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ORIGINAL RESEARCH

Histopathological analysis of gastric mucosa in patients who are rapid urease positive for h. pylori certificate

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Abstract

Background: In this study, we wanted to do ahistopathological analysis of changes in gastric mucosa in patients who turn positive for *H. pylori* through rapid urease test.

Methods: This was a prospective study conducted among 40 patients who underwent UGIscopy in the Department of General Surgery in PSG Hospitals for a period of two yearsfrom November 2017 to November 2019, after obtaining clearance from the Institutional Ethics Committee, and written informed consent from the study participants.

Results: There was no statistical significance between site of occurrence with regard to presence of polymorphs, atrophic changes, presence of *H. pylori*, and lymphoid hyperplasia. Parietal hyperplasia was present in 22.5% of biopsies from body of stomach, 7.5 % from antral and incisura biopsies. There was a statistical significance between site of occurrence. There was no statistical significance between age, and the site of occurrence of polymorphs, atrophy changes, *H. pylori* changes, parietal hyperplasia, or lymphoid hyperplasia.

Conclusions: *H. pylori* kit was highly sensitive and gives a rapid report when compared to histopathology and is easy to perform. Antrum is the most common site affected by *H. pylori*. Atrophic gastritis is seen in 15% of the patients, hence required long term follow-up to detect early malignancies. Young males were mostly affected by *H. pylori* when compared to elder population.

Keywords: Histopathological Analysis, Gastric Mucosa, Rapid Urease Test, H. Pylori.

Introduction

Peptic ulcer disease (PUD)is a common condition that occurs in patients suffering from dyspepsia. Symptoms of peptic ulcer disease are variable which includes from mild symptoms of abdominal pain, nausea, vomiting and weight loss to complications such as bleeding or perforation. Diagnosis and treatment of peptic ulcer disease depends on the risk factors and the mechanisms which cause peptic ulcer disease. Peptic ulcers are lesions induced by acid found in the stomach and duodenum which are characterized by denuded mucosa with the defect extending deep into the sub mucosa or muscularispropria. Lesions that do not reach to depth are called erosion. NSAID abuse and *Helicobacter pylori* infection

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constitutes the most important cause for peptic ulcer disease, In this study, histopathological analysis of changes in gastric mucosa in patients who turn positive for *H.pylori* through rapid urease test was done.[1,2]

Aim of the Study

To enumerate the histopathological changes associated with *H. pylori* infection in patients who are positive for rapid urease test.

Methods

This was a prospective study conducted among 40 patients who underwent UGIscopy in the Department of General Surgery in PSG Hospitals during the period November 2017-November 2019, after obtaining clearance from the Institutional Ethics Committee, and written informed consent from the study participants.

Inclusion Criteria

All the patients who were suspected to have positive for rapid urease test in upper GI endoscopy

Patients with visual changes in gastric mucosa secondary to chronic gastritis.

Patients who discontinued PPI's 1 week prior to UGIscopy.

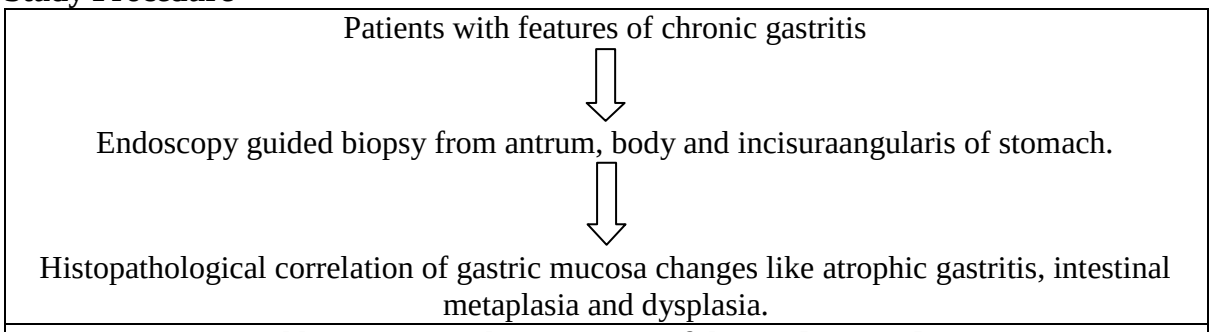
Exclusion Criteria

Patients who were not willing to take part in the study

Patients who were on anticoagulant therapy

Patients who has gastric cancer and gastric polyp.

