

Utility of Rapid Urease Test in Detecting Helicobacter Pylori in Patients with Acid-Peptic Disease in AVBRH Tertiary Care Hospital, Sawangi

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Abstract:- Patients from AVBRH tertiary care Hospital , Sawangi with dyspeptic symptoms attending the surgery department during the period of August 2015-July 2016 were included in the study..There were 66 males(57%),43 females(43%).Age range was 17-60 years . Mean age was 40years.Among the 109, 71(65%) were positive by RUT,38(35%) were negative for RUT . Histopathological examination of the tissue by H & E stain was positive in 60(55%) & negative in 49(44%) out of 109.Culture positivity of the endoscopy sample was 4(3.7%).The RUT positivity was 65% & histopathology was 67% positive.

Keywords:- Rapid Urease test(RUT), Histopathology, Helicobacter pylori.

I. INTRODUCTION

Helicobacter pylori is a common & important transmissible bacterial human pathogen. The prevalence of this infection varies world wide being as low as 10% in developed western nations to higher than 80% among the indigent populations of many developing countries. The infection primarily involves the upper gastrointestinal tract causing progressive acute & chronic gastro-duodenal inflammation. Typically these inflammatory changes are silent but clinical disease manifestations occur in approximately 20%, generally after a long latent period.¹

The manifestations of H. pylori infection include gastritis, gastric atrophy, duodenal ulcer disease, gastric ulcer, primary gastric B-cell lymphoma, gastric adenocarcinoma , iron deficiency anaemia & Vitamin B12 deficiency.²⁻⁵

There are often regional differences with regard to which clinical manifestation is predominant ranging from iron deficiency anaemia in childhood to gastric cancer in the elderly. The predominant manifestation can also evolve over time. The prevalence of H. pylori in the Indian subcontinent can be as high as 80% or more in rural areas. The most commonly recognized manifestation of H. pylori infection in India is peptic ulcer disease, particularly duodenal ulcer disease, which outnumbers gastric ulcer between 8:1 & 30:1. Singh et al⁶ calculated the point prevalence of active peptic ulcer disease at 3% with a life time prevalence of 9%.

H. pylori is known for production of abundant urease. Urease enzyme hydrolyses urea to release CO₂ & NH₃.Detection of urease production has been a surrogate marker for the detection of the bacterium in antral biopsies. Release of ammonia increases the pH of the test medium & it is detected by a colour change due to pH indicator. Test can be done either in a solution or supporting media eg CLO test . A reagent strip of rapid urease test where reading is taken within 15 min is also available. This strip is therefore more convenient to use in the endoscopy clinics. The sensitivity & specificity of urease test when compared to histology were 89% & 88% respectively . The sensitivity of RUT is influenced by the bacterial density & the forms (spiral or coccoid) of bacteria present in the biopsy. The minimum of 10⁴ organisms per biopsy piece are required for a positive RUT result . The low cost , ease & speed of diagnosis of H . pylori infection gives RUT upper hand on culture & histology . The aim of the study was to detect the utility of RUT in patients of acid peptic disease.

II. MATERIAL METHOD.

The study was carried among 109 patients from AVBRH tertiary care Hospital, Sawangi with dyspeptic symptoms attending the surgery dept .The study was carried out in the Dept of microbiology in collaboration with Dept of Surgery & Dept of Pathology from August 2015- July 2016. Ethical committee approval was taken. Informed consent was taken from each patient. Detailed history of Clinical symptoms at the time of presentation was taken. History of drug & duration of illness were noted. 3 antral biopsy taken.

1antral biopsy was collected in Brain Heart Infusion Broth & sent to Microbiology for staining , culture.

1 was collected in Formalin bulb & sent to histology for H& E staining .

1 was collected for RUT. The tissue is put directly in the RUT kit & results were seen within 5 minutes.

Microbiological Samples were processed within 1 hr.

