ORIGINAL ARTICLE

Examine the Prevalence of H. Pylori Infection Also Determine the Accuracy of Rapid Urease Test and Histopathology Examination for Diagnosing H. Pylori Infection

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ABSTRACT

Aim: To examine the accuracy of RUT and compare with histopathology examination to diagnose H. pylori infection in patients presented with gastritis
Study design: Prospective/Observational study
Place & duration: Department of Pathology Shahida Islam Medical College Lodhran from 1st March 2016 to 31st January 2017
Methods: A total 120 patients of both genders with ages 20 to 70 years having gastritis were included in this study. Four biopsies were taken from all the patients 2 biopsies were taken for the RUT and 2 for the histopathology examination. Sensitivity, specificity, PPV and NPV were examined of both methods.
Results: Out of 120 patients 57 (47.5%) patients were males while 52.5% patients were females. 80 (66.67%) patients had H.pylori infection by Rapid urease test and 79 (65.83%) patients had H pylori infection as per histopathology examination. Association between RUT and Histopathology examination were noted as sensitivity, specificity, PPV and NPV as 96.20%, 92.5%, 95% and 90.24% respectively.
Conclusion: It is concluded from this study that rapid urease test shows accurate results with no procedural complications. It is a good alternative to histopathology examination in patients presented with gastritis.
Keyword: Rapid urease test, Histopathology, H. Pylori

INTRODUCTION

Worldwide, Helicobacter pylori (H. pylori) infection is commonly found with the frequency rate of 40 to 50% in developed and eighty to ninety percent in developing countries. Many of previous studies illustrated that H.pylori infection plays a important role in developing chronic gastritis and peptic ulcer.[1]H. pylori is one of the most common and important cause of acute and chronic gastritis and gastric cancer[2].

Previous studies showed that above 80% gastric cancers and 92% of low-grade gastric mucosa-associated are due to H. pylori infection.[3]H.pylori infection can be diagnosed by invasive method in which RUT, Histopathology examination and bacterial culture with biopsy specimen were included and noninvasive methods included stool antigen Test and Urea Breath Test and serology.

Urea breath and stool antigen tests are very easy procedure but they need proper validation of procedure. Noninvasive tests are easier to accomplish but need appropriate validation of methods for each population and age.[4]Serological testing is less accurate than UBT and SAT, particularly in areas of low *H. Pylori* prevalence in developed countries, and cannot differentiate past from present infection.5SAT and UBT have the advantage of indicating current, ongoing infection, but both tests are affected by several parameters, such as colonization density, nutrition, and co-medication. Invasive tests have been considerate the gold standard, but biopsy-based methods may suffer from sampling error because of the patchy nature of the infection, low concentration of bacteria in fragments and low sensitivity culture[6].

Every method for detection of H Pylori has its own inherent advantages and disadvantages. Rapid Urease Test (RUT), with its high sensitivity and specificity, is considered to be a quick and reliable test for the initial diagnosis of H. pylori infection and is simple and inexpensive[7.]

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MATERIALS AND METHODS

This prospective/observational study was conducted at Department of Pathology Shahida Islam Medical College Lodhran from 1st March 2016 to 31st January 2017. Total 120 patients of both genders with ages 20 to 70 years having gastritis were included in this study. Patients detailed medical history including age, sex, residence and education were examined after taking informed consent from all the patients. Alcohlic patients, patients taking NSAIDS, patients with acute abdominal pain, patients with liver cirrhosis and patients with tuberculosis were excluded from this study. Patients were kept Nil by Mouth (NBM) 6 hrs prior to Endoscopy. Four biopsies were taken from all the patients 2 biopsies were taken for the RUT examination and 2 for the histopathology examination for diagnosing H. pylori infection. Prevalence of H. pylori infection was

recorded. Association between Rapid Urease Test and Histopathology examination were examined as sensitivity, specificity, positive predictive value, negative predictive value. All the data was analyzed by computer statistical software 20.

