Carcinoma stomach – A clinico morphological study

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Abstract
A clinico morphological study of carcinoma stomach was carried out in a rural teaching hospital namely Rajah Muthiah Medical college hospital, Annamalai University, cuddalore district, Tamil Nadu from 41 patients presenting with gastric carcinoma and the details are as follows: Among the 41 patients, 75.6% were male and 24.4% were female. The mean age was 55 years. Patients exhibit 24.40% of B positive group, 21.95% of O positive group and 14.63% of A positive group. Common presenting complaints were abdominal pain (90.24%), nausea/vomiting (70.73%) and anemia was present in nearly half of the study group (48.78%). Histopathologically 95.12% was gastric adenocarcinoma with 21.95% showing a mucinous variant and 4.87% showing a papillary variant and 2.44% were early gastric cancer and adenosquamous carcinoma each.
Keywords: Carcinoma stomach, Rural Teaching Hospital.

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INTRODUCTION

Adeno carcinoma is the most common malignancy of stomach comprising over 90% of all gastric cancers. Incidence of gastric cancers increases markedly with geographical location. Incidence is 20 fold more in Japan, Chile, Eastern Europe as compared to northern Europe, Africa and South East Asia probably due to increased consumption of salted and smoked foods[1].

MATERIALS AND METHODS

Gastric carcinoma diagnosed on gastric biopsies and surgical specimens received from August 2014 to August 2016 were included in the study. Age, sex, incidence, clinical presentation, detailed gross appearance of the specimen were recorded in detail. Sections from representative areas were studied using haematoxylin and eosin staining. Histomorphological features were recorded and data were analysed.

RESULTS

The present study consisted of 41 cases of gastric carcinoma from a total specimens of 73 endoscopic specimens and 3 gastrectomy specimens. The highest incidence of gastric carcinoma was found to be 34.15% in the age group 51 to 60 years and the mean age was 55 years. (Table 1).

Table 1: Gastric Carcinoma in relation to Age

Age group in Years	No. of cases = 41	%
21 - 30	1	2.44%
31 - 40	4	9.76%
41 - 50	7	17.07%
51 - 60	14	34.15%
61 - 70	11	26.83%
71 - 80	4	9.75%
Total	**41**	**100%**

In this study, 31 (75.6%) were male and 10 (24.4%) were female with a male to female ratio of 3.1:1. [Table 2].

Table 2: Gastric carcinoma – Gender incidence

Gender	No. of cases = 41	%
Male	31	75.6%
Female	10	24.4%
Total	**41**	**100%**

The present study showed 90.24% of the patients were illiterate and only 9.76% were literate. (Table 3)

Table 3: Gastric carcinoma – Educational Status

Educational Status of the individual	No. of cases = 41	%
Literate	4	9.76%
Illiterate	37	90.24%
Total	**41**	**100%**

This study showed that 90.24% of the patients were Daily Labourers by occupation and only 9.76% were agricultural workers. (Table 4)

Table 4: Gastric carcinoma – in relation to Occupation

Occupation	No. of cases = 41	%
Occupation – Labourers	37	90.24%
Occupation – Agriculture	4	9.76%
Total	**41**	**100%**

Out of the 41 patients studied, 90.24% of the patients belonged to the lower income group (Rs.400/month), while 9.76% belonged to the middle income group (Rs.1000- 10,000/month) (Table5)

Table 5: Gastric carcinoma – Association with Income

Income	No. of cases = 41	%
Low	37	90.24%
Middle	4	9.76%
High	-	-
Total	**41**	**100%**

Risk factors

The common risk factors studied for gastric carcinoma were alcohol, smoking and tobacco chewing. The present study observed that 17 patients (41.46%) were associated with alcohol consumption followed by 14 patients (34.15%) of smokers and 4 patients (9.76%) gave history of tobacco chewing. [Table 6]

Table 6: Gastric carcinoma – Risk factor association

Risk factors	No. of cases = 41	%
Alcohol	17	41.46%
Smoking	14	34.15%
Tobacco chewing	4	9.76%
No significant risk factor	6	14.63%
Total	**41**	**100%**