RUT



Negative

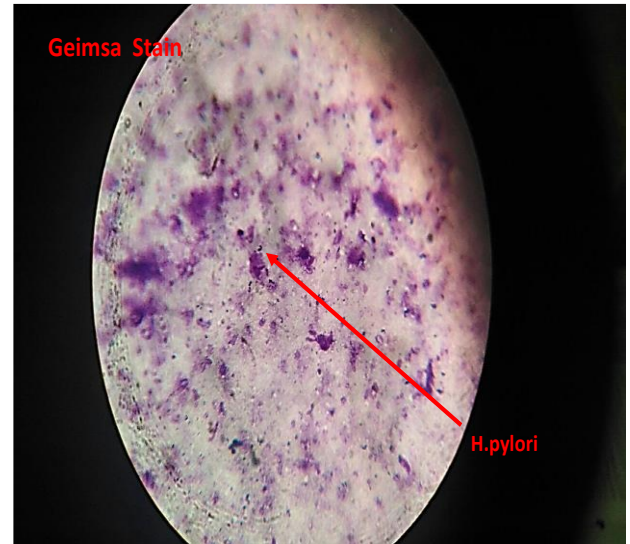
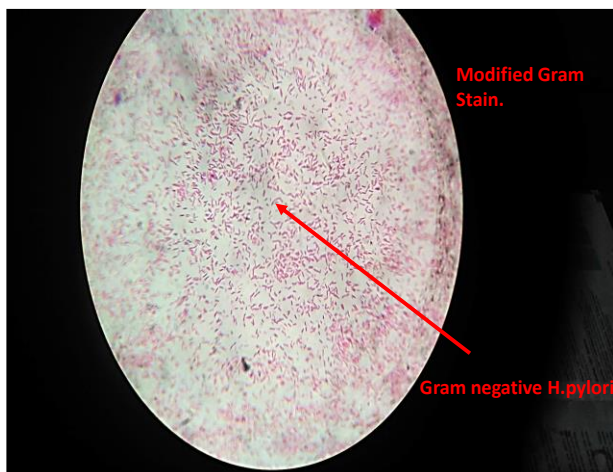


Positive

III. CULTURE

Tissue pieces were crushed with sterile glass rod. They were inoculated in Brain Heart infusion Agar with 10% calf serum & Skirrow’s supplement in Candle jar. (U.Arora et al 2003). A Moist gauge piece was kept in the candle jar & incubated at 37 C. Colonies are examined after 7 days. Small dew drops translucent colonies appeared after 7 days. Colonies were subjected to oxidase, catalase, Urease. All were positive for oxidase , catalase , urease

- Modified Gram staining was done with Carbol fuchsin (Manual of Clinical Microbiology) as decolouriser for better visualisation. Thin Sigel Shaped gram negative rods were seen under the microscope.. Geimsa stain was done.



IV. RESULTS

There were 57% male(66/109),43% Female(43/109).Age range was 17-60 years.Mean age was 40 years.the results are depicted in the table below.

Test	Positive	Negative
RUT	65%(71/109)	35%(38/109)
Histopathology	55%(60/109)	44%(49/109)
Staining	64%(70/109)	36%(39/109)
Culture	3.7%(4/109)	96%(105/109)

V. DISCUSSION

In our study we have evaluated the utility of RUT test in diagnosing H. pylori infection in symptomatic patients. Out of the 109 patients 71 were positive for RUT, 55 were positive for Histopathology. Modified gram staining were positive for 70 patients. Culture positivity were 4 out of 109.Lower culture positivity is due to the difficulty to culture the bacilli, as the bacilli losses its viability after 1hr of exposure to air/ oxygen . In our study RUT correlates well with gram staining & histopathology.

In a study by Lindvist et al 1999, they reported 64% Rapid Urease Test positivity in females more than males where it was 41%. This study contradicts our study where males showed more positivity for Rapid Urease Test than females.^[7]

Kamiya et al 1993, Zaitoun et al 1993 reported Rapid Urease Test positivity to be 84.6% & 94% respectively.^(8,9) Sivprakash Rao et al 1994 reported Rapid Urease Test positivity to be 55.6%.^[10] Sengupta et al 2002 from India reported Rapid Urease Test positivity to be 96%.^[11] J.yakoob et al 2005 in Karachi found the positivity of Rapid Urease Test to be 40%.^[12] Calvet et al 2009 in Spain found the positivity of Rapid Urease Test to be 54%.^[13] MD Islam et al 2010 from Bangladesh found positivity of Rapid Urease test to be 75%.^[14] Ratnesh et al 2017 in Wardha found the positivity of Rapid urease test to be 48.07%.^[15] Study done by Mojgan Foroutan et al 2010 found the positivity of Rapid Urease test to be 33.33%.^[16]

Our study correlates well with Lindvist et al .The higher percentage of RUT positivity may be due to the study population(rural population).

VI. CONCLUSION

RUT is a simple cheap test . It can be considered as a screening test.RUT correlates well with histopathology. It can be used routinely. Moreover it requires less time so diagnosis of patients can be done early followed by early treatment. Thus preventing the development carcinoma. Histopathology is time consuming, requires 5-7 days. So there is delay in treatment. More time can result in poor patient compliance.

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