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Stop Fighting the Stomach Bacterium Helicobacter Pylori; Esophageal Reflux was not as Such before the Anti-H. Pylori Antibiotics

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Abstract The study aimed to investigate for recent etiologic reasons behind the apparent phenomena of the increasing incidence of gastro-esophageal reflux disease during latest decades. Esophageal acid reflux disease has been demonstrated lately to widely spread beyond medical limits and rules in both sexes among different age groups and social classes to the extent that it was found prevalent even among children. ***Helicobacter pylori*** colonized the stomach since an immemorial time as if both the gastric wall and the bacterium used to live together in peace harmless to each other. ***H. pylori*** has been shown to be protective against low acidity-related problems. It was suggested that ***H. pylori*** is protective against development of the esophageal acid reflux disease and eradication treatment may increase the incidence of reflux symptoms. Two equal groups of males and females; 20 children and 20 adults with clinical symptoms of acid reflux, were included in the study and investigated for existence of ***H. pylori*** while acid reflux was confirmed by endoscopy. Colon care and colon clear were employed for them for natural eradication of the abnormal-behavior ***H. pylori*** strains. Patients were allowed to use natural probiotic supplements during the early days of the study to alleviate their dyspeptic symptoms. Marked clinical improvement and disappearance of dyspeptic and acid reflux symptoms were demonstrated. The bacterium ***H. pylori*** seems to be a natural biologic bacterium; it's possible protective functions should be properly assessed before being attacked. The antibiotic violence towards ***H. pylori*** could have been the reason for the rising incidence of acid reflux disease during latest decades.

Keywords Acid reflux, Helicobacter pylori, Probiotics, senna, Vinegar

1. Introduction

Functional dyspepsia is a clinical syndrome defined as chronic or recurrent pain or discomfort in the upper abdomen of a variable origin. A general agreement exists on the irrelevant role played by ***Helicobacter pylori*** in the pathophysiology of most cases of functional dyspepsia worldwide. [1]

Diagnosis of functional dyspepsia is based on the clinical picture and detection of ***H. pylori*** serum antibodies. The following common clinical symptoms are always there; upper gastrointestinal pain, burping, gastric distension, halitosis, hyperacidity and acid reflux. Specific sensitive diagnostic tests such as urea breath and ***H. pylori*** fecal antigen tests are available; ***H. pylori*** serum antibodies, though non-specific, is usually suggested as a screening measure because of being cost effective and the matter of ***H. pylori*** dyspepsia is a typical subject of cost-effectiveness. [2, 3]

Esophageal acid reflux disease has been demonstrated lately to widely spread beyond medical limits and rules in both sexes among different age groups and social classes to the extent that its prevalence was noticed even in children. [2, 4, 5]

It is necessary to effectively deal with ***H. pylori*** dyspepsia due to its associated risk with many reasons of chronic illness like diabetes, hypertension, thyroiditis, carditis, dermatitis and nephritis through inflammatory, toxic, immune or other different reasons, [2, 5] that is in addition to the local esophageal pathologic complications consequent to the acid reflux.

The efficacy of antibiotic treatment for non-ulcer dyspepsia is controversial, different trails have given conflicting results. Overall, antibiotic eradication treatment for non-ulcer dyspepsia symptoms had no significant effect on quality of life compared with placebo and was found more costly if compared to antacid treatment. [6, 7] Bio-organic acids; lactic, formic and acetic, have been proved effective in symptomatic and clinical cure of dyspepsia. [4, 5, 8]

Eradication of clinical symptoms of ***H. pylori*** dyspepsia should be considered a clinical cure; patients who are

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rendered asymptomatic after treatment do not need further investigation or treatment, they can just return for re-assessment if they develop further symptoms. Evaluation of eradication after ***H. pylori*** treatment markedly increases cost with no clear improvement in results. [9]

2. Aim

Demonstration of recent etiologic reasons behind the apparent phenomena of increasing incidence of gastro-esophageal reflux disease during latest decades.

3. Design & Settings

A prospective study done in Jeddah/Saudi Arabia between October 2014 and October 2015.

4. Motive of the Study

It was surprising to the research team of the study to receive the news of a 9 years old Saudi girl living with her family in Switzerland to have a diagnosis of reflux disease; the family was actually seeking a second opinion medical advice. All the symptoms of this kid just totally disappeared after stopping un-necessary antibiotic use for every throat infection, complete restriction of outside-home meals and fast food in addition to intake of natural probiotic supplements. That was the real motive of this study to investigate for an underlying pathologic reason for the flare up of the esophageal acid reflux disease.

