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THE CORRELATION BETWEEN THE COVID-19 INFECTIONS AND SUSCEPTIBILITY TO INFECTION WITH HELICOBACTER PYLORI IN IRAQI PATIENTS

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Abstract:

Helicobacter pylori (H. pylori) is bacterium with Gram negative stain test It causes gastritis and intestinal ulcers, and also causes adenocarcinoma of lymphocytes attached to the mucous membrane of the stomach. These bacteria also cause iron deficiency, which causes anemia, as well as a lack of blood platelets, in addition to a lack of vitamin B12 .
In this study, we discuss and evaluate the pathogenesis caused by these bacteria to the respiratory system.
Patient previously infected with SARS – CoV2 undergo tests for the possibility of infection with helicobacter pylori and study the possible relationship between the infection with corona virus and helicobacter pylori

Keywords: Helicobacter pylori

INTRODUCTION

Corona virus SARS-CoV2 has been first diagnosed In the last week of December 2019, after discovering a pyrexia symptoms of unknown origin that accompined with symptoms of lower respiratory tract infection in people from Wuhan city – Hubei – China. Corona virus are species of coronaviridea family that member of this family represent a causative agents of respiratory tract infection(1). Corona virus first identified as virus of respiratory tract in 1965 then following years many outbreaks caused by member of this family specially in 2003 when first outbreak of SARS- CoV has been announced by the WHO, which improved that the SARS – CoV as a responsible agent for the infection of lower respiratory tract infection and this virus is transferred from the bird to human following the outbreak the othe endemic of MERS-CoV that transferred from the camel to human in the middle east, Corona viruses constitute the subfamily of orthocoronaviridea that belong to coronaviridae, order Nidovirales (2). Beta corona virus family encompass many species among them three, SARS-CoV, along wih MERS-CoV, in addition to SARS-CoV-2, causes a most fatal respiratory tract disease which can lead to death approximately of 10%, 37%, and 5%, respectively, Corona virus is enveloped virus with single positive RNA strand enclosed in helical nucleocapsid (3).
Corona virus transmitted by respiratory tract route when the suspected person cough or sneeze which cause the droplet from the infected person is transmitted by air to the close person who inhaled these droplet or aerosols then transmitted through the respiratory tract to the lungs and other lower respiratory tract (4). Nearly 1000 infectious virions of SAR-CoV2 may be sufficient to cause the new infection during human-to-human transmission (5). Mechanism of infection initiated when the S protein of envelope bind to host cell receptor Angiotensin Converting Enzyme 2 (ACE2) which mediated the viral access that led to the TM protease serine 2 which abbreviated as (TMPRSS2) on the host cell membrane to promote the viral entry (6).

HELICOBACTER PYLORI

The bacterium Helicobacter pylori is a Gram-negative microaerophilic heliux formed bacterium encompassing member of normal flora found only in stomach with asymptomatic presence in 50% of population, Helicobacter pylori prefer to live in acidic conditions like a gastric fluid of stomach, first improved by the Marshall and Warren in 1988 whose awarded a nobel prize for their discover, this bacteria responsible for the gastro-duodenal ulcer, chronic gastritis and may developed to gastric cancer and adenocarcinoma (7).
Transmission of H. pylori mainly by saliva or by fecal oral route specially in developing countries due to many cases specially the contamination of food or water along with crowded condition that a combine with poor hygiene is (8).

CORRELATION BETWEEN HELICOBACTER PYLORI INFECTION, GASTRIC DISEASES, AND LIFE HABITS

The presence of H. pylori is defined as being higher among the patient took non- steroidal anti-inflammatory drugs than people do not took these medicines. NSAID users than in people that do not make use of these medicines (9). So, the effect of chronic swelling lead to alternation in the design of general gastric mucosa which involving the massive replacement of general epithelial gastric cells of gastric mucosa with intestinal metaplastic cells (10).

MATERIAL AND METHODS

In this study 50 Patient were chosen from Baghdad province ranged between 26 – 36 years old previously infected with corona virus in duration at least 17 days between the January and February of 2021 while the study performed in June 2021 as shown in figure 1, the patient were taking analgesic drugs along with azithromycin antibiotic as a prophylaxes and all patients not needed to hospital entry and their oxygen range was about 93-97%, the patient undergo a serological test for helicobacter pylori using OneSite *H.pylori* Ab combo rapid test (CTK biotech) by adding the drops of serum isolated from previous Covid-19 infection patients on the test to diagnose the positively toward *H.pylori* and weather the patient is susceptible to infection with Helicobacter or not, the tests performed in medical laboratories of Al-bayan University – Baghdad.