Among the 41 patients, 10 (24.40%) were of B positive group followed by 9 patients (21.95%) who were O positive and 6 patients (14.63%) were A positive, while the data was not available for the rest of the patients. The overall proportion of blood group in India is documented below: [2]

Table 7: ABO and Rh (D) blood group distribution in India

Amit Agarwal et al (July 2009 and June 2011)			
Blood groups	Phenotypes	Number	Percentage
ABO	A	2216	22.8%
	B	3125	32.26%
	O	3595	37.12%
	AB	750	7.74%
Total		**9686**	**100%**
Rhesus	D Positive	9164	94.61%
	D Negative	522	5.39%
Total		**9686**	**100%**

The proportion of blood group in Tamil Nadu is depicted in the table given below: [5]

Table 8: ABO and Rh (D) blood group distribution in Tamilnadu

Maheswari Uma and M. Somasundaram C 2010			
Blood groups	Phenotypes	Number	Percentage
ABO	A	190	21.3%
	B	282	31.7%
	O	**347**	**39.0%**
	AB	71	8.0%
Total		890	100%
Rhesus	D Positive	841	94.5%
	D Negative	49	5.5%
Total		**890**	**100%**

The percentage of incidence of blood group in and around Chidambaram taluk, Cuddalore District is as follows:

Table 9: Incidence of Blood group in and around Chidambaram Taluk

Blood Group	No. of Cases	Percentage
O+ve	629	33.61%
B+ve	671	35.87%
A+ve	333	17.80%
AB+ve	151	8.07%
O-ve	26	1.40%
B-ve	27	1.44%
A-ve	27	1.44%
AB-ve	07	0.37%
Total	**1871**	**100%**

Source: Blood sample - voluntary donors list - Rajah Muthiah Medical College and Hospital, Annamalai University.

In Chidambaram Taluk, there is increased proportion of B positive Blood group individuals and in the present study, the most commonly associated blood group detected was B positive, in contrast to world's higher incidence of gastric cancer in association with Blood group A. (Table 10)

Table 10: Gastric carcinoma – Blood group association

Blood group	No. of cases = 41	%
A+	6	14.63%
B+	10	24.40%
AB+	5	12.19%
O+	9	21.95%
O-	1	2.43%
Not available	10	24.40%
Total	**41**	**100.00%**

The most common clinical symptom was abdominal pain in 90.24% of the patients, followed by nausea and vomiting in 70.73% of the patients and the least common symptom was melena (7.31%). Anemia was present in nearly half of the study group (48.78%). 33.58% of patients had loss of weight and loss of appetite. 31.70% of patients had lump and 26.82% had gastric outlet obstruction followed by 12.19% who presented with dyspepsia. Melena was present in 7.31% of patients. (Table 11)

Table 11: Gastric carcinoma in relation to presenting symptoms

Clinical symptoms	No. of cases	%
Dyspepsia	5	12.19%
Abdominal pain	37	90.24%
Nausea/vomiting	29	70.73%
Melena	3	7.31%
GOO – Gastric Outlet Obstruction	11	26.82%
Weight loss	15	33.58%
Loss of appetite	15	33.58%
Lump	13	31.70%
Anemia	20	48.78%

Though WHO classification of histological types of gastric carcinoma was followed for the present study, we have encountered only the following histological patterns such as gastric adenocarcinoma, mucinous & papillary variants of adenocarcinoma, adenosquamous carcinoma and early gastric carcinoma. Of these, the most common histological type was gastric adenocarcinoma observed in 39 patients (95.12%) including 9 patients (21.95%) showing a mucinous variant of gastric adenocarcinoma and 2 patients (4.87%) showing a papillary variant of gastric adenocarcinoma. The remaining 2 patients were diagnosed as early gastric cancer and adenosquamous carcinoma - 1 patient each (2.44%). (Table 12).

