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Prevalence Of Helicobacter Pylori Infection In Rural Population Of Wardha District Of Central India-A Cross Sectional Study

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Abstract :
BACKGROUND–Initially believed to be a member of the Campylobacter genus , H. pylori , since being discovered in 1973 , has established itself as an important pathogen responsible for various gastrointestinal tract related ailments. Despite nearly fifty percent of the entire world population being a reservoir for the bacteria , its infection rate depends on a plethora of factors. Some of these may include the socio economic status of a country , with developing and under developed countries being at a greater risk of infection. It most frequently , inhabits the gastric antrum of the stomach but is known to colonize other parts of the gastrointestinal tract especially those having gastric metaplasia. AIM – To estimate the prevalence of Helicobacter pylori in rural population of Wardha district of central India, in a rural tertiary care centre.
METHODOLGY–This cross -sectional study will be carried out on a total of 150 consecutive patients who have come to the tertiary care centre for upper gastrointestinal endoscopy. The patients will be fulfilling both, the inclusion as well as the exclusion criteria. Before beginning the procedure , family history and personal history of each patient should be taken. Along with this, history of chronic illness is also to be noted.
RESULT – We aim to detect the presence of Helicobacter pylori upon performing endoscopy of the patients satisfying exclusion and inclusion criteria .

1. INTRODUCTION –

A spiral shaped, non sporing , gram negative bacilli, similar to Campylobacter and discovered in 1983 by Warren and Marshall in Australia, Helicobacter pylori is responsible for various gastrointestinal infections like gastritis (which may transform into chronic atrophic gastritis in later stages.), peptic ulcers and even gastric – adenocarcinomas along with mucosa associated lymphoid tissue (MALT) lymphomas in extreme cases.[1]

H. pylori has considerable genetic diversity and is thought to have originated in Africa. The bacteria later split into around seven major population groups divided on the basis of geographical distribution.[2] Around half, of the entire world population may be a reservoir to the pathogen in their gastrointestinal tract. However, this infection has variable prevalence. Studies have observed that the trend in developed countries is considerably lower (around 10 %) than that of developing countries (up to 80%)[3] due to lesser problems related to overcrowding.

Being a fairly common source of infection in India, early detection of this bacteria is of utmost importance and this can be attained by various techniques Some of the techniques applied for the same can be broadly classified into invasive and non-invasive .Invasive techniques include endoscopy and biopsy, which, along with histological examination, culture and rapid urease test (RUT) can be helpful in detection. The non-invasive techniques consist of serology, urea breath test, along with detection of H. pylori antigen in stool specimen.[4] H. pylori may be present in any part of the stomach, but it is mostly found in the gastric antrum. These bacteria can be found in the mucous which covers the gastric epithelial cells[5] and may even be present in regions of the gastrointestinal tract having gastric metaplasia, which may be seen in case of the duodenum.[6] H. Pylori can spread from individual to individual. The generic mode of transmission is via our saliva or the faecal-oral route.[7] Hence, if a member of a family is infected, chances of the others catching the infection is high and can be further compounded by socio-economic problems like overcrowding as well as poor sanitary and hygiene habits.

Objectives -

1. Correlation between gender and occurrence of H. pylori related infections.
2. Relation between the prevalence of H. pylori and gastrointestinal tract disorders.
3. Relation between the prevalence of H. pylori and extra gastrointestinal tract disease.

2. METHODOLOGY –

Study type – We aim to carry out a cross sectional type of study based on the observation of the endoscopy results of concerned patients.

Study duration – We propose to carry out the research in a time span of two months.

Study design – The study shall be started after clearance from the Institutional Ethical Committee (IEC). The study shall be carried out in the Department of Gastroenterology in the tertiary care centre within the aforementioned time span.

Study population / sample size – The research shall be carried out in a total of 150 consecutive patients who have come for upper gastrointestinal endoscopy. Additionally, the inclusion and exclusion criteria shall be applicable to them, in an attempt to provide adequate statistics with regard to the main objectives.

Selection criteria -

Inclusion criteria – This involves all the patients who have come for endoscopy. Exclusion

criteria -

The exclusion criteria shall involve those patients who have the following conditions -

1. Haemoglobin lesser than 7 g/dl
2. Oxygen saturation lesser than 95 %.
3. Patients who have encephalopathy or patients who are unable to follow command.
4. Patients who are on Proton Pump Inhibitor (PPI) within four weeks of endoscopy.

