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Original Article

Anatomical Location of Histopathologically Confirmed Gastric Carcinoma in Bangladesh

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Abstract

Background: Gastric carcinoma remains a leading cause of cancer-related morbidity and mortality worldwide. Tumor location and specimen type significantly influence diagnosis, management, and prognosis. In Bangladesh, where incidence is steadily rising, tumors have traditionally been reported predominantly in the distal stomach. **Objective:** The purpose of the present study was to determine the anatomical distribution of histopathologically confirmed gastric carcinoma and the types of specimens used for diagnosis in the Bangladeshi population. **Methodology:** This cross-sectional study was conducted in the Department of Pathology, Chittagong Medical College, Chittagong Bangladesh, from January 1, 2014, to December 31, 2014. A total of 44 consecutive cases of gastric carcinoma were included. Following confirmation of anatomical distribution, histopathological examination was carried out on all specimens. **Results:** This study showed that most gastric carcinoma were located in the body of the stomach (56.8%), followed by the pyloric antrum (25.0%) and cardiac end (18.2%). Specimens were mostly obtained via endoscopic biopsy (59.1%) compared to resection (40.9%). **Conclusion:** Gastric carcinoma most commonly affects the body and pyloric antrum, with the cardiac end being less frequently involved. Specimens are more often obtained via endoscopic biopsy than resection, highlighting the importance of minimally invasive diagnostic approaches for early detection and management. *[Journal of Current and Advance Medical Research, January 2025;12(1):22-26]*

Keywords: Anatomical location; histopathological Examination; gastric carcinoma

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Introduction

Gastric cancer is the fifth most common malignancy and the fourth leading cause of cancer-related mortality worldwide, with an estimated 870,000 new cases and 650,000 deaths annually[1-2]. Its incidence varies geographically and among different ethnic groups, with high prevalence in East Asia and relatively lower rates in South Asia, including Bangladesh[3-4]. In Bangladesh, most cases

are diagnosed at advanced stages, contributing to poor prognosis despite therapeutic advances[5].

Gastric carcinoma primarily presents in two histological types like intestinal and diffuse, as classified by Lauren. The intestinal type arises from a stepwise progression of chronic gastritis, atrophic gastritis, intestinal metaplasia, and dysplasia, predominantly affecting older males[6]. Conversely, the diffuse type is more common in younger individuals and females and is associated with worse prognosis[6-7].

Anatomically, gastric carcinoma occurs more frequently in the distal region of the stomach. Data from the United States indicate that 37.0% of gastric carcinomas arise in the upper third, 20.0% in the middle third, and 30.0% in the lower third, with approximately 12.0% involving the entire stomach[7]. Histologically, intestinal-type adenocarcinoma is more commonly diagnosed in men and older individuals. Chronic atrophic gastritis is an important factor in the development of this subtype, and precursor lesions such as intestinal metaplasia and dysplasia are recognized as warning signs. *Helicobacter pylori* infection contributes to gastric carcinogenesis by promoting gastric atrophy and intestinal metaplasia[8].

Early-stage gastric cancer is often asymptomatic, leading patients to seek medical care only after reaching advanced stages[9]. Therefore, early detection is critical, and a thorough clinical history combined with careful endoscopic examination and biopsy is essential for accurate tumor localization and diagnosis[10]. This underscores the importance of early detection, where careful history-taking and thorough endoscopic evaluation with biopsy are critical for timely diagnosis and tumor localization. Based on these considerations, the present study aimed to evaluate the anatomical distribution of histopathologically confirmed gastric carcinoma and the types of specimens used for diagnosis in the Bangladeshi population.

Methodology

Study Settings and Population: This descriptive cross-sectional study was conducted in the Department of Pathology, Chittagong Medical College, Bangladesh, over a one-year period from January 1, 2014, to December 31, 2014. A total of 44 consecutive cases of histopathologically diagnosed gastric carcinoma were included. Specimens were obtained either as resected surgical samples or endoscopic biopsies.

Study Procedure: All specimens were fixed in 10.0% formalin, processed routinely, and stained with hematoxylin and eosin (H&E). Following verification of the anatomical site within the stomach (cardia, body, or pyloric antrum), all specimens were examined through histopathological evaluation. Clinical data, including patient demographics and presenting complaints, were recorded from the laboratory and hospital records.

Statistical Analysis: Statistical analysis was performed by Windows based software named as Statistical Package for Social Science (SPSS), versions 22.0 (IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp.). Continuous data were expressed as mean, standard deviation, minimum and maximum. Categorical data were summarized in terms of frequency counts and percentages. Chi-square test was used for comparison of categorical variables and Student t test was applied for continuous variables. Every efforts were made to obtain missing data. A two-sided P value of less than 0.05 was considered to indicate statistical significance. Differences between case and control were tested.

Ethical Consideration: All procedures of the present study were carried out in accordance with the principles for human investigations (i.e., Helsinki Declaration 2013) and also with the ethical guidelines of the Institutional research ethics. Formal ethics approval was granted by the local ethics committee. Participants in the study were informed about the procedure and purpose of the study and confidentiality of information provided. All participants consented willingly to be a part of the study during the data collection periods. All data were collected anonymously and were analyzed using the coding system.