5. Patients & Methods

Two equal groups of patients with three to five months history of dyspepsia and acid reflux symptoms, 20 children between 9 and 15 years of age and 20 adults between 30-45 years old equally distributed between males and females, were randomly included in the study. The following clinical symptoms of ***H. pylori*** dyspepsia; heart burn, abdominal distension, constipation, were considered. ***H. pylori*** existence was confirmed by specific tests; urea breath test and ***H. pylori*** fecal antigen. [2] Upon inclusion in the study patients were not following any regular medications except gastric sedatives per need in order to relieve any developing dyspeptic or acid reflux symptoms. All patients underwent upper endoscopy to confirm the diagnosis of acid reflux disease. All patients were given a natural remedy of colon care and colon clear for eradication of the abnormal-behavior ***H. pylori*** strains from the stomach by vinegar therapy and the senna leaves extract purge for eradication of colonic ***H. pylori*** strains. The vinegar therapy consisted of vinegar-mixed salad to be taken with principal meals once or twice per day, 3-5 days every week. [10] Patients were requested to avoid antibiotics unless absolutely indicated, refrain completely from gastric sedatives including anti-urease activity and to restrict outside-home meals during the period of the study. They were allowed during early days of the study to have natural probiotic supplements in the form of acid butter milk in order to compensate for the protective natural bacterial function whenever they feel need to relieve any dyspeptic symptoms.

Patients were followed up strictly every week for recurrence of acid reflux symptoms for one month, then twice monthly for further three months and every 2 months for the remaining total follow up of 12 months. Patients were requested to return to the natural remedy of colon care/colon clear and the intake of natural probiotics (acid butter milk) if they develop gastric symptoms.

6. Results

More than 85% of the screened sample of volunteers for the purpose of their inclusion in the study were found to have an element of dyspepsia or colonic upsets. ***H. pylori*** fecal antigen test was proved positive in 90% of patients; 19 children and 17 adults. Urea breath test was weakly positive in 25% of patients; 3 children and 7 adults. A total of 28 patients (70%); 17 children and 11 adults were confirmed positive for acid reflux by endoscopy. 7 adults were having endoscopic signs of mild esophagitis. Eradication of the abnormal ***H. pylori*** strains from the colon was confirmed in all patients by ***H. pylori*** fecal antigen test. Urea breath test was rendered negative in all patients after three days of vinegar therapy. Dyspeptic and acid reflux symptoms disappeared in all patients in less than one week without using any medications and the natural probiotic supplements were discontinued without development of any further discomfort or symptoms.

Recurrence did not show during the first 6 month of follow up, minor recurrence following some query meals in both the younger (9%) and the older group (22%) between the 6^{th} and the 8^{th} months in the form of mild recurrent or constant epigastric discomfort which was readily cured in few days by intake of vinegar therapy and acid butter milk.

7. Ethical Considerations

An informed signed consent was taken from all patients, they were made aware about safety of the natural colon clear and vinegar therapy, they were free to quit the study whenever they like. They were allowed to lead their own style of life except extreme carefulness towards outside-home meals, antibiotics unless absolutely indicated and avoidance of gastric sedatives including anti-ureas activity. The research proposal was approved and the study followed the rules of the Research Ethics Committee.

8. Discussion

It was not surprising while screening patients for symptoms of dyspepsia before their inclusion in the study to have a finding indicating the possibility that almost all the population living in a developing country lifestyle are suffering from dyspeptic symptoms and colonic troubles; this finding actually conforms with the current social and health standards in these countries. [2, 10]

Migration of ***H. pylori*** to the colon is a fact that has been reported in literature; ***H. pylori*** could migrate or get forced to migrate to the colon under the influence of antibiotic violence. [2, 4, 5, 11] Antibiotics are seldom effective against extra-gastric ***H. pylori*** strains; [12] It was suggested that antibiotics could force the stomach bacterium to migrate to the colon rather than eradicating it from the stomach. [4, 5, 13] This suggestion is supported by the finding that pseudo-membranous toxic colitis and toxic megacolon have developed after ***H. pylori*** antibiotic eradication therapy. [14, 15] It seems that antibiotics do not have any influence against ***H. pylori*** except forcing it to migrate from the stomach where risks and complications actually begin. [4, 5] ***H. pylori*** in the colon will continue producing ammonia for a reason or no reason leading to accumulation of profuse toxic amounts of ammonia, unopposed or buffered by any acidity, carrying the risk of various adverse toxic effects to the body. Ammonia is smooth muscle tonic, in profuse concentrations it is strongly spastic leading to multiple colonic spasms interfering in such way with the integral colonic function causing recurrent colonic upsets and colonic re-absorptive error of fluids, salts and toxins. [10, 16]

