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A Pathologic Etiology for the Rising World Challenge of Obesity and Dyslipidemia during Latest Three Decades

Abdullah M. Nasrat[1,*], Rand M. Nasrat[2], Mohammad M. Nasrat[2]

[1]Department of Surgery, Zytona Therapeutic Center, Jeddah, KSA
[2]Department of Internal Medicine, Helwan General Hospital, Helwan, Egypt

Abstract The study aimed to demonstrate the frequency of existence of the colonic ***Helicobacter pylori*** strains among a sample of overweight/obese and dyslipidemic individuals and illustration of the pathologic role of these colonic ***H. pylori*** strains in leading to obesity and dyslipidemia. Prevalence of obesity and dyslipidemia constitutes a world health challenge. The latest decades demonstrated flare up of abnormal-existence/behavior colonic ***H. pylori*** strains and rising figures of disease spread related to these colonic ***H. pylori*** strains. The association of overweight/obesity with ***H. pylori*** is controversial in different studies while it has been confirmed that colonic ***H. pylori*** strains could interfere with fat turnover and lipid-lipoprotein metabolism. ***H. pylori*** was found significantly associated with dyslipidemia; ***H. pylori*** can induce dyslipidemia by means of increasing triglyceride and decreasing HDL-cholesterol, hence; increasing the risk of atherosclerosis. Existence of colonic ***H. pylori*** strains was investigated among 100 overweight/obese male and female individuals employing a specific test, the lipid profile was also assessed among those individuals. Natural measures for eradication of ***H. pylori*** were employed for selected 30 volunteers with dyslipidemia and positive colonic ***H. pylori*** strains in order to assess effect of ***H. pylori*** eradication on obesity and dyslipidemia. Marked reduction of body weight with improvement of body mass index and correction of dyslipidemia were demonstrated in 27 patients (90%) within three-five months of employing the natural measures. The bacterium ***H. pylori*** colonic strains seem to have a significant role in the spread of obesity and dyslipidemia during latest decades. Therefore; eradication of these abnormal-behavior colonic ***H. pylori*** strains could be definitively effective in the control of the rising figures of overweight/obesity and dyslipidmia.

Keywords Dyslipidemia, Helicobacter pylori, Obesity, Overweight, Senna, Vinegar

1. Introduction

Obesity constitutes a serious global health concern reaching pandemic prevalence rates. Obesity is a significant risk factor for many diseases and is considered an economic complicating factor, it is becoming a common health problem in the United States. Obesity has got its impact on the short/long-term survival and major adverse cardiovascular events; obese patients have lower free survival because of increased incidence of congestive heart failure. [1-3]

Childhood obesity prevalence has tripled over the last three decades. Pediatric obesity has got important implications on both child and adult health. It is an economic burden in the United States as well. Professionals should find ways to involve children in various sports settings and policies as well as helping obese children to engage more in sports. [4, 5]

* Corresponding author:
abdullahnasrat@hotmail.com (Abdullah M. Nasrat)
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Cardiovascular disease (CVD) has become a concerning health problem because of its increasing prevalence. CVD remains the most common health problem in developed countries and the residual risk after implementing all the current therapies is still high. Changing demographics and lifestyles over the past few decades have resulted in an epidemic of the atherogenic dyslipidemia complex. [6, 7] In most clinical trials it was found that the reduction of LDL-cholesterol (LDL-C) reduces the incidence of cardiovascular events by approximately one third meaning that a sizeable "residual risk" remains. In the last decade, the importance of HDL-cholesterol (HDL-C) was overvalued while the importance of triglycerides (TG) has been underestimated. [8]

2. Aim

Demonstration of the frequency of existence of the colonic strains of the bacterium ***Helicobacter pylori*** among an overweight/obese and dyslipidemic sample of population and illustration of the pathologic role of these colonic ***H. pylori*** strains in leading to obesity and dyslipidemia.

