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Prevalence of H. pylori in Carcinoma Stomach – A Case Series

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Introduction

H. pylori infection has been recognized as having a prominent causative role for gastric cancer which is the fourth most common cancer and the second most common cause of cancer deaths worldwide [1]. Given the ongoing debate about the efficacy of H.pylori eradication, it is important and timely to obtain a prevalence estimate for this infection. The micro-organism is capable of inducing an inflammatory response in gastric tissue in humans leading to development of multifocal gastritis, intestinal metaplasia and adenocarcinoma in the stomach [2].

Since its discovery in the l982 (Warren and Marshall) [3], extensive research on H.pylori in the epidemiology and microbiology fields have led to an established relationship between H. pylori and gastric cancer.

In addition, investigation of the risk factors associated with this infection is crucial to identify high-risk groups in the population and consequently to develop appropriate public health intervention strategies. The main objective of this research is to estimate the prevalence of H. pylori in carcinoma stomach.

Aim of study

To assess the prevalence of Helicobacter pylori in patients with carcinoma stomach in terms of

- Age
- Sex
- Socioeconomic status
- Pre-operative albumin levels
- Location of the tumor
- Pathological type of tumor - lauren's classification
- Tumor differentiation
- T stage of the disease
- N stage of the disease

Materials and methods

- A prospective study of 50 patients who underwent surgery for carcinoma stomach at SRMC.
- A detailed history and physical examination was done, the socio-economic status of the patient, personal habits including smoking, consumption of alcohol and diabetes mellitus was recorded.
- Relevant and needed investigations including preoperative albumin levels, imaging and UGI scopy biopsy were done. The material (gastric mucosa) was placed in formalin containers at 10% fixing and processed for histopathological examination and set into paraffin blocks.
- All the sample blocks were examined and the selected blocks (gastric mucosa adjacent to the tumor) were made into a thickness of 5 micro mm using a microtome, prepared on slides and stained using GIEMSA (for detection of Helicobacter Pylori) and studied under optical microscope.
- Adjacent mucosa was assessed for associated chronic gastritis and intestinal metaplasia apart from regular histo -pathological examination.

- The collected data was analysed with IBM>SPSS statistics software 23.0 version

Inclusion Criteria

- Patients undergoing surgery for carcinoma stomach
- All the patients above the age of 18 years

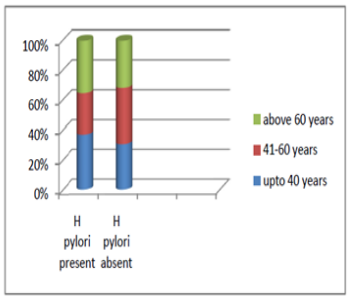
Exclusion Criteria

- Patients with distant metastasis
- gastro-oesophageal junction tumors
- Known case of GastroEsophageal Reflux Diseases not undergoing surgery for carcinoma stomach who had been previously treated for H.pylori infection atleast 2 months prior to diagnosis of carcinoma stomach

Results

Age Range with H.Pylori

			H.pylori ABSENT	H.pylori PRESENT	Total
AGE	Upto 40 years	Count	2	2	4
		% within the age	50%	50%	100%
	41 - 60 yrs	Count	13	8	21
		% within the age	62.0%	38.0%	100%
	Above 60 yrs	Count	13	12	25
		% within the age	52.0%	48.0%	100%
Total		Count	28	22	50
		% within the age	56%	44%	100%

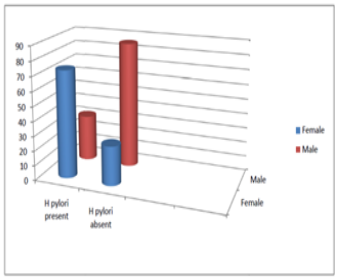


- Among 50 patients – 22 (44%) had presence of H.pylori and 28 (56%) had absence of H.pylori
- The mean age was 59.56
- Among 4 patients upto 40 years of age 2(50%) had presence of H.pylori 2 (50%) had absence of H.pylori
- Among 21 patients in the age group of 41-60 years of age 8(38%) had presence of H.pylori and 13 (62%) had absence of H.pylori
- Among 25 patients above 60 years of age 12(48%) had presence of H.pylori and 13 (52%) had absence of H.pylori .

In this study, prevalence of H.pylori was higher in patients upto 40 years of age, however p value was .772 which is not statistically significant.