Study Procedure



Table/Figure 1: Flow Diagram of the Study Procedure

Results

Age Group	Frequency	Percentage
20-30	3	7.5
31-40	16	40
41-50	6	15
51-60	10	25
>60	5	12.5
TOTAL	40	100
Distribution of Study Population According to Age		
SEX	**Frequency**	**Percentage**
Male	26	65
Female	14	35
TOTAL	40	100

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Distribution of Study Population According to Sex

Table/Figure 2: Demographic Distribution

Around 47% were in the age group of less than 40 years. 65% of the study population were males.

Polymorphs	**Frequency**	**Percentage**
Present	27	67.5
Absent	13	32.5
Total	40	100

Distribution of Study Population According to Presence of Polymorphs

Polymorphs	**Body**		**Antrum**		**Incisura**		**Chi square Value**	**P Value**
	No	**%**	**No**	**%**	**No**	**%**		
Present	17	42.5	15	37.5	19	47.5	0.818	0.66
Absent	23	57.5	25	62.5	21	52.5		

Distribution of Study Population According to Position of Polymorphs

Table/Figure 3

Polymorphs were present in 42.5% of biopsies from body of stomach, 37.5% of antral biopsies and 47.5% of incisura biopsies. There was no statistical significance between site of occurrence. Atrophic changes were present in 7.5% of biopsies from body of stomach, 5% from antral biopsies and 12.5% from incisura biopsies. There was no statistical significance between site of occurrence. *H. pylori* were present in 82.5% of biopsies from body of stomach, 100% from antral biopsies and 85% from incisura biopsies. There was no statistical significance between site of occurrence. Parietal hyperplasia was present in 22.5% of biopsies from body of stomach, 7.5 % from antral and incisura biopsies. There was a statistical significance between site of occurrence. Lymphoid hyperplasia was present in 17.5% of biopsies from body of stomach, 12.5% from antral biopsies and 20% from incisura biopsies. There was no statistical significance between site of occurrence.

Atrophic Changes	**Frequency**	**Percentage**
Present	6	15
Absent	34	85
Total	40	100

Atrophy Changes	**Body**		**Incisura**			**Chi Square Value**	**P Value**
	No	**%**	**No**	**No**	**%**		
Present	3	7.5	2	5	12.5	1.527	0.46
Absent	37	92.5	38	35	87.5		

Distribution of Study Population According to Atrophic Changes

H. pylori	**Frequency**	**Percentage**
Present	40	100
Absent	0	0
Total	40	100

H. pylori	**Body**		**Antrum**		**Incisura**		**Chi Square Value**	**P Value**
	No	**%**	**No**	**%**	**No**	**%**		

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Present	33	82.5	40	100	32	80	8.686	0.012
Absent	7	17.5	0	0	8	20		

Distribution of Study Population According to H. pylori

Parietal Hyperplasia	Frequency	Percentage
Present	13	32.5
Absent	27	67.5
Total	40	100

Parietal Hyperplasia	Body		Antrum		Incisura		Chi SquareValue	P Value
	No	%	No	%	No	%		
Present	9	22.55	3	7.5	3	7.5	3.829	0.014
Absent	31	77.5	37	92.5	37	92.5		

Distribution of Study Population According to Parietal Hyperplasia

Lymphoid Hyperplasia	Frequency	Percentage
Present	15	37.5
Absent	25	62.5
Total	40	100

