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ORIGINAL ARTICLE

STUDY OF RISK FACTORS OF CARCINOMA STOMACH

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ABSTRACT

Introduction : Carcinoma stomach is the disease of the mankind and this is called captain of “Man of Death” .According to the International Gastric Cancer Society, more than 800,000 people are affected by Gastric Carcinoma every year and up to 650,000 people have succumbed to gastric cancer. Gastric cancer rates shows marked geographical variation. These differences in incidence rates can be attributed to many factors but refer particularly to differences in dietary habits, and infection to *Helicobacter pylori*. This study includes association between various risk factors related to gastric cancer.

Materials and Methods : The study includes 50 histologically proven cases of Carcinoma Stomach who were admitted in the Department of surgery, Rajah Muthiah Medical College Hospital, Annamalainagar during a period of 24 months from July 2012 to July 2014. The risk factors of Carcinoma Stomach in relation to age, sex, dietary factors, occupation, smoking, alcohol, drug intake, previous gastric surgery were studied by taking detailed history. The risk factors of Carcinoma Stomach in relation to H.pylori and blood group are studied by doing H.pylori Ig G ab testing along with ABO Grouping and Rh Typing respectively. **Results:** . In our series, gastric cancer was found to be common in the fourth decade of life 38%. In our series, out of 50 cases, the male to female ratio is 1.8 : 1, 32(64%) being male and 18 (36%) females. In our series, out of 50 cases, the male to female ratio is 1.8 : 1, 32(64%) being male and 18 (36%) females. All female patients in our study were non smokers and non alcoholic. Among 32 male patients 29 of our patients were smokers and 23 were alcoholics. None of our patients gave family history of carcinoma stomach. 43 (86%) of our patients were Agricultural labourers. About 8 patients in our series gave history of prolonged intake of proton pump Inhibitors. In our series, 2 patients present with history of previous surgery for duodenal ulcer (Truncal vagotomy and posterior gastrojejunostomy). In our study 34 (66%) patients presented with blood group A. **Conclusion:** The peak incidence of carcinoma stomach in our study is in fourth decade. Males have higher incidence of gastric cancer than females. There is a high incidence of Carcinoma Stomach in low socioeconomic group is probably due to diet rich in carbohydrates & poor in fat & protein. Smoking and alcoholism has a definite role in aetiology of carcinoma stomach. There is a strong association of H.pylori infection and gastric cancer. A(+ve) Blood group is another possible risk factor.

Keywords: gastric carcinoma, risk factors, alcohol, smoking, H.pylori, Screening Endoscopy

1.INTRODUCTION

Carcinoma stomach is the disease of the mankind and this is called captain of “Man of Death” .According to the International Gastric Cancer Society, more than 800,000 people are affected by Gastric Carcinoma every year and up to 650,000 people have succumbed to gastric cancer. It is

likely that in 2020 GC will increase by 10% in developing countries. Stomach cancer is the second-most common cancer among men and third most among females in Asia and worldwide. Gastric Carcinoma is a multifactorial disease. The symptoms and sign of the stomach cancer are often reported late when the disease is already in advanced stages and 5-year survival is less than 30% in developed countries and around 20% in developing countries. Gastric cancer rates shows marked geographical variation, with high-risk areas in Japan, China, Eastern Europe and certain countries in Latin America. Low-risk population is seen

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among whites in North America, India, Philippines, most countries in Africa, some Western European countries and Australia. These differences in incidence rates can be attributed to many factors but refer particularly to differences in dietary habits, and infection to *Helicobacter pylori*. This study includes association between various risk factors related to gastric cancer.

AIMS AND OBJECTIVES

To study the various risk factors of Carcinoma Stomach in patients admitted and treated in the Department of Surgery, Rajah Muthiah Medical College Hospital, Annamalaiagar.