RESULTS AND DISCUSSION

The results showed that out of 50 patients performed the H.pylori test, 21 show positive to the H.pylori which about 42% of total number of patients as shown in figure 1 whose show positive results to the H.pylori, several studies starting from 1965 to 2021 tried to estimate the association between the respiratory diseases and infection with H.pylori like bronchiectasis, tuberculosis, cystic fibrosis, lung cancer, sarcoidosis, bronchial asthma, and COPD. Direct causative relationship has not been approved due to wide heterogenicity among the valuable sources. For several of these, a causative relationship has not been proved, primarily due to some valuable sources of heterogeneity: the restrictions due to epidemiological project of the studies, the low effect of confounding variables, lack of suitable controls and the methods used to assess H. pylori infection. Several theories have been expressed about the immune response in people infected with this bacterium, which causes damage in the gastric tissues, which leads to the activation of immune cells (T or B cells) that are activated by components of the bacteria, direct damage that affects lung tissues, and chronic inflammation that affects the airway when inhaled and exhaled.. H. pylori stimulates different types of immune response like adaptive, humoral systematic immune response. The interleukins response like (IL-1, IL-4, IL-8, IL-10 and tumor necrosis factor-_) in blood in response to infection with H.pylori as result of gastroduodenal disease showed a result of long-term irritation due to infection may showed the correlation between the infection with H.pylori and immune system response. (11). Furthermore, metalloproteinases levels increasing in serum and lungs of animals undergo tests specially a dysfunction occurs, which is a weakness in the inner lining of the blood vessels as a result of molecule(1,5) adhesion, and also causes white blood cells to adhesion to and migrate to the sub-vasculature. These changes in lungs did not appear in uninfected animals (12).

This could indicate the genetic variation occurring in the lung because of gastric H. pylori infection. In mice, it has been indicated that while in the absence of a local inducing agent, two genes are involved in the detection *Smad3* and *Smad5* genes were not involved in the lung, and in the case of gastric H. pylori infection, the expression of these genes showed downregulation in the stomach and increased in the lung. Therefore, expression of the SMAD protein performs a critical role in T-helper cell differentiation (13). The correlation between the autoimmune mechanism, based on molecular mimicry in H. pylori host tissues and lipopolysaccharides , has been standard in the stomach and could also be involved in extra-gastrointestinal manifestations linked with this infection. The hypothesis that these bacteria induce self-antagonistic reactions has been proposed after detection of antibodies reactive with the gastric mucosa in patients. (14).

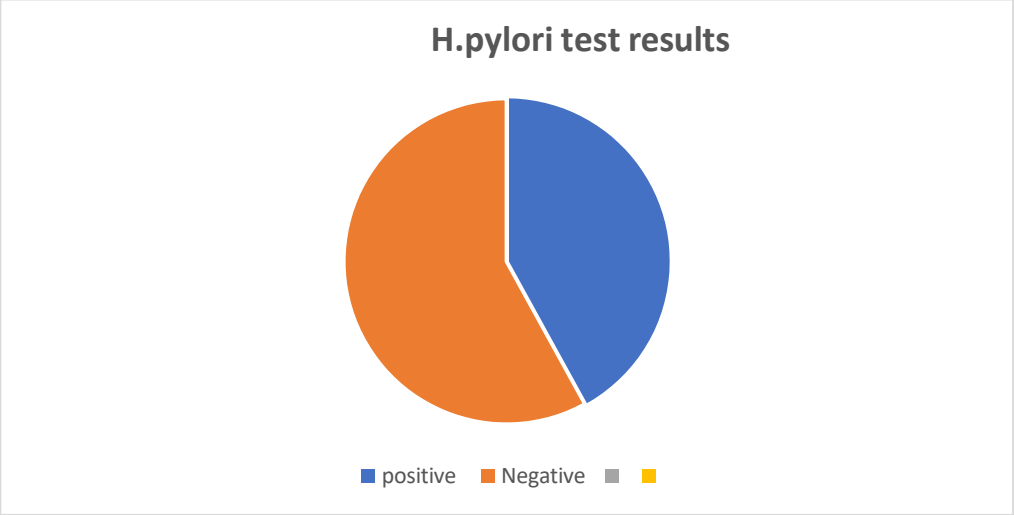

Figure 1 the Number of patients infected with H.pylori from patients previously infected with Covid-19

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