3. Design & Settings

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

4. Patients & Methods

A group of 100 overweight/obese individuals who were equally distributed between males and females within the age range of 30-45 years were investigated for the existence of colonic ***H. pylori*** strains employing ***H. pylori*** fecal antigen test. [9] The ***H. pylori*** fecal antigen test was obtained from Acon Laboratory, USA, Batch No. HP8040008. They were also investigated for serum levels of cholesterol and TG. A group of 30 volunteers with dyslipidemia and positive for colonic ***H. poylri*** strains were selected from the first group so that males are equal to females. They followed a natural measure for eradication of ***H. pylori*** from the colon which consisted of the senna leaves extract purge and vinegar therapy. The senna purge was employed every month for three successive times to ensure eradication of the colonic ***H. pylori*** strains while vinegar therapy was used to protect from recurrence of the abnormal-behavior ***H. pylori*** strains via buffering the bacterium ingested with any query meal. Vinegar therapy consisted of a vinegar-mixed salad with principal meals, once or twice daily/five days every week continued for five months or until a satisfactory target as concerns overweight/obesity and dyslipidemia is achieved; vinegar is dietary white vinegar 6%. Patients were advised to refrain from any gastric sedative medications particularly those including anti-urease activity in order to avoid forcing normal-behavior ***H. pylori*** strains to escape to the colon. [10] Patients were not following any particular diet regimen or slimming measures and they were allowed to follow their own style of life except absolute restriction of outside-home meals to avoid recurrence of colonic ***H. pylori*** strains.

5. Results

93 patients (93%), 52 males and 41 females, were found positive for colonic ***H. pylori*** strains. The weight of the 30 patients selected to follow the natural therapy was ranging between 105-123 KG with body mass index (BMI) above 25. The level of their serum TG ranged between 171-199 mg/dl, total serum cholesterol range was between 221-268 mg/dl, serum HDL-C ranged between 41-44mg/dl and LDL-C was ranging between 180-224 mg/dl. All patients became negative for colonic ***H. pylori*** strains after the senna purge as confirmed by the ***H. pylori*** fecal antigen test. Marked slimming was demonstrated in 27 patients (90%) within 3-5 months with improvement of their BMI and a range of body weight of 83-92 KG. Slimming was frankly characterized by stretched skin without any redundancy as the loss of weight occurred just gradual. Serum TG dropped to a normal range between 106-144 mg/dl. Total serum cholesterol improved to a range of 154-176 mg/dl with HDL-C ranging between 56-61 mg/dl and a range of LDL-C between 98-115 mg/dl.

6. Ethical Considerations

An informed signed consent was taken from all patients, they were made aware about safety of the natural vinegar therapy and senna extract purge, they were free to quit the study whenever they like. The research proposal was approved and the study followed the rules of the Research Ethics Committee.

7. Discussion

The latest reports in literature demonstrated a definite flare up of many medical challenges in a dramatic way through different reasons. Some of these diseases such as diabetes and hypertension which were once considered diseases of the developed world have become a worldwide pandemic resembling an ocean wave flooding the whole world with its two thirds occupying the developing side of the globe. Diabetes and hypertension, diseases of rich, are now flaring up as a challenge among poor population. Some reports consider disease spread in developing countries a consequence of progress and lifestyle change. [9, 11-15] In spite of that, traditional risk rules do not appear fully sufficient to explain the rising figures of spread of chronic illness in those countries. Prevalence of the challenge of obesity and dyslipidemia has been demonstrated worldwide during the latest few decades. [4, 7, 8] Obesity and diabetes in the developing world constitute an actual growing challenge. [16]