2.MATERIALS AND METHODS

The study includes 50 histologically proven cases of Carcinoma Stomach who were admitted in the Department of surgery, Rajah Muthiah Medical College Hospital, Annamalaiagar during a period of 24 months from July 2012 to July 2014. The risk factors of Carcinoma Stomach in relation to age, sex, dietary factors, occupation, smoking, alcohol, drug intake, previous gastric surgery were studied by taking detailed history. The risk factors of Carcinoma Stomach in relation to H.pylori and blood group are studied by doing H.pylori Ig G ab testing along with ABO Grouping and Rh Typing respectively

Exclusion criteria-

Patients with tumor recurrence

3.RESULTS

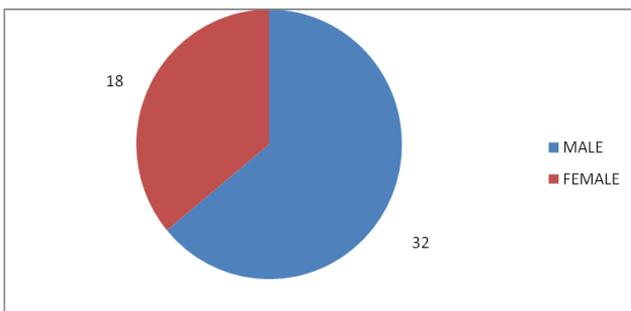
Age

Table 1 Age Distribution

p	Female	Male	Total	Percentage
31-40	0	1	1	2
41-50	7	12	19	38
51-60	4	9	13	26
61-70	5	8	13	26
71-80	1	2	3	6
81-90	1	0	1	2
Total	18	32	50	100

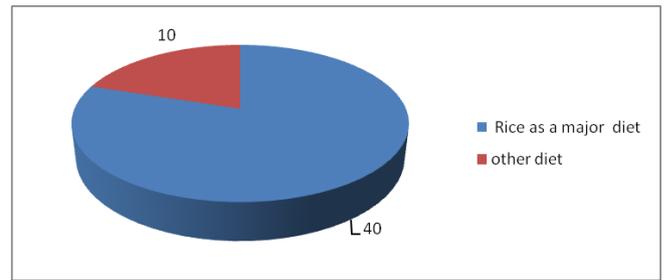
The youngest patient in our study was a 35 years old woman with an undifferentiated carcinoma of antrum of stomach and the oldest was an 81 years old woman with carcinoma of antrum. In our series, gastric cancer was found to be common in the fourth decade of life 38%.

Figure 1 -Sex distribution



In our series, out of 50 cases, the male to female ratio is 1.8 : 1, 32(64%) being male and 18 (36%) females.

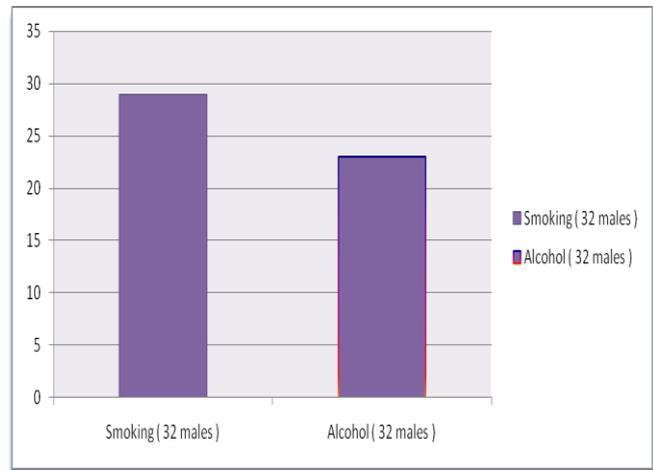
Low Fat And Protein With High Starch Diet



In our series, 40 (80%) patients consume rice as the major food, which is rich in carbohydrates & poor in fat & protein

Smoking And Alcohol

Figure 2 Alcohol and smoking association

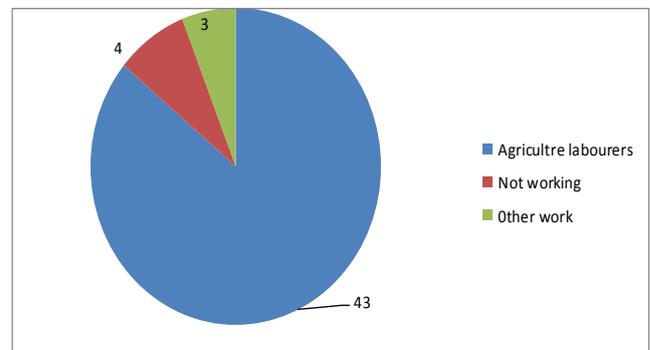


All female patients in our study were non smokers and non alcoholic. Among 32 male patients 29 of our patients were smokers and 23 were alcoholics.