Gender Distribution with H. Pylori

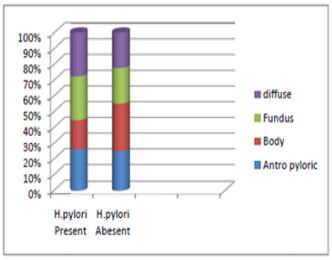
			H.pylori ABSENT	H.pylori PRESENT	Total
SEX	F	Count	4	11	15
		% within gender	26.7%	73.3%	100%
	M	Count	24	11	35
		% within gender	68.6%	31.4%	100%
Total		Count	28	22	50
		% within gender	56%	44%	100.0%



- Among 15 female patients, 11 (73.3%) had presence of H.pylori and 4 (26.7%) had absence of H.pylori
- Among 35 male patients , 11 (31.4%) had presence of H.pylori and 24 (68.6%) had absence of H.pylori
- Prevalence of H.pylori was higher in females than in males, however the p value was 0.012 which is not statistically significant.

Location of Tumor with H.Pylori

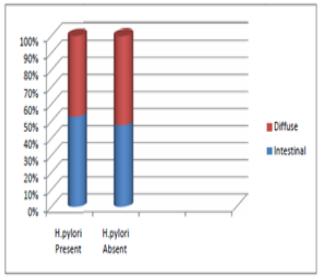
			H.pylori ABSENT	H.pylori PRESENT	Total
LOCATION	ANTRO PYLORIC	Count	20	17	37
		% within location	54.1%	45.9%	100.0%
	BODY	Count	6	3	9
		% within location	66.7%	33.3%	100.0%
	DIFFUSE	Count	1	1	2
		% within location	50%	50%	100.0%
	FUNDUS	Count	1	1	2
		% within location	50%	50%	100.0%
Total		Count	28	22	50
		% within location	56%	44%	100.0%



- Among 37 patients with antro - pyloric tumor, 17 (45.9%) had presence of H.pylori and 20 (54.1%) had absence of H.pylori
- Among 9 patients with body tumor, 3 (33.3%) had presence of H.pylori and 6 (66.7%) had absence
- Among 2 patients with fundus tumor, 1 had presence of H.pylori and 1 had absence.
- Prevalence of H.pylori was found to be maximum with tumors occurring in the distal stomach –Antro-pyloric region, however the p value was .536 which is not statistically significant.

Pathological Type of Tumor (Lauren's classification) With H. Pylori

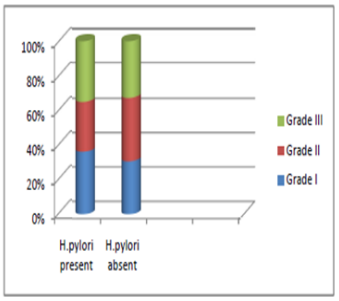
			H.pylori		
			ABSENT	PRESENT	Total
HISTOLOGICAL TYPE	Diffuse	Count	6	4	10
		% within histological type	60%	40%	100.0%
	Intestinal	Count	22	18	40
		% within histological type	55%	45%	100.0%
Total		Count	28	22	50
		% within histological type	56%	44%	100.0%



- Among 40 patients with intestinal type of tumor, 18 (45%) had presence of H.pylori and 22 (55%) had absence of H.pylori.
- Among 10 patients with diffuse type of tumor, 4 (40%) had presence of H. pylori and 6 (60%) had absence of H.pylori.
- In this study, Prevalence of H.pylori was higher in intestinal type of tumor, however the p value was 1.000 which is not statistically significant

Tumor Differentiation (Grade) With H. pylori

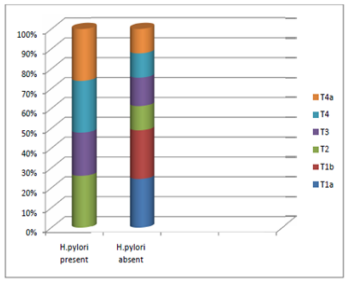
			H.pylori		
			ABSENT	PRESENT	Total
HISTOLOGICAL GRADE	GI	Count	2	2	4
		% within grade	50%	50%	100.0%
	GII	Count	15	10	25
		% within grade	60%	40%	100.0%
	GIII	Count	11	10	21
		% within grade	52.4%	47.6%	100.0%
Total		Count	28	22	50
		% within grade	56%	44%	100.0%



- Among 4 patients with grade I tumor , 2 (50%) had presence of H.pylori and 2 (50%) had absence of H.pylori
- Among 25 patients with grade II tumor , 10 (40%) had presence of H.pylori and 15 (60%) had absence of H.pylori
- Among 21 patients with grade III tumor , 10 (47.6%) had presence of H.pylori and 11 (52.4%) had absence of H.pylori
- In this study, prevalence of H pylori was higher in Grade I tumors, however the p value was 0.847 which is statistically insignificant.

