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Is There Any Cause for Concern in Patients Who Have Their First *Helicobacter* Like Organism Test Positive?

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Abstract

Aim: To assess the existing first line triple therapy in patients for possible resistance.

Materials and Methods: Retrospective assessment of all patients who had their Helicobacter pylori positive with biopsies taken for various reasons during gastroscopy followed by confirmation of eradication with 13C-urea test over a time period of one year.

Results: Out of 1548 gastroscopies where CLO (Campylobacter-like Organism test) was taken that were done over a time period of 1 year, 242 (15.63%) patients had their helicobacter-like organism test positive. Triple regime was prescribed for eradication in all of them and retesting with 13C urea breath test after six weeks reveal successful eradication in 192 (79.3%) and failed eradication in only 50 (20.7%) of the patients.

Conclusion: The first line regime for the eradication of *Helicobacter pylori* used in our hospital is efficient for the eradication and there is no any amendment that has to be made in the current regime.

Keywords: *Helicobacter pylori*; Resistance; Antibiotics; Bacteria

Introduction

Helicobacter is a spiral shaped gram-negative bacterium that colonizes the human stomach. The organism is found in the mucous layer of the stomach overlying the gastric epithelium. The mucosa colonized by *H. pylori* is invariably inflamed; this condition is referred as to as chronic superficial or non-atrophic gastritis which if untreated persist for life [1,2]. The chronic inflammatory process can lead to atrophic gastritis, which has been linked with peptic ulceration and gastric cancer, two of the most important diseases of the upper gastrointestinal tract [3-6]. The epidemiological evidence of a link between *H. pylori* infection and gastric adenocarcinoma or Mucosa Associated Lymphoid Tissue [MALT] lymphoma has resulted in classification of the organism as a group I carcinogen.

Materials and Methods

The retrospective audit was carried out at Our Lady's Hospital Navan, Co.Meath Republic of Ireland. The inclusion criteria was all the patients who underwent gastroscopy during a time period of 12 calendar months regardless of indication and had their biopsy taken from antrum of the stomach with the help of biopsy forceps and was diagnosed as positive for *H. pylori* with the help of *Helicobacter pylori* Quick Test (HPQT). The quick test for detection of *H. pylori* infection in stomach is based on the activity of the urease enzyme in biopsy specimen. The biopsy sample taken from stomach is tested immediately. The development of the color in the test gel informs whether urease is present in the biopsy sample or not [7,8]. Any patients who had their CLO positive from the above mentioned method was subsequently started on regime currently being followed in Our Lady's Hospital Navan, Navan Co. Meath followed by breath test 6 weeks later with the help of 13C urea breath test. Firstly data was collected of all the patients from the endoscopy department who had their CLO positive over a time period of one year and their details were send to Department of Microbiology in Mercy Hospital Cork, Co. Cork and the results of their outcome of 13C urea breath test was obtained. Data was entered in the Microsoft excel and further analysis to see the possible resistant and regime change was carried out with the help of IBM SPSS statistics.

Results

1548 gastroscopies were done in the department of Gastroenterology in Our Lady's Hospital Navan, Co.Meath, Ireland in the year 2017. 242 (15.63%) patients had their *Helicobacter* like organism test positive. The number of female patient who had their *Helicobacter* like organism test positive was slightly higher 136 (56.2%) as compared to male 106 (43.8%). The youngest patient in our patient that had his *Helicobacter* like organism test positive was 16 years of age with the oldest tested positive was 85 years of age. Out of 242 (15.63%) patients, when re tested after a 2 weeks course of triple regime currently being used at our hospital six weeks post completion of course 192 (79.3%) of the patients were successfully treated and was found negative by 13C Urea breath test. In contrast, only a small percentage of patients 50 (20.7%) were still positive and were started on second line regime.

