid) and omeprazole (20 mg bid) for 7 days followed by omeprazole (20 mg bid), clarithromycin (500 mg bid), and metronidazole (400 mg tid), amoxicillin (1 g bid), for the next 7 days with the Sequential Treatment group receiving omeprazole and amoxicillin for 5 days followed by omeprazole, metronidazole and clarithromycin, and for the next 5 days. Problems, completion rate, compliance were compared. Patients with H.pylori positivity were classified into two groups using the SNOSE procedure. One group received HT while the other group received ST. HT contains omeprazole 20 mg bid, amoxicillin 1 g bid for 7 days followed by omeprazole 20 mg bid, metronidazole 400 mg tid, amoxicillin 1 g bid, and clarithromycin 500 mg bid daily the next 7. ST contains omeprazole 20 mg bid, amoxicillin 1 g bid for 5 days followed by omeprazole 20 mg bid, clarithromycin 500 mg bid, and metronidazole 400 mg tid for the next 5 days. In all patients with peptic ulcer disease, PPI continued for 5 weeks of wound healing.

Follow-up endoscopy is performed after 1.5 months of completing a complete treatment to ensure wound healing and H. Pylori. To complete, two biopsy samples were taken individually from the corpus and abdominal antrum for these two tests. Completion was defined as a negative urease test or H histology. Pylori. For comparison of both treatment protocol's CHI Square test was applied. The data was analyzed by SPSS version 25.

RESULTS

A total of 145 patients were assessed for peptic ulcer and gastritis as shown in Table 1. Out of this, 18 were 16-20 years old, while 16 (11.0%) have ages between 21-25 years. There were 12 (8.2%) patients who 26-30 years old. while 31-35 years were 8 (5.5%) and 9 have ages between 36-40 years. 41-45 years were 11 (6.2%) and there were 7 patients who have ages 46-50 years, while19 (13.10%) patients were 51-55 years old. There were 6 (4.1%) patients (4.1%) who have ages56-60 years, while those with ages 61-65 years were 14 (9.7%). There were 18 (12.4%) patients who have ages 66-70 years, 4 (1.2 %) were between 71-75 years, while only 3 (1.1%) 76-80 years old. Figure 1

Among 145 patients the 156 (41.1%) were Male and 224 (58.9%) were Female as shown in Table 2, Figure 2. The eradication rate of *H. pylori* in peptic ulcer disease patients treated with ST and HT was 83.0% versus 86.8% ($P = 0.021$) by PER PROTOCOAL analysis. By

Table 1. Age distribution of patients

Age	Frequency	Percent
16-20 YEARS	18	12.4
21-25 YEARS	16	11.0
26-30 YEARS	12	8.2
31-35 YEARS	8	5.5
36-40 YEARS	9	9.7
41-45 YEARS	11	6.2
46-50 YEARS	7	4.8
51-55 YEARS	19	13.1
56-60 YEARS	6	4.1
61-65 YEARS	14	9.7
66-70 YEARS	18	12.4
71-75 YEARS	4	1.2
76-80 YEARS	3	1.1
Total	145	100.0