T Stage of the Disease with H. Pylori

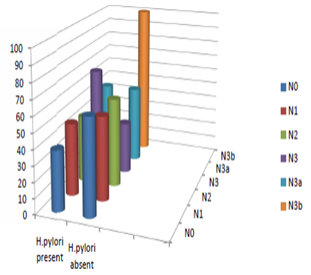
			H.pylori		
			ABSENT	PRESENT	Total
T stage	T1a	Count	1	0	1
		% within T stage	100%	0.0%	100.0%
	T1b	Count	1	0	1
		% within T stage	100%	0.0%	100.0%
	T2	Count	5	5	10
		% within T stage	50%	50%	100.0%
	T3	Count	14	10	24
		% within T stage	58.3%	41.7%	100.0%
	T4	Count	1	1	2
		% within T stage	50%	50%	100.0%
	T4a	Count	6	6	12
		% within T stage	50%	50%	100.0%
Total		Count	28	22	50
		% within T stage	56%	44%	100.0%



- Among 1 patient with T1a lesion and 1 patient with T1b lesion , none had presence of H.pylori
- Among 10 patients with T2 lesion, 5 (50%) had presence and 5 (50%) had absence of H.pylori
- Among 24 patients with T3 lesion, 10 (41.7%) had presence and 14 (58.3%) had absence of H.pylori
- Among 2 patients with T4 lesion, 1 (50%) had presence and 1 (50%) had absence of H.pylori
- Among 12 patients with T4a lesion , 6 (50%) had presence of H.pylori and 6 (50%) had absence of H.pylori
- In this study, prevalence of H pylori was higher in patients with T2 and T4a lesion, however the p value was .853 which is not statistically significant

N Stage of the Disease

			H.pylori		
			ABSENT	PRESENT	Total
N stage	N0	Count	8	5	13
		% within N stage	61.5%	38.5%	100.0%
	N1	Count	7	6	13
		% within N stage	53.8%	46.2%	100.0%
	N2	Count	8	6	14
		% within N stage	57.1%	42.9%	100.0%
	N3	Count	1	2	3
		% within N stage	33.3%	66.7%	100.0%
	N3a	Count	3	3	6
		% within N stage	50%	50%	100.0%
	N3b	Count	1	0	1
		% within N stage	100%	0.0%	100.0%
Total		Count	28	22	50
		% within N stage	56%	44%	100.0%

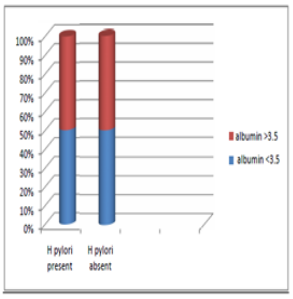


- Among 13 patients with N0 nodal status , 5 (38.5%) had presence and 8 (61.5%) had absence of H.pylori
- Among 13 patients with N1 nodal status , 6 (46.2%) had presence and 7 (53.9%) had absence of H.pylori
- Among 14 patients with N2 nodal status , 6 (42.9%) had presence and 8 (57.1%) had absence of H.pylori

- Among 3 patients with N3 nodal status , 2 (66.7%) had presence of and 1 (33.3%) had absence of H.pylori
- Among 6 patients with N3a nodal status , 3 (50%) had presence of and 3 (50%) had absence of H.pylori
- Among 1 patient with N3b nodal status , none had presence of H.pylori
- In this study, Prevalence of H.pylori was higher in N3 nodal status, however the p value is .813 which is not statistically significant.

Pre – Operative Albumin Levels With H.Pylori.

			H.Pylori		
			ABSENT	PRESENT	Total
ALBUMIN	<3.5	Count	19	15	34
		% within albumin	55.9%	44.1%	100.0%
	>3.5	Count	9	7	16
		% within albumin	56.2%	43.8%	100.0%
Total		Count	28	22	50
		% within albumin	56%	44%	100.0%

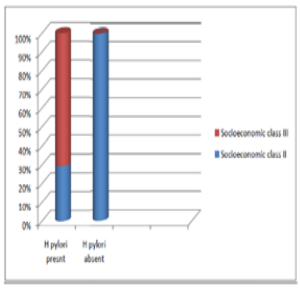


- Among 34 patients with albumin < 3.5 , 15 (44.1%) had presence of H.pylori and 19 (55.9%) had absence
- Among 16 patients with albumin > 3.5 , 7 (43.8%) had presence of H.pylori and 9 (52.7%) had absence
- In this study, Prevalence of H.pylori in carcinoma stomach was higher in patients with low pre-operative serum albumin levels, however the p value is .981 which is not statistically significant