Table 12: Histological types of gastric adenocarcinoma

Histological types	No. of cases = 41	Percentage
Adenocarcinoma	28	68.29%
Mucinous variant of adenocarcinoma	9	21.95%
Papillary variant of adenocarcinoma	2	4.88%
Adenosquamous CA	1	2.44%
Early gastric cancer	1	2.44%
Total	41	100%

Analysing the degree of differentiation of gastric carcinomas in the present study, it was found that the most common degree of differentiation was poorly differentiated adenocarcinoma observed in 19 patients (46.34%) followed by the well differentiated tumors seen in 17 patients (41.46%). The least incidence was seen in moderately differentiated tumors in 3 patients (7.32%). [Table 12 a]

Table 12a: Gastric adenocarcinoma – Degree of differentiation

Degree of differentiation	No. of cases = 41	%
Well differentiated adenocarcinoma	17	43.60%
Moderately differentiated adenocarcinoma	3	7.69%
Poorly differentiated adenocarcinoma	19	48.72%
Total	39	100%

DISCUSSION

The incidence of gastric cancer from Japan (M Inoue and S Tsugane, 2002) was estimated to be 934 000 cases, 56% of the new cases being derived from Eastern Asia, 41% from China, and 11% from Japan[4]. In Asia, it was maximum in Eastern Asia (30.2/100,000) (Rubayat Rahman et al 2008) with the highest incidence in Japan (31.1/100,000)[5]. The incidence rate of gastric cancer is four times higher in Southern India compared with Northern India(Keechilat Pavithran et al 2001)[6].In our present study, the incidence of gastric cancer was mostly concentrated in villages around Chidambaram, South Arcot district and most of them were from a rural background. In our present study, the maximum incidence of gastric cancer was seen in the age group of 51 to 60 years (33.3%) similar to the study done by Arun Kumar et al (35.4%)[7] and study by SEER(2008-2012) (25.2%)[8] and also with the study by Gajalakshmi C K et al (32%)[9] in the same age group. The maximum incidence of gastric cancer in the present study, was seen in males (75.6%) comparable to the studies done by Firmin Ankouane et al (2014)[10], SuvenduMaji et al (2014)[11], Arun Kumar et al(2013)[7] and Gajalakshmi et al(1990)[9].In the present study, 90.24% of patients were illiterate and only 9.76% were literate and 90.24% were labourers while 9.76% were agricultural workers. Comparable to Gajalakshmi CK et al, in the present study 90.24% of patients belonged to low income group and only 9.76% belonged to middle income category. In the present study, the most common risk factor associated with gastric carcinoma was alcohol consumption in 17 patients (41.46%) followed by smoking in14 patients (34.15%) and tobacco chewing in 4 patients (9.76%) in contrast to the studies done by P Karthick et al where the most common risk factor associated was smoking in 30 patients (68.18%)[12] and Prathvi Shetty et al which did not show any association with alcohol consumption[13]. Probable reasons for this may be the relatively lesser number of cases studied and also because the present study is centered more in the rural population with lesser awareness of the medical hazards of alcohol, smoking and tobacco chewing. The maximum incidence of blood group associated with gastric carcinoma was B group(24.40%) comparable to the study by MA Kabir et