Methodology in PICOT format:

P (Population): 150 consecutive patients who come for upper gastrointestinal endoscopy in tertiary care centre.

I (Intervention): Assessment and detection of H. pylori in rural population after performing upper GI endoscopy.

C (Comparison): Not applicable.

O (Outcome): Presence of H. pylori in rural population upon performing upper gastrointestinal endoscopy.

T (Time): We propose to conduct the study over a duration of 2 months. Method -

Before beginning the procedure, a detailed history including the family history and personal history shall be taken for every patient. We shall also inquire whether the patients are suffering from any chronic illnesses like -

1. Diabetes Mellitus
2. Hypertension
3. Connective tissue disorders like Rheumatoid arthritis, Systemic Lupus Erythematosus, Marfan syndrome etc.
4. Chronic Liver Disease (CLD)
5. Chronic Kidney Disease (CKD)

Endoscopy is the preferred method for detecting the presence of H. pylori in this case. The procedure is done with usage of local anaesthesia, oral lignocaine spray. Before beginning with the endoscopy, biopsy will be taken from the gastric antrum. Biopsy involves removal of the tissue from antrum and detecting the presence of H. pylori. Those patients who have been rejected due to Proton Pump Inhibitor (PPI), will be called back after four weeks of stopping PPI and sample is taken from both antrum and body. The sample from the biopsy shall be put into the Rapid Urease Test (RUT) kit. Rapid Urease Test is a method of detecting H. pylori and is usually preferred due to its accurate results, (with sensitivity - 90 – 95% and specificity

– 95-97%) and cost effectiveness. H. pylori produces urease, which will split urea into ammonia and carbon dioxide. The ammonia which has been produced, imparts pink colour to the test.

Observation time for the RUT kit shall be 10 minutes. If the colour of the kit turns pink, then it will be considered as RUT positive, and the patient will be considered to be infected with H. pylori.

Data analysis -

In order to analyse the data, statistical analysis will be done by using descriptive and inferential statistics using chi square test, and t – test for difference between two means. The software which we shall be using in the analysis will be IBM SPSS (Statistical Package for Social Sciences) 25.0 version and an observed value of $p < 0.05$ will be considered as

significant.

3. EXPECTED RESULTS –

The expected results of this study would be , the detection of H. Pylori in the upper gastrointestinal tract upon performing endoscopy. We also aim to achieve our objectives while also ensuring the application of specific inclusive and exclusive criteria to obtain better results.

4. DISCUSSION –

As aforementioned , Helicobacter pylori is the causative agent of a wide range of gastrointestinal diseases , including but not limited to gastritis ,peptic ulcers and gastric – adenocarcinomas. In fact , it may also lead to iron deficiency anaemia in certain patients .[8] When talking about the prevalence rate , in India , the age groupin children which was most commonly affected was the pre adolescents and adolescents (10 – 19 years) , followed by the 5 – 9 age group.[9] Alternatively , in the range of 14 to 86 years , the median range was believed to be in the fourth decade .[10] Despite the above data , there doesn't seem to be a major correlation between age and prevalence as has been demonstrated by studies conducted byTarkhashvili *et. al.*[11] .

Additionally , a study conducted by Agarwal P K *et. al.*[12] , as well as Dhakal O.P. and Dhakal Mona[13] showed the presence of H. pylori on performing upper gastrointestinal endoscopy. Adlekha S. *et. al.*[1 4] have also shown the rising presence of H. pylori infection in rural population. A number of similar studies in rural settings were reported by Bhayani et. al. [15,] Gawai et. al. [16] and Kadam et. al. [17.] Kadam et al reported on acute respiratory distress syndrome in a rural tertiary care hospital[18.] Related Studies have been reported in Global burden of disease study [19,20.]

In this study , we aim to observe a noticeable pattern in the occurrence of H. pylori within different parts of the upper gastrointestinal tract and subsequently provide statistics which shall be of help in future studies pertaining to this pathogen and its effect on a given demographic. With our country having an enormous population, nearly 65% of which resides in rural areas, we hope to use this research as a means of not only spreading awareness related to the diseases caused by H. pylori, but also, find a link between early diagnosis and prevention of malignant conditions.

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