Socioeconomic Status (Ses) With H.Pylori

Crosstab

			H.pylori		
			ABSENT	PRESENT	Total
Socioeconomic status	Class II	Count	28	20	48
		% within SES	58.3%	41.7%	100.0%
	Class III	Count	0	2	2
		% within SES	0%	100%	100.0%
Total		Count	28	22	50
		% within SES	56%	44%	100.0%



- Among 48 patients with socio-economic class II, 20 (41.7%) had presence of H.pylori 28 (58.3%) had absence of H. Pylori
- Among 2 patients socioeconomic class III, 2 (100%) had presence of H.pylori
- In this study, prevalence of H. Pylori was higher in patients with socio-economic class III, however the p value was >.05 which is not statistically significant.

Discussion

Patients with H. pylori infection have a high risk of Gastric Carcinoma[5,6] . In fact, a recent review indicated that 2 million cases of cancer each year worldwide could be attributed to H. pylori, a key infectious agent leading to carcinoma stomach.[4]

This study is a prospective study to assess the prevalence of H.pylori in 50 cases of histologically proved carcinoma stomach in terms of age, gender, location of tumor, pathological types, tumor differentiation, T and N stages of the disease, with associated chronic gastritis and intestinal metaplasia.Patient factor variables like smoking habits, alcohol consumption, diabetes mellitus and socio-economic status were analysed with prevalence of H. pylori

Age

In this study, prevalence of H.pylori was higher in patients upto 40 years, however it was not statistically significant.

The EUROGAST study on diverse populations found a 6-fold increase in the risk of gastric adenocarcinoma development for patients with H. pylori infection compared to patients that were not infected [5] . There was a still much greater risk of adenocarcinoma in H.pylori-infected individuals younger than 30 years of age [6] . In a study done by Narayan thapa et al., at Shree Birenda hospital which was published in 2013 in MJSBH showed

that the age group predominantly affected was above 60 years. [7]

Gender

In this study, prevalence of H.pylori was higher in females than males, however it was not statistically significant.

Hansson et al., [8] investigated the risk of Gastric Carcinoma among patients with H.pylori infection in a Swedish population-based study and reported that female patients and patients who were younger than 50 years old were found to have a higher risk of Gastric Cancer than an age and gender matched background population.

In a study done by Narayan thapa et al., at Shree Birenda hospital which was published in 2013 in MJSBH showed that males were affected more than females [7] .

Location of tumor

In this study, the prevalence of H.pylori was higher in tumors occurring in the distal stomach–Antro – pyloric region which is also the commonest site of tumor. However it was not statistically significant.

There appears to be differences in the locations of gastric adenocarcinoma in H.pylori-infected patients. Distal gastric adenocarcinoma is much more likely to develop in H.pylori-infected patients than gastroesophageal junction adenocarcinoma [9] .

In a study done by Narayan thapa et al., at Shree Birenda hospital which was published in 2013 in MJSBH showed H.pylori prevalence was maximum with distal gastric carcinoma [7]

Pathological type

In this study, prevalence of H.pylori was higher in patients with intestinal type of tumor though it was not statistically significant H.pylori infection has been associated with both intestinal and diffuse types of gastric adenocarcinoma [6,8] .

In a study done by Narayan thapa et al., at Shree Birenda hospital which was published in 2013 in MJSBH showed H.pylori prevalence was increased in intestinal type of carcinoma stomach [7]

Tumor differentiation

In this study, prevalence of H. Pylori was higher in grade I tumors, however it was not statistically significant.

In a study done by Byung Mu Lee et al., 1998 Jpn. J. Cancer Res. 89, 597–603, June 1998 [10] showed that Grade III tumors had an increased prevalence of H. Pylori

Association with T and N stage of the disease

In this study patients with T2, T4a lesions and N3 nodal status had higher prevalence of H. Pylori however it was not statistically significant.

In a study conducted by Hai bo Qui et al., 2010 [(11)] have reported association of H pylori infection with nodal involvement.

In a study conducted by Eduardo cambruzzi et al.,Arq Bras cir Dig 2014 jan-mar27(1): 18-21 showed that there was relation with depth of lesion and no relation with nodal status [12] .

Association with diabetes and socioeconomic status

In this study, the prevalence of H.pylori was higher in non-diabetics and in patients with socio-economic class III.