Survival of ***H. pylori*** inside the stomach is achieved through various defense mechanisms. The bacterium resides and colonizes under the layer of mucus overlying gastric mucosa, although gastric acid plays an important role in the protection against many enteric organisms and ***H. pylori*** can be readily killed by a brief exposure to diluted hydrochloric acid solutions, the organism's intense urease activity produces ammonia from organic urea in gastric juice in such amounts that can buffer the pH of gastric acid. The gastric mucus layer is relatively thick, alkaline and viscous allowing for ***H. pylori*** pH gradients from approximately pH 2 close to the gastric lumen until pH 7.4 immediately adjacent to the mucosa. The high motility of ***H. pylori*** via its flagellae even in a very viscous mucus allows the organism to swim and migrate freely to reach the most favorable pH gradient. Accordingly, elaboration of ammonia from endogenous urea that buffers gastric acid in the immediate vicinity of the bacterium constitutes an essential mechanism for survival of ***H. pylori*** in its gastric habitat. [17-21]

Existence of ammonia in the stomach was described as early as 1852, in 1930s it was reported that ammonia in the stomach is due to a urease activity and it was further reported in 1960s that gastric urease activity is not a property of the stomach but is of a bacterial origin. Early in 1980s it was emphasized that ammonia of the stomach does not exist in toxic concentrations but in residual amounts and it is even useful. Amazingly; ***H. pylori*** might not be just a bad bug in all instances as complete eradication of the bacterium could introduce new problems due to low gastric acidity. ***H. pylori*** has been shown to be protective against low pH-related carcinomas involving the cardia of the stomach. [2] Data from observational studies have proposed a protective role of ***H. pylori*** against the development of gastro-esophageal reflux disease and suggested that ***H. pylori*** eradication treatment may increase the incidence of reflux symptoms. It was observed that prevalence of ***H. pylori*** has been decreasing in developed countries while the prevalence of gastro-esophageal reflux disease and esophageal adenocarcinoma have been increasing since 1930s. [22-25] Ammonia, being smooth muscle tonic, it maintains the integrity of the gastro-esophageal sphincter protecting against acid reflux. [10, 16]

A normal-behavior ***H. pylori*** never exists inside the gastric lumen during presence of food, it remains hidden under the gastric mucus layer until travel of food from the stomach and drop of gastric acid to a residual level where the bacterium moves to pick up its nutrition from remnants of food within gastric lumen in a blink like momentum protected with a shield of ammonia around its immediate vicinity before returning back to its natural secure habitat under the gastric mucus layer leaving behind it a residual ammonia scattered in the gastric lumen. This scattered residual ammonia excites the gastric wall to secrete its acid to buffer the ammonia; ***H. pylori*** in this way prevents absence of the defensive role of the gastric acid during absence of food and serving in turn to guard against low acidity-related complications at the cardiac end of the stomach. Ammonia is smooth muscle tonic; therefore, residual gastric ammonia resulting from the flash moves of ***H. pylori*** to seek its nutrition helps to maintain the integrity of the gastro-esophageal tone protecting accordingly from incidents of acid reflux. [2, 4, 5, 10] Hence; this biological balance between ammonia of ***H. pylori*** and gastric acid is constant life-long round the clock ensuring at same time both the protective function of residual ammonia towards acid reflux and the gastric acid defensive function.

As the use of antibiotics in children is more than in adults due to the frequent incidence of throat and upper respiratory troubles, migration of ***H. pylori*** to the colon was manifested in children more than the adults of this study as demonstrated by the less incidence of positive urea breath test, higher incidence of positive ***H. pylori*** fecal antigen test and higher incidence of acid reflux confirmed by endoscopy.

Colon clear employing the senna leaves extract was done in this study to eradicate the ***H. pylori*** strains migrated to the colon in order to correct the resulting colonic troubles. Migrated colonic ***H. pylori*** strains could remain inside the colon for life unless eradicated as antibiotics are seldom effective against extra-gastric ***H. pylori*** strains, [2, 12] and there is no available effective measure to eradicate ***H. pylori*** from the colon except the senna purge. The senna purge kills and expels all colonic ***H. pylori*** strains as it was found that three-times dilution of the standard senna extract has got a

direct lethal effect on ***H. pylori*** culture media. [10, 13, 26, 27]

