Clinicopathological Study of Carcinoma Stomach in a South Indian Population

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Abstract Introduction: *Gastric carcinoma remains one of the leading causes of cancer-related mortality worldwide, particularly in developing countries. Despite declining global incidence, regional variations persist in India, with Southern states showing distinct epidemiological and pathological patterns. Understanding clinicopathological characteristics is crucial for early detection, treatment planning, and prognostication.* ***Material and Methods:*** *This prospective observational study included 120 histopathologically confirmed cases of carcinoma stomach admitted to a tertiary care center in South India over a 2-year period. Demographic data, clinical presentation, endoscopic findings, tumor location, histopathological subtype, staging, and lymph node involvement were recorded. Inclusion and exclusion criteria were applied. Statistical analysis was performed using SPSS version 25.* ***Results:*** *The majority of patients were males (68.3%) with peak incidence in the 51-60 year age group. The most common presenting symptom was epigastric pain (82.5%). The antrum was the predominant tumor site (56.7%). Adenocarcinoma constituted 95% of cases, with intestinal type being more common (62%). Most patients presented in Stage III (48%). Lymph node metastasis was observed in 58% of cases.* ***Conclusion:*** *Carcinoma stomach in the South Indian population predominantly affects middle-aged males and commonly presents at advanced stages. Early detection strategies and awareness programs are essential to improve prognosis.*

Keywords: *Carcinoma stomach; Gastric cancer; Adenocarcinoma; Clinicopathological profile; South India; TNM staging*

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INTRODUCTION

Gastric carcinoma is the fifth most common malignancy and the fourth leading cause of cancer-related deaths globally[1]. According to GLOBOCAN 2020 data, over one million new cases and approximately 769,000 deaths were reported worldwide[2]. Although incidence has declined in Western countries, it remains significant in Asian populations[3]. India demonstrates heterogeneous distribution, with higher prevalence reported in Southern and Northeastern regions[4].

The etiopathogenesis of gastric carcinoma is multifactorial. Chronic Helicobacter pylori infection remains the strongest risk factor and is classified as a Group I carcinogen by the WHO[5]. Additional factors include dietary habits (high salt intake, smoked foods), tobacco use, alcohol consumption, genetic predisposition, chronic atrophic gastritis, and intestinal metaplasia[6,7]. Socioeconomic status and sanitation also influence disease prevalence[8].

Histologically, gastric adenocarcinoma accounts for over 90% of cases[9]. The Lauren classification divides gastric cancer into intestinal and diffuse types, each with distinct epidemiological and prognostic implications[10]. Intestinal type is associated with environmental factors and tends to form glandular structures, whereas diffuse type demonstrates infiltrative growth with signet ring cells[11].

Tumor location has shifted over time, with proximal gastric cancers increasing in Western countries[12]. However, distal gastric cancers remain predominant in many Indian populations[13]. Clinical presentation is often insidious, including dyspepsia, weight loss, anorexia, vomiting, and anemia[14]. Late presentation contributes significantly to poor survival rates[15].

TNM staging remains the cornerstone of prognosis and management[16]. Lymph node metastasis is a critical determinant of survival[17]. Surgical resection with adequate lymphadenectomy remains the primary curative modality[18]. However, advanced stage at diagnosis limits resectability in many cases[19].

Regional clinicopathological studies are essential for understanding local disease patterns and guiding early detection programs[20]. South India, with distinct dietary and sociocultural habits, requires region-specific evaluation[21].

The present study aims to evaluate the demographic profile, clinical presentation, histopathological features, tumor staging, and lymph node involvement in patients with carcinoma stomach in a South Indian population.

MATERIALS AND METHODS

Study Design

Prospective observational study conducted in the Department of General Surgery and Pathology at a tertiary care teaching hospital in South India from January 2023 to December 2024.

Sample Size

A total of 120 patients diagnosed with carcinoma stomach were included.