In a study conducted by Sarita Bajaj, et al., [14] 2014 Sep-Oct; 18(5): 694–699. Prevalence of H. pylori infection was significantly higher in diabetes as compared to controls based on HbA1c levels.

In a study done by Mohammed Mahdy Khalifa et al., Gut pathology 2010; 2:2 march 31 1757-4749-2-2 showed that H.pylori was associated with low socio economic status. [13]

Conclusion

Hence, in this study we conclude that the prevalence of Helicobacter pylori in carcinoma stomach was not statistically significant among the variables analysed in this study group of population

This being a prospective study in a small population, a similar study with a larger sample size may be required to substantiate the results of this study.

So, it can be inferred that prevalence of H. pylori infection is not directly associated with pathogenesis of gastric cancer but it may act as a co-carcinogen by damaging the mucosa and thereby making it more susceptible to effects of carcinogen.

References

1. McColl KE. Clinical practice. Helicobacter pylori infection. N Engl J Med. 2010;362:1597–1604.
2. Gastroduodenal diseases of childhood Horvitz, Ga The prevalence of Helicobacter pylori infection in different countries. (PMID:8547526) yle; Gold, Benjamin D Current Opinion in Gastroenterology: November 2006 - Volume 22 -Issue 6 - p 632–640 doi: 0.1097/01. mog.0000245534. 58389.f3 Stomach and duodenum.
3. McColl KE. Clinical practice. Helicobacter pylori infection. N Engl J Med. 2010;362:1597–1604.
4. De Martel C, Ferlay J, Franceschi S, Vignat J, Bray F, Forman D, Plummer M. Global burden of cancers attributable to infections in 2008: a review and synthetic analysis. Lancet Oncol. 2012;13:607–615.
5. An international association between Helicobacter pylori infection and gastric cancer. The EUROGAST Study Group. Lancet. 1993;341:1359–1362.
6. Huang JQ, Sridhar S, Chen Y, Hunt RH. Meta-analysis of the relationship between Helicobacter pylori seropositivity and gastric cancer. Gastroenterology. 1998;114:1169–1179.
7. Narayan Thapa, Kunda Bikram Shah, Bharat Bahadur Bhandari, Bhairab Kumar Hamal, Amar Shrestha, Subodh Kumar Adhikari Association of Helicobacter Pylori Infection and Stomach Cancer ..MJSBH..july December 2013 .volume 12.issue 2 pg :36-41
8. Hansson LE, Nyrén O, Hsing AW, Bergström R, Josefsson S, Chow WH, Fraumeni JF, Adami HO. The risks of stomach cancer in patients with gastric or duodenal ulcer disease. N Engl J Med. 1996;335:242–249.
9. Kamada T, Kurose H, Yamanaka Y, Manabe N, Kusunoki H, Shiotani A, Inoue K, Hata J, Matsumoto H, Akiyama T, et al. Relationship between gastroesophageal junction adenocarcinoma and Helicobacter pylori infection in Japan. Digestion 2012;85:256–260.
10. Byung Mu Lee,1, 6 Ja-June Jang,2 Joung-Soon Kim,3 Young Chan You,4 Sun Ah Chun,1 Hyung Sik Kim,1 Hyung Mee Han,5 Mi Young Ahn1 and Soo Hyun Byun.Association of Helicobacter pylori Infection with Gastric Adenocarcinoma Jpn. J. Cancer Res. 89, 597–603, June 1998.
11. Hai-Bo Qiu,1 ,2 Li-Yi Zhang,3 Rajiv-Prasad Keshari,1 ,2 Guo-Qiang Wang,1 ,2 Zhi-Wei Zhou, 1 ,2 Da- Zhi Xu,1 ,2 Wei Wang,1 ,2 You-Qin Zhan,1 ,2 and Wei Li1 ,Relationship between H.Pylori infection and clinicopathological features and prognosis of gastric cancer 2010 Jul 17. doi: 10.1186/1471-2407-10-374.
12. Eduardo cambruzzi et al.,Arq Bras cir Presence of metastasis in regional lymph node associated with tumor size and depth invasion in gastric adenocarcinoma Dig 2014 jan-mar27(1): 18-21
13. Mohammed Mahdy Khalifa et al., Gut pathology Helicobatcter pylori – a poor man’s gut pathogen 2010; 2:2 march 31 1757-4749-2-2
14. Sarita Bajaj, Lokendra Rekwal, S.P. Misra,1 Vatsala Misra,2 Rakesh Kumar Yadav, and Anubha Srivastava. Prevalence of H. pylori infection in type 2 diabetes 2014 Sep-Oct; 18(5): 694–699.

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