Lymphoid Hyperplasia	Body		Antrum		Incisura		Chi Square Value	P Value
	No	%	No	%	No	%		
Present	7	17.5	5	12.5	8	20	0.375	0.83
Absent	33	82.5	35	87.5	32	80		

Distribution of Study Population According to Lymphoid Hyperplasia

Table/Figure 4

Age Group	Body		Antrum		Incisura		Chi SquareValue	P Value
	No	%	No	%	No	%		
<30	0	0	0	0	0	0	0	1
31-40	6	37.5	5	31.3	7	43.8	0.2	0.9
41-50	5	83.3	3	50	2	33.3	1.4	0.49
51-60	4	40	4	40	8	80	2.44	0.29
>60	2	40	3	60	4	80	0.625	0.73

Association between Presence of Polymorphs and AGE Group

Age Group	Body		Antrum		Incisura		Chi square Value	P Value
	No	%	No	%	No	%		
<30	0	0	0	0	0	0	1	0
31-40	2	12.5	1	6.3	3	18.7	0.429	0.80
41-50	1	16.7	0	0	1	16.7	0.141	0.93
51-60	0	0	1	10	1	10	0.134	0.93
>60	0	0	0	0	0	0	1	0

Association between Presence of Atrophy and AGE Group

Age Group	Body		Antrum		Incisura		Chi square Value	P Value
	No	%	No	%	No	%		
<30	2	66.7	3	100	3	100	0.28	0.86

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31-40	13	81.2	16	100	15	93.7	1.7	0.42
41-50	6	100	6	100	5	83.3	0.26	0.87
51-60	7	70	10	100	9	90	28.03	<0.001
>60	5	100	5	100	2	40	3.43	0.18

Association between Presence of H. pylori and AGE Group

Age Group	Body		Antrum		Incisura		Chi Square Value	P Value
	No	%	No	%	No	%		
<30	1	33.3	0	0	0	0	0.28	0.86
31-40	5	31.3	3	18.8	1	6.3	1.95	0.377
41-50	1	16.7	0	0	1	16.7	0.14	0.93
51-60	2	20	0	0	0	0	1.21	0.55
>60	0	0	0	0	1	20	0.268	0.88

Association between Presence of Parietal Hyperplasia and AGE Group

Age Group	Body		Antrum		Incisura		Chi Square Value	P Value
	No	%	No	%	No	%		
<30	1	33.3	0	0	0	0	0.28	0.86
31-40	3	18.8	1	6.3	2	12.5	0.42	0.80
41-50	1	16.7	1	16.7	1	16.7	0	1
51-60	2	20	3	30	4	40	0.357	0.83
>60	0	0	0	0	1	20	0.268	0.88

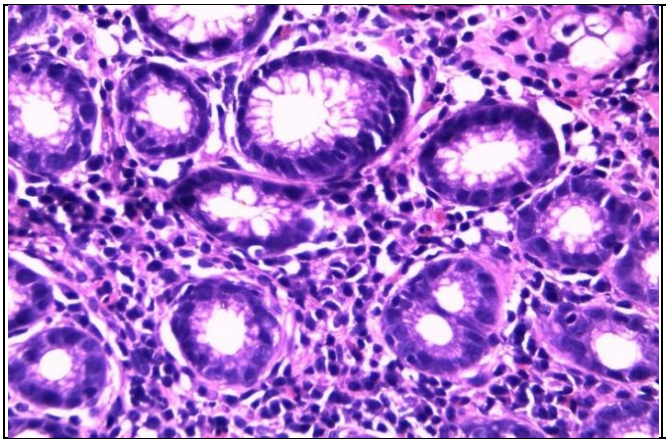
Association between Presence of Lymphoid Hyperplasia and AGE Group

Table/Figure 5

There was no statistical significance in the site of occurrence of polymorphs and age group. There was no statistical significance in the site of occurrence of atrophy changes and age group. There was no statistical significance in the site of occurrence of *H. pylori* changes and age group. There was no statistical significance in the site of occurrence of parietal hyperplasia and age group. There was no statistical significance in the site of occurrence of lymphoid hyperplasia and age group