The latest three decades confirm the prevalence of abnormal-existence/behavior colonic ***H. pylori*** strains with flare up of a lot of medical challenges related to these strains through immune, inflammatory, toxic or different unknown reasons. [9, 10] Obesity has got an epidemic growth but the association of overweight/obesity with ***H. pylori*** is controversial in different studies, some studies have reported that ***H. pylori*** is not associated with overweight/obesity while other studies emphasized that this association is undefined or there is inverse correlation between ***H. pylori*** colonization and overweight. [17-19] Whereas some studies have considered that ***H. pylori*** increases the prevalence of metabolic syndrome and mentioned that existence of ***H. pylori*** and vitamin D deficiency could be predictors of metabolic syndrome. [20, 21] Surgeons doing gastric interventions for treatment of obesity has found positive existence of ***H. pylori*** in more than 50% of their patients and they advised that ***H. pylori*** should be eradicated in order to achieve successful reduction of weight after surgery. [22, 23]

Although epidemiologic and clinical data suggest that ***H. pylori*** is a contributing factor in the progression of atherosclerosis, specific CVD risk factors which are associated with ***H. pylori*** remain unclear. However, ***H.***

pylori was found significantly and independently associated with dyslipidemia. ***H. pylori*** has been also found associated significantly with low serum levels of HDL-C. It has been reported that ***H. pylori*** can induce dyslipidemia which may result in the development of coronary heart disease by increasing TG and decreasing HDL-C, accordingly increasing the risk of atherosclerosis. [24-26]

H. pylori colonized the stomach since an immemorial time as if both the stomach wall and the bacterium used to live together in peace harmless to each other. ***H. pylori*** could migrate or get forced to migrate to the colon under the influence of antibiotic violence to become foreign structure to the tissues beyond the stomach as the bacterium is recognized only to the gastric wall tissues. ***H. pylori*** outside the stomach is rendered a poison itself by inducing auto-immunity and also a source of poison by leading to inflammatory reactions and tissue pathology. Colonic ***H. pylori*** strains will continue producing ammonia for a reason or no reason, un-opposed or buffered by any acidity, leading to accumulation of profuse toxic amounts of ammonia that might cause different adverse toxic sequels in the body. [9, 10] Different reports in literature have confirmed the association of cytotoxin-associated gene A (cagA) with colonic ***H. pylori*** strains and emphasized that cagA of ***H. pylori*** encodes a highly immunogenic and virulence-associated protein; the presence of this virulent gene in the body could affect the clinical outcome in many patients. [27, 28]

It has been confirmed that colonic ***H. pylori*** strains could interfere with lipid and glucose metabolism. The most plausible hypothesis is emphasizing that alterations in fat turnover, interference with lipid-lipoprotein metabolism and glucose metabolism may exist due to low-grade systemic inflammatory situations causing increased insulin resistance. In spite of a century old hypothesis that infection is a known cause for atherosclerosis, this is an issue which is still debatable. ***H. pylori*** can induce dyslipidemia by increasing TG and decreasing HDL-C, accordingly increasing the risk for developing atherosclerosis. While ***H. pylori*** does not essentially enter the circulation, these remote manifestations beyond the stomach are probably mediated by the cytokines and acute phase proteins produced by the inflamed mucosa. The role of extra-gastric ***H. pylori*** cytotoxins and associated chronic inflammatory situations with consequent increase of insulin resistance creating atherogenic lipid profile and increased body mass index have been confirmed in further studies. [26, 29-31]

The association of overweight/obesity and dyslipidemia with colonic ***H. pylori*** strains in this study constituted a considerable figure (93%). The reason that some studies did not report a similar association was due to the finding that these studies were only searching for the existence of the gastric ***H. pylori*** strains employing urea breath test or endoscopic gastro-duodenal biopsy missing to assess the percentage of ***H. pylori*** in the colon. [17-19, 32, 33] Gastric ***H. pylori*** strains, so long within the stomach, do not induce antigenicity as the bacterium is being recognized to the stomach wall tissues. More-over, these gastric strains of the bacterium even including abnormal behavior within the stomach do not lead to accumulation of toxic amounts of ammonia and therefore are not supposed to cause systemic inflammatory sequels beyond the stomach. [9, 10] Whereas existence of ***H. pylori*** strains in the colon among patients of this study was confirmed by the ***H. pylori*** fecal antigen test and it is further confirmed by the stool picture. The stool was in the form of solid hard dried small pieces in 87 patients (87%) denoting presence of multiple colonic spasms while it was small amount soft in 13 patients (13%) which is the picture of retention with overflow indicating a loaded colon due to a high rectal severe spasm caused by the excess ammonia as ammonia is smooth muscle tonic but its accumulation is spastic for the colon. [27] The multiple colonic spasms were demonstrated by colonoscopy while the high rectal spasm was detected by sigmoidoscopy.