al(2006)[14], while the least association with gastric cancer was blood group AB(12.19%), which was also comparable to the study of MA Kabir et al (16%). The present study observed that the 90.24% of patients presented with abdominal pain, while 70.73% of patients presented with nausea and vomiting which was comparable with studies of Suvendu Maji et al and Arun Kumar et al. Anemia was present in 48.78% of patients in contrast to the study done by Sowkat Ahmad Bhat et al[15], where the incidence of anemia was 81.5%.Loss of weight and loss of appetite was observed in 33.58% of the patients comparable to the study done by Sowkat Ahmad Bhat et al, where the incidence was 34.5% and 35.5% respectively, but was in contrast to the study done by Suvendu Maji et al where the incidence of weight loss was 72%.Palpable lump was observed in 31.70% of patients in contrast to the study done by Ayandip Nandi et al where the incidence was 17.2%[16]. Gastric outlet obstruction was observed in 26.82% of the patients in our present study contrasting sharply with the incidence of 10.3% observed in a study by Ayandip Nandi et al. Dyspepsia was observed in 12.19% of the patients in our study in contrast to the studies done by Ayandip Nandi et al, Suvendu Maji et al and Sowkat Ahmad Bhat et al where the incidence was 44.8%, 70% and 76.5% respectively. Melena was present in only 7.31% in our patients, in contrast to the studies by Arun Kumar et al and Suvendu Maji et al who reported an incidence of 15.8% and 24% respectively. In conclusion, in the present study, the most common clinical symptom was abdominal pain in 90.24% of the patients followed by nausea and vomiting in 70.73% of the patients and the least common symptom was melena observed in 7.31% of the patients. In the present study, the most common histological type of gastric carcinoma was the mucinous variant of adenocarcinoma observed in 9 patients (21.95%) which was the same as the incidence observed in the study by Ayandip et al[16]. The most common degree of differentiation observed in our study was poorly differentiated adenocarcinoma in 19 patients (46.34%) which was comparable to studies done by Arun Kumar et al and Suvendu Maji et al. The least incidence was that of moderately differentiated carcinoma, which was seen in 3 patients (7.32%) of patients comparable to the study done by Maria Amin Qureshi et al[17].

SUMMARY AND CONCLUSIONS

During a study period from August 2014 to August 2016, a total of 3548 surgical specimens were received in the Department of Pathology, Rajah Muthiah Medical College and Hospital, Annamalai University of which 73 were endoscopic specimens and 3 were gastrectomy specimens. Maximum prevalence in both sexes was seen in the 6th decade (34.14%) while the least incidence was seen in 3rd decade (2.44%). Mean age was 55 years. Median age was 60 years. Male preponderance was seen with a M: F ratio of 3.1:1. Among the 41 patients, 37 patients (90.24%) were illiterate and only 4 patients (9.76%) were literate. 37 patients (90.24%) were Labourer by occupation and 4 patients (9.76%) were agricultural workers (farmers). 90.24% of the patients belonged to the lower income group while 9.76% belonged to the middle income group. Most common risk factor associated with gastric carcinoma was alcohol consumption in 17 patients (41.46%) followed by 14 patients (34.15%) who were smokers and 4 patients (9.76%) with history of tobacco chewing. The most commonly associated blood group detected was B positive in 10 patients (24.40%) and least commonly associated blood group was O negative in 1 patient (2.43%).The most common presenting symptom was abdominal pain found in 37 patients (90.24%) and least common symptom was melena in 3 patients (7.31%).Metastatic nodal deposits were seen in 3 patients (7.31%) (2 patients with mesenteric nodal deposits and 1 patient with para aortic nodal deposit).Gastric perforation was seen in 4 patients (9.76%).Pleural effusion was seen in 2 patients (4.87%) and an enlarged ovary was seen in 1 patient (2.43%). Ascitis was seen in 9 patients (21.45%). Pulmonary tuberculosis was seen in 1 patient (2.43%). Foci of calcification was seen in the liver on ultrasound examination of 1 patient (further details were not available). Ultrasonogram finding showed pyloric antral growth in only 11 patients (26.82%). Diabetes mellitus was present in 2 patients (4.87%) and systemic hypertension in 1 patient. (2.44%).Blood investigations showed anemia in 20 patients (48.7%).The most common histological type was gastric adenocarcinoma in 39 patients (95.12%) including mucinous variant in 9 patients (21.95%) and papillary variant in 2 patients (4.87%). The least common histological type was early gastric cancer and adenosquamous carcinoma each comprising 1 patient (2.44%). The most common degree of differentiation was poorly differentiated adenocarcinoma in 19 patients (46.34%).

CONCLUSION

The present study helps to gain insight about the overall prevalence of gastric carcinoma in a rural setting like Chidambaram, Tamilnadu.

FUTURE PERSPECTIVES

Emphasis should be given to the early detection of gastric carcinoma by endoscopic surveillance and biopsy in all patients presenting with dyspepsia and abdominal pain so

that appropriate treatment could be initiated in the early stage itself.

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