Results

This study showed that a total of 44 gastric carcinoma specimens were examined histopathologically. Among these, 18 (40.9%) were resected specimens and 26 (59.1%) were obtained via endoscopic biopsy (Table 1).

Table 1: Distribution of Specimen Types Examined Histopathologically (n = 44)

Type of Specimen	Frequency	Percent
Resected	18	40.9
Endoscopic Biopsy	26	59.1
Total	**44**	**100**

Regarding the anatomical distribution of lesions, the majority were located in the body of the stomach (56.8%), followed by the pyloric antrum (25.0%) and the cardiac end (18.2%) (Table 2).

Table 2: Distribution of Patients by Site of Lesion (n = 44)

Site of Lesion	Frequency	Percent
Cardiac end	8	18.2
Body	25	56.8
Pyloric antrum	11	25.0
Total	**44**	**100**

Discussion

In this study, most specimens of gastric carcinoma were obtained through endoscopic biopsy (59.1%), while surgically resected specimens accounted for 40.9%. This finding is consistent with the global trend where endoscopic biopsy serves as the primary diagnostic tool, given its minimally invasive nature and ability to provide early histopathological confirmation. Several studies[11-16] emphasized that although biopsy specimens are crucial for initial diagnosis, discrepancies may occur when compared with resected specimens, which provide a more comprehensive evaluation of tumor architecture and staging. Similarly, Namieno et al[17] highlighted the diagnostic and therapeutic value of endoscopic resection, particularly in early gastric carcinoma, reinforcing the growing importance of endoscopic specimens in clinical practice. Another studies[18,19] found 76.0% biopsy and 24.0% surgically resected specimens.

With regard to anatomical distribution, the present study found the body of the stomach to be the most commonly affected site (56.8%), followed by the pyloric antrum (25.0%) and the cardiac end (18.2%). These findings align with reports from other Asian populations, where the distal stomach, particularly the body and antrum, has been shown to harbor the majority of gastric carcinomas[8-16].

This pattern aligns with the global trend of distal gastric cancers predominating over proximal lesions in populations with high Helicobacter pylori prevalence, although the proportion of cardiac tumors has been noted to increase in some regions due to risk factors such as obesity and gastroesophageal reflux.[3,4] The relatively lower frequency of cardiac end tumors in this study may reflect regional epidemiological differences and lifestyle factors specific to the Bangladeshi population. Another study Yan et al[24] found cardia or fundus of stomach was in 37.9% cases; body of the stomach was in 26.8% cases and pyloric antrum was in 35.2% cases.

According to the results, in terms of location of tumoral involvement, cardia was involved in 23.0%, body and greater curvature in 28.5%, lesser curvature in 3.2%, antrum in 36.8%, and the entire stomach in 1.8%. If we consider cardiac involvement only, 100(23.0%) patients had cardiac cancer, and 335(77%) patients had noncardiac cancer. The results were similar to the study by Dessan and colleagues, who aimed to investigate the 20 years history of gastric cancer in the Netherlands[21-22].

Endoscopy is now widely used and allows direct visualization of gastric cancer, enabling the assessment of its macroscopic and morphological features. By analyzing these characteristics, clinicians can often estimate whether the tumor is in an early or advanced stage, predict the histologic type or degree of differentiation, and evaluate the likelihood of nodal involvement. However, endoscopic assessment does not always reflect the tumor's true pathology, as the histology obtained from biopsy specimens may differ from that of the resected tissue. This discrepancy arises because endoscopic biopsies sample only a small portion of the lesion, and when multiple histologic types coexist within a tumor, the predominant type is assigned according to the Japanese classification guidelines[23]. Such differences between biopsy and resected specimens can sometimes result in tumors being misclassified as either differentiated or undifferentiated[24,25].

Taken together, these results underscore the complementary role of biopsy and resection specimens in the diagnosis and management of gastric carcinoma. While biopsies ensure early detection and less invasive assessment, resected specimens remain essential for definitive histological classification and staging. The predominance of lesions in the gastric body and antrum further emphasizes the need for careful endoscopic evaluation of these sites during diagnostic workups.

Conclusion

The gastric body was the most commonly affected site, followed by the pyloric antrum and cardiac end. These findings highlight the need for careful endoscopic assessment of the stomach, particularly the body and antrum, to ensure early and accurate

diagnosis. Endoscopic biopsy remains the primary method for diagnosing gastric carcinoma, while resected specimens provide definitive evaluation.

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Conflict of Interest
The authors have no conflicts of interest to disclose

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Data Availability
Any inquiries regarding supporting data availability of this study should be directed to the corresponding author and are available from the corresponding author on reasonable request.

Ethics Approval and Consent to Participate
Ethical approval for the study was obtained from the Institutional Review Board. As this was a prospective study the written informed consent was obtained from all study participants. All methods were performed in accordance with the relevant guidelines and regulations.

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