Colon care which consists of vinegar-mixed salad to be taken with principal meals was meant to get rid of the abnormal-behavior gastric ***H. pylori*** strains that exists in gastric lumen during presence of food leading to agonizing gastric upsets due to a vicious circling action between ammonia of ***H. pylori*** and the gastric acid. It was also aimed to eradicate these abnormal-behavior strains before their migration to the colon. [5, 10] The complex nutritional requirements of ***H. pylori*** are achieved via its unique energy metabolism which exhibits characteristic dislocation sites. These sites can be considered as targets that should attract any attempts to fight the organism. [28, 29] As acetate is demonstrated among the metabolic pathway of ***H. pylori***; therefore, dietary vinegar (acetic acid 6%) could lead to inhibition of the enzyme pyruvate dehydrogenase complex (PDC). [30, 31] This suggestion is supported by the fact that the major routes of generation of energy for ***H. pylori*** are via pyruvate and the activity of the enzyme PDC is controlled by the rules of product inhibition and feedback regulation. [32, 33] For the same reason, addition of pyruvate to different solid culture media was found to inhibit bacterial growth and this inhibition was attributed to accumulation of acetate and formate; [34] therefore, addition of acetate in the atmosphere around ***H. pylori*** could compromise the energy metabolism of ***H. pylori*** or interfere with its respiratory chain metabolism. As the matter includes interference with the energy metabolism and the respiratory chain metabolism of ***H. pylori***; an immediate paralysis of the bacterium could be considered leading to immediate eradication of the abnormal-behavior gastric ***H. pylori*** strains. Twenty-times dilution of dietary white vinegar 6% was demonstrated to include direct lethal effect on ***H. pylori*** in culture media. [10, 13]

The purpose of restriction of outside-home meals during the study is for decreasing the chance for developing abnormal-behavior ***H. pylori*** strains via meals while restriction of antibiotics and gastric sedatives including anti-urease activity was meant to avoid forcing the developed normal-behavior ***H. pylori*** strains to migrate outside the stomach. [2, 4, 5, 10]

Natural probiotics play an important role in human health by promoting nutrient supply, preventing pathogen colonization, shaping and maintaining normal mucosal immunity. Natural gut bacteria have been recently appreciated as having a true symbiotic relationship with the host. Within this large pool of bacteria, probiotic supplements containing lactic acid-producing bacteria (LAPB) like Lactobacilli have been claimed to have a variety of beneficial effects on human health. LAPB are facultative anaerobic organisms that grow in abundance in the digestive tract of vertebrate animals. LAPB also represent some of the most commonly used probiotic bacteria which are extensively used in food products. LAPB generate large amounts of the healthy bio-organic lactic acid that helps to improve dyspeptic symptoms. [35-37] Natural probiotic supplements were used in this study in the form of acid butter milk for a limited period in order to improve symptoms of dyspepsia until the natural ***H. pylori*** strains are naturally developed, replacing the function of maintaining the integrity of the gastro-esophageal tone and protecting from acid reflux. The acid butter milk supplements were discontinued within ten days of the study.

Revision of the records of this research study investigators revealed the reports of a group of 37 patients who were following antacid medications for the relief of acid reflux symptoms for 3-5 months, they experienced just temporary relief of symptoms for a short duration after intake of medications, therefore; they shifted to take proton pump inhibitors but they realized after 6 months that their life became totally dependent upon these acid inhibitor medications without permanent real cure of acid reflux.

Disappearance of symptoms of dyspepsia and acid reflux was considered in this study a clinical cure with no need for further confirmation by endoscopy as ***H. pylori*** is a typical subject of cost-effectiveness and evaluation of eradication after ***H. pylori*** treatment markedly increases cost with no clear improvement in results. [9] Recurrence of acid reflux did not show in this study during the first 6 months of follow up possibly because of carefulness towards outside-home meals while most recurrences following later were related to the intake of some query outside-home meals.

H. pylori colonized the stomach since an immemorial time; [2] as if both the gastric wall and the bacterium used to live together in peace harmless to each other. Existence of ***H. pylori*** in the stomach is lifelong unless eradicated but recurrence of ***H. pylori*** in the stomach is typically unavoidable. [16, 38, 39] In children, existence of ***H. pylori*** starts trans-familial early during childhood and the ***H. pylori*** strain is often identical with that of parents. Interestingly, children maintain the same strain genotype even after moving to a different environment. [6] In children, elimination of ***H. pylori*** is probably common due to the frequent antibiotic use for other different reasons; yet, trans-familial recurrence in children is still hardly avoidable. [6, 39] It seems that ***H. pylori*** is a natural inhabitant bacterium of the stomach as evidenced by the scientific facts of its existence since an immemorial time, having huge biological talents for survival inside the strongly acidic gastric lumen, its recurrence in the stomach is unavoidable and its biological benefits of protection towards low acidity-related complications at the cardia of the stomach and guard against acid reflux disease.

9. Conclusions

Frequency of acid reflux disease during late decades among children and adults might indicate the existence of a missed underlying pathologic environmental error. The bacterium ***H. pylori*** is leading in the stomach the behavior of natural useful bacteria of the gut as it protects against the acid reflux through the smooth muscle tonic effect of its residual ammonia. Its biological functions deserve to be

properly assessed and the bacterium should be saved until accurate and adequate re-determination of the sequels of violence towards it is made up. Experimental and observational findings support the concept that the antibiotic violence towards ***H. pylori*** could have been the major reason for the rising incidence of the acid reflux disease during latest decades. Colon/care and colon/clear together with additional probiotic supplements per need might constitute the fundamental solution for the challenge of acid reflux disease.

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