Intestinal Metaplasia	Number	Frequency
Present	2	5
Absent	38	95

Table/Figure 6: Distribution of Study Population According to Presence of Intestinal Metaplasia



REGENERATIVE ATYPIA WITH ASSOCIATED NEUTROPHILIC INFILTRATION

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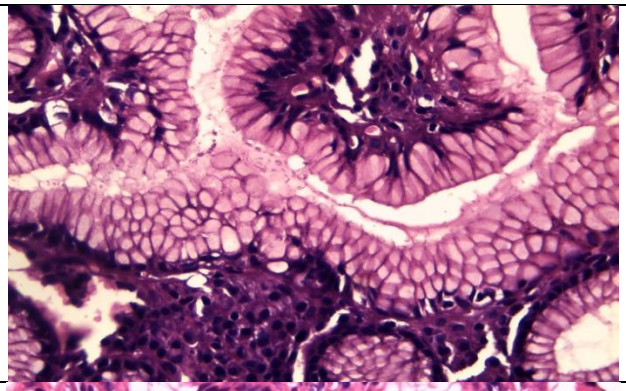
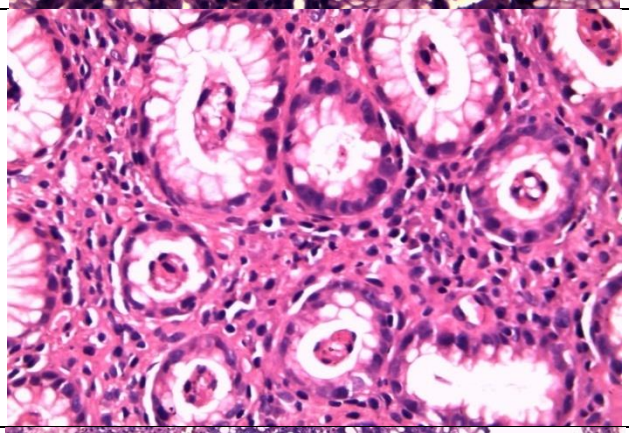
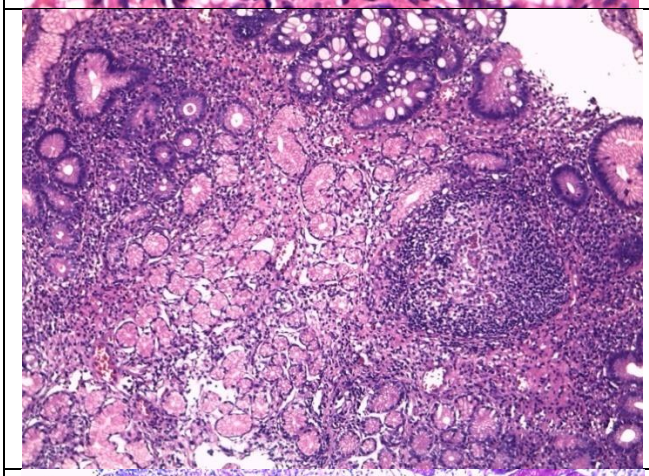
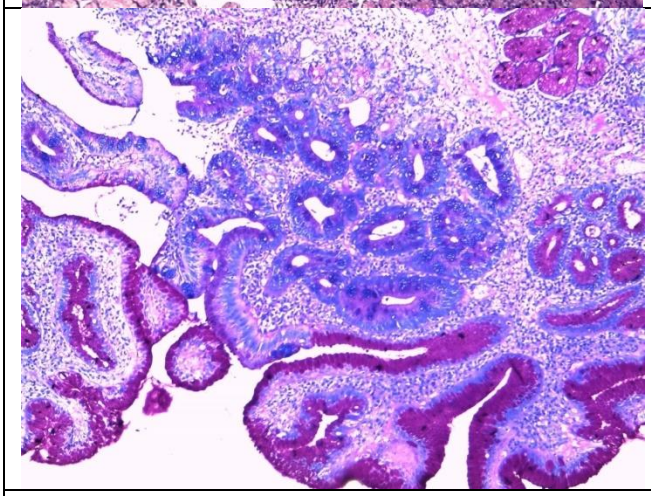
	***PRESENCE OF ROD-SHAPED H.PYLORI IN H&E STAINING***
	***PIT ABSCESS, SIGN OF ACUTE INFLAMMATION***
	***INESTINAL METAPLASIA WITH LYMPHOID AGGREGATES***
	***INTESTINAL METAPLASIA WITH ALCIAN BLUE PAS STAIN HIGH POWER FIELD***