Genetic Factors

None of our patients gave family history of carcinoma stomach

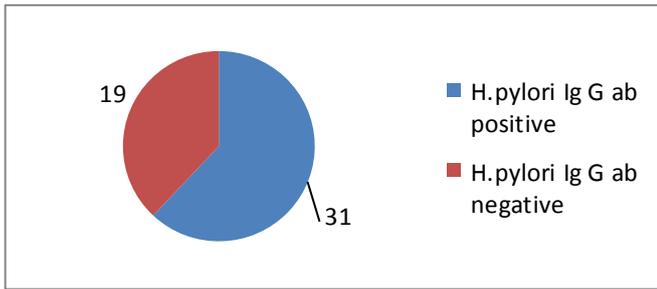
Occupational Factors



43 (86%) of our patients were Agricultural labourers.

Role Of H.Pylori Infection

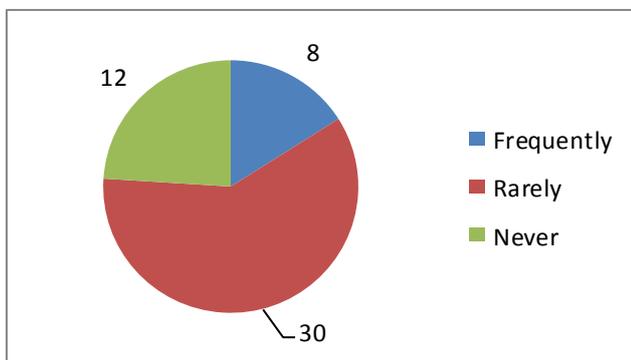
Figure 3 Role of H.pylori



31 patients in our study was positive for H.Pylori IgG antibody

Role Of Proton Pump Inhibitors

Figure 4 Role of proton pump inhibitor



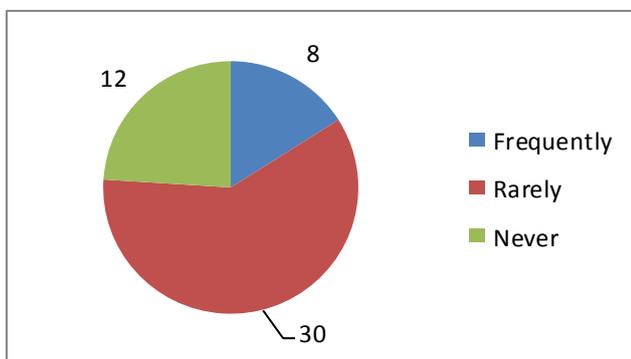
About 8 patients in our series gave history of prolonged intake of proton pump Inhibitors.

History Of Previous Surgery

In our series, 2 patients present with history of previous surgery for duodenal ulcer (Truncal vagotomy and posterior gastrojejunostomy)

Blood Group Antigens

Table 2 Association between blood group and Gastric Carcinoma



In our study 34 (66%) patients presented with blood group A

4.DISCUSSION

The youngest patient in our, study was a 35 years old woman with an undifferentiated carcinoma of antrum of stomach and the oldest was on 81 years old woman with carcinoma of antrum. In our series, gastric cancer was found to be common in the fourth decade of life 38%.

According to western study the peak incidence of Gastic cancer is in the 7th decade.^[1]

Occurrence of Carcinoma stomach is more in men than in women. In our series, out of 50 cases, the male to female ratio is 1.8 : 1, 32(64%) being male and 18 (36%) females.

In Lumpkin series, the ratio was 2.6:1. In Japan the analysis shows 62% were males and 38% were females .^[2]

The usual high incidence in males is probably due to increased association with smoking and alcohol consumption when compared to females.

A diet rich in starch but poor in animal fat & protein is thought to be possible aetiological factor in carcinogenesis of cancer stomach.^[4] In our series, 40 (80%) of the patients consume rice as the major food, which is rich in carbohydrates & poor in fat & protein. High incidence of Carcinoma Stomach in low socioeconomic group is probably due to diet rich in carbohydrates & poor in fat & protein. Consumption of preserved, smoked and cured foods result in high

Consumption of preserved, smoked and cured foods result in high concentration of nitrites which forms mutagenic compounds when exposed to bile acids in a stimulated Gastric activity. Colonization of achlorhydric stomach by bacteria reduce dietary nitrate to nitrites and convert dietary amines in presence of nitrite into carcinogenic N-nitroso compounds .^[5]

Consumption of raw vegetables, fruits, citrus fruits and high fibre diet are inversely related to stomach cancer. Diets rich in vit A and C are associated with a low risk of gastric cancer.^{[6][12]}

Smoking has been reported as to increase the relative risk where as there has been no consistent data to support the alcohol consumption affect the incidence of stomach cancer.^[7]

Both smoking and alcoholism leads to gastritis, which is a precursor of carcinoma stomach. No female patients were smoker and alcoholics in our series. Among 32 male patients 29 of our patients were smokers and 23 were alcoholics.