Inclusion Criteria

- Age ≥18 years
- Histopathologically confirmed carcinoma stomach
- Patients undergoing endoscopic biopsy or surgical resection
- Willing to provide informed consent
- **Exclusion Criteria**
- Recurrent gastric carcinoma
- Secondary metastasis to stomach
- Gastrointestinal stromal tumors (GIST)
- Lymphomas of stomach
- Incomplete clinical data
- Patients unwilling to participate

Data Collection
Data were collected using a structured proforma including:

- Demographic details (age, gender)
- Risk factors (smoking, alcohol)
- Clinical symptoms and duration
- Endoscopic findings
- Tumor location (cardia, body, antrum, pylorus)
- Histopathology (Lauren classification)
- TNM staging (AJCC 8th edition)
- Lymph node involvement

Histopathological Examination
Biopsy and resected specimens were fixed in 10% formalin, processed routinely, and stained with Hematoxylin and Eosin. Tumors were classified according to WHO 2019 guidelines.

Statistical Analysis
Data were entered into Microsoft Excel and analyzed using SPSS v25. Descriptive statistics were expressed as mean ± SD and percentages. Chi-square test was used to assess associations. $p < 0.05$ was considered statistically significant.

Ethical Clearance
Institutional Ethics Committee approval was obtained prior to commencement.

RESULTS

Table 1: Age Distribution

Age Group	Number (n=120)	Percentage
<40	12	10%
41–50	28	23.3%
51–60	38	31.7%
61–70	30	25%
>70	12	10%

Interpretation: Peak incidence observed in 51–60 years.

Table 2: Gender Distribution

Gender	Number	Percentage
Male	82	68.3%
Female	38	31.7%

Interpretation: Male predominance (M:F = 2.1:1).

Table 3: Presenting Symptoms

Symptom	Frequency	Percentage
Epigastric pain	99	82.5%
Weight loss	85	70.8%
Vomiting	62	51.7%
Anemia	58	48.3%
Dysphagia	18	15%

Interpretation: Epigastric pain most common symptom.

Table 4: Tumor Location

Location	Number	Percentage
Antrum	68	56.7%
Body	28	23.3%
Cardia	16	13.3%
Pylorus	8	6.7%

Interpretation: Distal stomach predominance.

Table 5: Histological Type (Lauren Classification)

Type	Number	Percentage
Intestinal	74	62%
Diffuse	40	33%
Mixed	6	5%

Interpretation: Intestinal type predominant.

Table 6: TNM Stage Distribution

Stage	Number	Percentage
I	10	8.3%
II	28	23.3%
III	58	48.3%
IV	24	20%

Interpretation: Majority presented in Stage III and IV.

DISCUSSION

The present study demonstrates male predominance and peak incidence in the sixth decade, consistent with findings by Bray et al.[2] and Singh et al.[22]. Similar age distribution has been reported in other Indian studies[23].

The predominance of distal tumors aligns with observations from South Asian populations[24]. Dietary factors and high prevalence of H. pylori infection may contribute to antral predominance[25]. Western studies report increasing proximal tumors[26], indicating geographic variation.

Intestinal-type adenocarcinoma was more common in our cohort, correlating with environmental risk factors[27]. Comparable findings were reported by Karimi et al.[28]. Diffuse-type cancers were more frequent in younger patients, consistent with global data[29].

Advanced stage at diagnosis (Stage III/IV in 68%) reflects delayed presentation, similar to reports from Indian tertiary centers[30]. Lymph node metastasis significantly correlated with advanced TNM stage, as documented by Smyth et al.[31].

The high frequency of epigastric pain and weight loss aligns with previous clinical series[32]. Lack of screening programs contributes to late detection[33].

These findings highlight the need for early endoscopic evaluation in high-risk populations. Public awareness, dietary modification, and H. pylori eradication programs could reduce disease burden[34].

CONCLUSION

Carcinoma stomach in South India predominantly affects middle-aged males, commonly involves the antrum, and presents at advanced stages. Intestinal-type adenocarcinoma is the most frequent histological subtype. Early diagnosis through awareness and screening strategies is essential to improve survival outcomes..

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