Table/Figure 7

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Discussion

In this study, 40 patients were analysed for histopathological changes caused by *H.pylori* in gastric mucosa in different parts of the stomach in patients who turned positive for rapid urease test. This was a prospective study. The patients who were included in the study were those who had changes in gastric mucosa secondary to chronic gastritis and those who discontinued PPI's 1 week before UGIscopy. Patients who were taking anti coagulants were excluded from this study. This when compared to study done by Mishra,[3] patients who had chronic duodenal ulcer were examined whereas in this study those who had chronic gastritis were studied were taken biopsies separately from body, antrum and incisuraangularis. 47% of the people in this study were less than 40 years of age and almost 65% of study population were males. Biopsies were taken while performing UGIscopy in body, antrum and incisuraangularis and the gastric mucosal changes caused by *H.pylori* in different parts of the stomach were correlated.

The presence of polymorphs, atrophic changes, presence of *H. pylori*, parietal cell hyperplasia, lymphoid hyperplasia, dysplasia and intestinal metaplasia in different parts of the stomach were studied. Acute inflammatory activity was seen in 67 % of patients irrespective of biopsy site. This study has shown incidence of 42.5% in the body of the stomach, 37.5% in the antrum and 47.5% in the incisuraangularis. The symptoms for which patients present to hospital was due to the acute inflammatory change. This study has chronic gastritis in all 40 cases,when compared to A study of changes in stomach wall at sites other than the ulcer in chronic duodenal ulcer patients" by Mishra J, Panigrahi has chronic gastritis of antrum in 93% cases. In this study, atrophic gastritis occurs in 15% of the total cases infected with *H.pylori* out of which 17.5% of biopsies were from body, 5% from antral biopsies and 12.5% from incisura biopsies. According to the study conducted by Cheung DY[4]there was 12% risk of malignancy in severe atrophic gastritis. Hence, these patients require long term follow-up. According to the study conducted by J. S. A. Collins et al.[5] the prevalence rates for *H. pylori* was 94% for antral and 8% for body biopsies. In this study, parietal cell hyperplasia was found in 32% of cases out of which 22.5% were from body of stomach, 7.5 % of parietal cell hyperplasia from antrum and incisura angularis. There was a statistical significance between site of occurrence of parietal cell hyperplasia which most commonly occurs in the body which accounts for hyperacidity. Lymphoid hyperplasia was present in 38% of cases, in which 17.5% of biopsies from body of stomach, 12.5% from antral biopsies and 20% from incisura biopsies. There was no statistical significance between site of occurrence.

H. pylori were present in 100% of cases 82.5% of biopsies from body of stomach, 100% from antral biopsies and 85% from incisura biopsies. There was statistical significance between site of occurrence. Intestinal metaplasia seen in 5% of cases, that was 2 patients out of 40 cases and in Mishra's study[4] it was 4% of the total.

Conclusions

H. pylori kit was highly sensitive and gives a rapid report when compared to histopathology and is easy to perform. Antrum is the most common site affected by *H. pylori*. Atrophic gastritis is seen in 15% of the patients, hence required long term follow-up to detect early malignancies. Young males are mostly affected by *H. pylori* when compared to elder population.

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