P53 is the tumour suppressor gene that has been most extensively studied.^[12]Gastric cancer also occurs in families with Hereditary non-polyposis coli, Li Fraumeni syndrome, FAP .^[8] None of our patients gave family history of carcinoma stomach.

Incidence of Carcinoma Stomach is more common in low socioeconomic group. In our series, 42 out of 50 patients belonged to low socioeconomic status and 12 patients to lower middle class and 4 cases from upper middle class. High incidence in low socioeconomic group is probably related to diet rich in starch and poor in fat & protein.^[4]

Incidence of cancer stomach is high in occupation groups including coal miners, farmers, pottery workers & rubber

workers, Whether this occupation truly are associated with increased gastric cancer risk or whether merely reflect the socioeconomic status of the employee is not clear.^[9] 38 (86%) of our patients were Agricultural laborers.

Incidence of Carcinoma Stomach is high in conditions associated with achlorhydria. Pernicious anaemia, Chronic atrophic gastritis and Intestinal metaplasia predispose to Gastric cancer probably because of associated achlorhydria.^{[10][12]} Bacterial overgrowth in achlorhydric stomach reduce dietary nitrites to nitrites and covert dietary amines to carcinogenic N nitroso compounds in presence of nitrites.

Hansson L-E & Tracz studies reported a strong association of H.pylori infection and gastric cancer particularly distal adenocarcinoma. Infection with H.Pylori has been linked with chronic atrophic gastritis, an inflammatory precursor of gastric cancer. The risk of developing gastric cancer is correlated with increasing H.Pylori IgG antibody level.^[11]

Incidence of H.Pylori in our series is 62%. Recently it has been shows that H. Pylori isolates that possess the cag A gene are more virulent in nature and associated with higher risk of developing stomach cancer than those with cag A - negative strains (Blaser MJ – cancer Res 1995)^[15]

In 1922, Balfour made the original observation that there was an association between the development of gastric cancer and previous partial gastrectomy for benign disease.^[13]

Subsequently it was made out that patients who had peptic ulcer surgery particularly those with drainage procedures like gastrojejunostomy or pyloroplasty are at four fold increased risk for developing gastric cancer .

In our series, 2 patients present with history of previous surgery for duodenal ulcer (Truncal vagotomy and posterior gastrojejunostomy)

Prolonged use of proton- pump inhibitors will lead to atrophic gastritis, which subsequently becomes more prone for developing cancer stomach. About 8 patients in our series gave history of prolonged intake of proton pump Inhibitors.

No proven incidence that H2 blockers predispose to carcinoma stomach. Since H2 blockers do not block acid production completely, incidence of atrophic gastritis is rare. Most of our patients were treated with H2 Blockers initially before the diagnosis of carcinoma stomach was made.^[14]

The association between blood group and Gastric Carcinoma was studied. Most common group in our patients was Blood group 'A', it proves association between Blood group 'A', and Carcinoma Stomach.

5.CONCLUSION

The peak incidence of carcinoma stomach in our study is in fourth decade. Males have higher incidence of gastric cancer than females. There is a high incidence of Carcinoma Stomach in low socioeconomic group is probably due to diet rich in carbohydrates & poor in fat & protein. Consumption of preserved, smoked and cured foods result in high incidence .

Smoking and alcoholism has a definite role in aetiology of carcinoma stomach. There is a strong association of H.pylori infection and gastric cancer . A(+ve) Blood group is another possible risk factor. Prevention is always better than cure so people with modifiable risk factors for carcinoma stomach can be educated through mass education programmes to highlight certain principles which can prevent them from gastric carcinoma. While for other people with nonmodifiable risk factors we can introduce screening endoscopic programmes as they follow in japan for early diagnosis and curative treatment.

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