The principle of employing the senna extract purge in the current study is eradication of the colonic ***H. pylori*** strains which are the suggested main pathogenesis of compromising the lipid metabolism among patients of the study. The senna leaves extract purge was demonstrated as the typical natural measure for definitive eradication of ***H. pylori*** from the colon. Three-times dilution of the standard senna leaves extract was found directly lethal to ***H. pylori*** strains on culture media. [34-36] Whereas employment of the vinegar therapy was meant to protect from recurrence of any abnormal-behavior ***H. pylori*** strains via buffering any query food intake. The complex nutritional requirements of ***H. pylori*** are achieved via its unique energy metabolism as the major routes of generation of energy for ***H. pylori*** are via pyruvate while the activity of the pyruvate dehydrogenase complex is controlled by the rules of product inhibition and feedback regulation. [37, 38] As acetate is demonstrated as an end product among the metabolic pathway of ***H. pylori***; [39, 40] therefore, addition of acetic acid to the atmosphere around ***H. pylori*** could compromise the energy metabolism of ***H. pylori*** or interfere with the organism's respiratory chain metabolism. So long the matter includes interference with the energy metabolism and respiratory chain metabolism of ***H. pylori***, an immediate dramatic lethal effect on the bacterium should be considered. Twenty times-dilution of dietary white vinegar 6% was found directly lethal to ***H. pylori*** strains on culture media. [35]

Revision of the clinical records of the research team of this study in order to compare different ways for management of overweight/obesity and dyslipidemia associated with colonic ***H. pylori*** strains, it revealed that combination of the senna extract purge and vinegar therapy was superior to employment of the senna purge alone or the vinegar therapy alone. The purge regimen needs seven months to approach the target results as concerns cure of obesity and dyslipidemia while the vinegar therapy requires nine months to reach the same target whereas combination of the senna purge monthly for three successive months together with vinegar therapy for five months from the start of the combination therapy is sufficient to achieve ideal results.

Further revision of several series for the research team of this study which were done for the purpose of demonstrating the existence of ***H. pylori*** in the colon among dyslipidemic slim individuals. It was revealed that existence of colonic ***H. pylori*** strains was associated with dyslipidemia even among slim individuals in a frequency of 82-90% which confirms the role ***H. pylori*** in leading to dyslipidemia regardless of the body weight of the person. Some investigators confirmed the influence of ***H. pylori*** in leading to atherosclerosis and CVD via different mechanisms including interference with fat turnover, lipid-lipoprotein metabolism, glucose metabolism and increased insulin resistance, [3, 26, 29, 31] while other workers faced controversy or uncertainty as regards the influence of ***H. pylori*** in CVD as they did not find improvement of the atherogenic lipid profile after eradication of ***H. pylori***. [24, 32, 41] The reason for that controversy could be most probably due to the employment of antibiotics for ***H. pylori*** eradication instead of natural measures, this would further force the bacterium to migrate towards the colon. Accordingly, dyslipidemia is not expected to improve, on the contrary it might even go worse.

8. Conclusions

Colonic ***H. pylori*** strains could be significantly responsible for the spreading phenomena of obesity and dyslipidemia during latest decades. Eradication of the abnormal-existence colonic ***H. pylori*** strains could be a definitive and effective measure for controlling the phenomena of overweight/obesity and dyslipidemia worldwide.

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