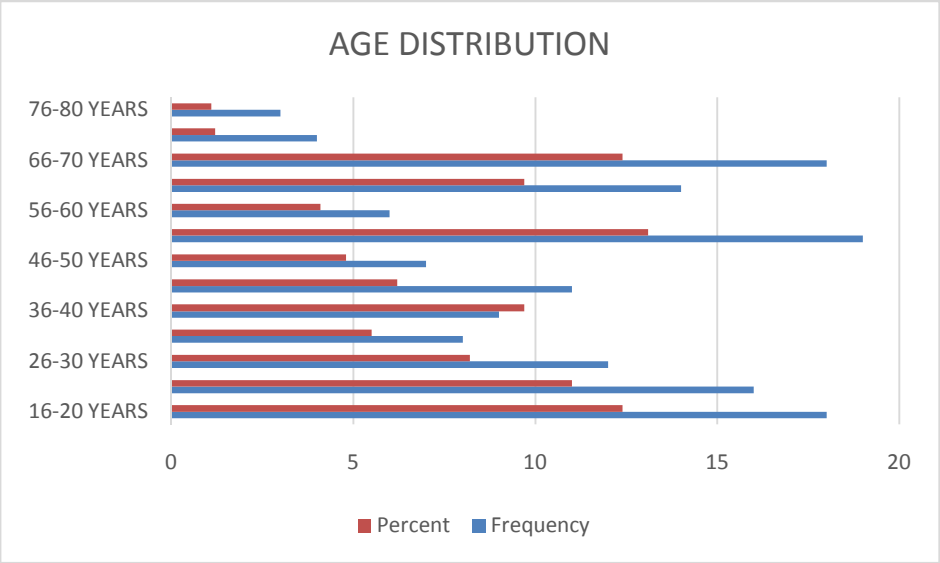

Figure 1. Age Distribution of patients

Table 2. Gender distribution of Peptic ulcer Patients

Gender	Frequency	Percent
MALE	86	59.3
FEMALE	59	40.6
Total	145	100.0

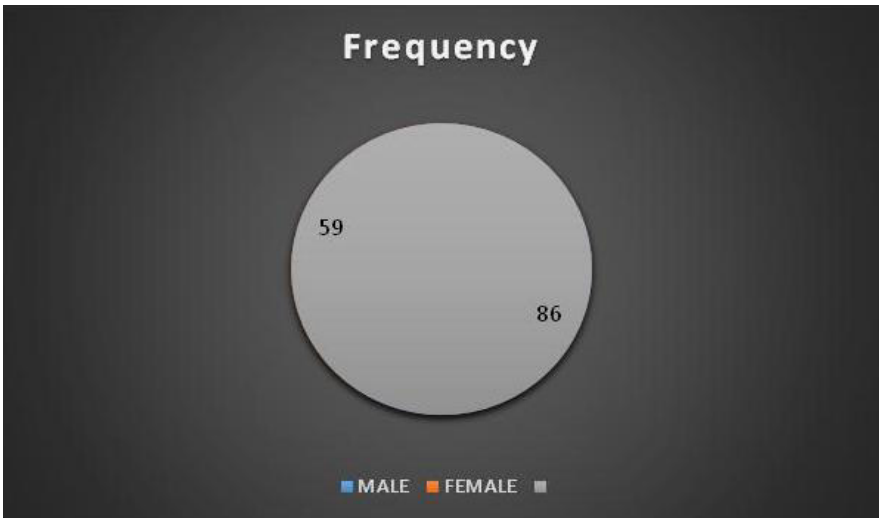

Figure 2. Gender Distribution

Table 3. Comparing the helicobacter pylori eradication rates with the sequential therapy and hybrid therapy

Type of Analysis	Sequential Treatment	Hybrid Treatment	*P value Chi squares*
Per Protocol	83.0[54 /65]	86.2[69/80]	0.021
Modified Intention To Treat	72.3[47 /65]	89.8[71/79]	0.031
Intention To Treat	67.6[45 /65]	92.1[70/76]	0.005

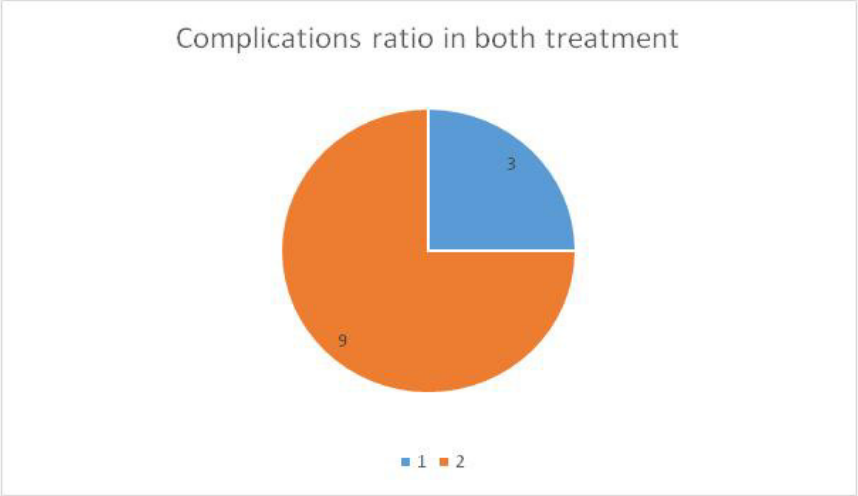

Figure 3. Hybrid treatment show less complications as compared to sequential treatment, i.e 3:9.

Table 4. Showed significant results.

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1603.020[a]	108	.000
Likelihood Ratio	1155.418	108	.000
Linear-by-Linear Association	271.344	1	.000
N of Valid Cases	380		

a. 112 cells (86.2%) have expected count less than 5. The minimum expected count is .41.

modified INTENTION TO TREAT, the eradication rate was (P = 0.031), and by intention to treat analysis it was 67% versus 92.1%. Table 3,4 and Figure 3

DISCUSSION

In under developing countries such as Afghanistan, play a vital role as the cost of treatment is stomached by the patient, and the coverage of health is not widely available to everyone (Jung et al., 2021). In the present study, the abolition of H. Pylori depends on completing the complete course of Hybrid Therapy or Sequential Treatment (Yang et al., 2021). Therefore, treatment costs were calculated that could play a significant role in the implementation of Hybrid therapy. Pylori (Howden et al., 2014). Extending the treatment time in the Hybrid Treatment group, i.e. a 14-day course with amoxicillin second phase 7-day comparison compared to that 10-day study with a small number of Sequential Treatment medications confirms the higher cost of Hybrid Treatment (Mohsina et al., 2016). Although Hybrid Treatment achieves a higher elimination rate than Sequential Treatment, this difference in cost can play an important role in the widespread acceptance and use of Hybrid Therapy (Vlăduţ et al., 2020).

In the present study, Hybrid Treatment achieved a better elimination rate compared to Sequential Treatment, especially where dual resistance to clarithromycin and metronidazole were placed. A higher rate of discontinuation of Hybrid treatment in the presence of dual resistance may be due to longer duration of Hybrid Treatment compared to Sequential Treatment (14 days versus 10 days) and amoxicillin continuation throughout low-dose antibiotics (from 0% to 1.6%) compared with other drugs that are still in treatment. Lin Hay et al. found in their study that both resistance was not found as a predictor of termination in the Sequential Treatment or Hybrid Treatment group (Lin et al., 2015).

A Similar study has shown that sdiarrhea as the most prominent outcome in both groups. Korean studies have shown bitter taste, discomfort for epigastrias, and diarrhea as the most serious side effects found in both groups. In all of these studies, side effects did not differ significantly between Hybrid Treatment and Sequential Treatment (Di Ciaula et al., 2017).

CONCLUSION

Hybrid therapy achieve the highest rate of elimination of H.pylorias compared to sequential therapies.

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