RESULTS

There were 57(47.5%) male patients while 52.5% patients were females. 51(42.5%) patients were ages between 20 to 40 years, 45(37.5%) patients were ages 41 to 60 years and 24(20%) patients had ages above 60 years. 65(54.17%) patients had urban residency while 55(45.83%) patients had rural residency. 57(47.5%) were literate while 63(52.5%) patients were illiterate (Table 1).

According to the Rapid urease test 80(66.67%) patients diagnosed to have H. pylori infection and 40(33.33%) patients had no H. pylori infection. As per histopathology examination 79(65.83%) patients had H pylori infection and 41(34.17%) patients showed negative results (Table 2).

The association between Rapid urease test and histopathology examination were recorded as true positive, true negative, false positive and false negative in 76(63.33%), 37(30.83%), 4(3.33%) and 3(2.5%) patients. According to the association between RUT and Histopathology we found sensitivity 96.20%, specificity 92.5%, positive predictive value (PPV) 95% and NPV 90.24% respectively (Table 3).

Table 1: Demographical details of all the patients

Variable	No.	%
Gender		
Male	57	47.5
Female	63	52.5
Age (years)		
20 - 40s	51	42.5
41 – 60	45	37.5
> 60	24	20
Residence		
Urban	65	54.17
Rural	55	45.87
Education		
Literate	57	47.5
Illiterate	63	52.5

Table 2: Prevalence of H.Pylori infection diagnosed by RUT and Histopathology Examination

H. Pylori	RUT	Histopathology
Yes	80 (66.67)	79 (65.83)
No	40 (33.33)	41 (34.17)

P-value >0.05

Table 3: Association between RUT and Histopathology examination

Characteristics	Frequency	%age
True Positive	76	63.33
True Negative	37	30.83
False Positive	4	3.33
False Negative	3	2.5

Sensitivity:T+ve/T+ve+F-ve*100=96.20%
Specificity: T-ve/T-ve+F-ve*100=92.5%
PPV: T+ve/T+ve+F+ve*100=95%
NPV: T-ve/T-ve+F+ve*100=90.24%

DISCUSSION

H. pylori as a cause of chronic gastritis, has always been a cause of concern for the treating physicians. Ghosal et al[9] and Ahmed et al[10] in their studies from India showed that the prevalence of H. Pylori infection in adults approaches 90% in many developing countries, particularly those in the tropics. In 2007, Lynn et al[11] and Sacco et al[12] in their province based individual studies, have shown that in industrialized parts of the world (Western Europe, United States, Canada, and Australia), exposure tends to occur later in life, which results in a lower percentage of infected adults. In eastern Asia (e.g. Japan), where there has been a recent introduction of improved sanitation methods, there has been a clear trend toward a lower rate of H. pylori infection[13]. In present study we observed that female patients population was high 52.5% as compared to males 47.5%. Many of other studies reported female patients population was high as compared to males 50 to 65%.[14,15] In our study the overall prevalence of H. pylori infection was 65.83%. A study conducted by Athavale et al reported 84% of H. pylori infection in gastritis patients[16].

In present study according to the Rapid urease test 80(66.67%) patients diagnosed to have H. pylori infection and 40(33.33%) patients had no H. pylori infection. As per histopathology examination 79(65.83%) patients had H pylori infection and 41(34.17%) patients showed negative results. We found no significant difference between both methods. However, we found RUT was safe, easy and time saving method with no procedural complications. Many of studies showed accuracy of RUT as 95 to 100%[17,18]. Our study showed 100% accuracy for diagnosing H. pylori infection. We found in our study according to the association between RUT and Histopathology examination recorded as true positive, true negative, false positive and false negative in 76(63.33%), 37(30.83%), 4(3.33%) and 3(2.5%) patients. According to the association between RUT and Histopathology we found sensitivity 96.20%, specificity 92.5%, positive predictive value (PPV) 95% and NPV 90.24% respectively. Many of previous shows similarity to our study[19,20].

CONCLUSION

H. pylori infection is one of the most common disorder found all over the world. We concluded from this study that the prevalence of H. pylori infection rate was high. It is also concluded that rapid urease test shows accurate results with no procedural complications. It is a good alternative to histopathology examination in patients presented with gastritis.

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