Discussion

H. pylori was first discovered in the stomachs of patients with gastritis and ulcers in 1982 by Dr. Barry Marshall and Robin Warren of Perth, Western Australia. At the time, the conventional thinking was that no bacterium could live in the acid environment of the human stomach. In recognition of their discovery, Marshall and Warren were awarded the 2005 Nobel Prize in Physiology or Medicine [9]. *Helicobacter pylori* infection is the most important cause of chronic gastritis. Another mechanism that may cause gastritis and severe atrophic gastritis is the autoimmune mechanism, which can also be triggered by an *H. pylori* infection [9,10]. Although *H. pylori* infection has a worldwide distribution, its prevalence has been decreasing in some regions [11,12]. However, the wide-scale prevention of the spread of this bacteria has not yet been achieved, mainly due to the high failure rates of the eradication therapeutics that are available that have been observed in many regions of the world. In the last 5 years, studies have highlighted variations in the rates of resistance of the main antibiotics used to eradicate *H. pylori* (Figure 1) [13-15].

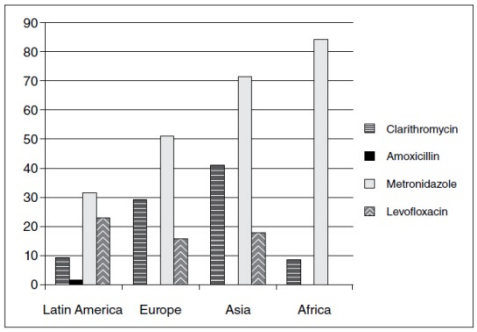

Figure 1: Geographic distribution of the mean between the resistances rates to the main antibiotics used to treat *H. pylori* in the last 5 years (2010-2015).

The use of triple therapy to treat *H. pylori* infection, which consists of proton pump inhibitors, clarithromycin, and amoxicillin or metronidazole, has become universal; however, the most recent data indicates that this combination of treatments has lost efficacy and is now only effective in a maximum of 70% of patients [16]. The current audit aims to study the pattern and percentage of resistance development by analyzing the number of negative and positive test after using first line regime that is currently being used at our hospital that were retested six weeks after completion of their course with 13C urea breathe test [17].

First line treatment as per current NICE guideline is prescribe people who test positive for *H. pylori* 7 days, twice-daily course of treatment with: a (Proton Pump Inhibitor) PPI, amoxicillin and either clarithromycin or metronidazole [18].

Prescribe people who are allergic to penicillin a 7 day, twice-daily course of treatment with: A PPI, clarithromycin, and metronidazole. Prescribe people who are allergic to penicillin and who have had previous exposure to clarithromycin a 7 day, twice-daily course of treatment with: A PPI, bismuth, metronidazole and tetracycline. Second line treatment as per current NICE guideline [19].

Prescribe people who still have symptoms after first-line eradication treatment a 7 day, twice-daily course of treatment with: A PPI and amoxicillin and either clarithromycin or metronidazole (whichever was not used first-line).

Prescribe people who have had previous exposure to clarithromycin and metronidazole 7 day, twice-daily course of treatment with: A PPI and amoxicillin and a quinolone or tetracycline. Prescribe people who are allergic to penicillin (or who have not had previous exposure to a quinolone) 7 day, twice-daily course of treatment with: a PPI and metronidazole and levofloxacin.

Prescribe people who are allergic to penicillin and who have had previous exposure to a quinolone: A PPI and bismuth and metronidazole and tetracycline. Current regime that we followed in Our Lady's Hospital Navan for the eradication of *H. pylori* in patients who have their CLO positive is:

- Triple therapy (First line) PPI B.D ("bis in die" which means it should be taken for twice daily) for 14 days, Clarithromycin 500 mg B.D for 14 days, Amoxicillin 1 g B.D for 14 days.
- Patients who are allergic to penicillin were prescribed: PPI B.D for 14 days, Clarithromycin 500 mg, Metronidazole 400 mg B.D for 14 days.

Quadruple therapy (Second line) PPI B.D for 14 days, Bismuth Salicylate 525 mg QDS for 14 days, Metronidazole 250 mg QDS for 14 days, Tetracycline 500 mg QDS for 14 days.

In our study approximately 80% of the patients were successfully treated with the current regime and shows that although resistance is developing but at a much slower rate than expected earlier. The current regime should be continued as we have shown. However, sensitivity should be checked at regular interval to determine if resistance is developing.

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