Histopathological diagnosis of gastric biopsies in correlation with Endoscopy in Bangladeshi people

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Abstract

Background: The diagnosis of upper GIT tract lesions sometimes involves endoscopy-guided biopsies. It is a daycare procedure, safe and economical. In the early stages of GIT cancer, most patients are asymptomatic or lack particular symptoms, and they are frequently detected in an advanced stage. This is diagnosed with a punch biopsy of the lesion under endoscopic guidance and histological analysis. Upper GIT endoscopy, combined with biopsy, plays a vital role in diagnosing these disorders for further management. **Objectives:** This study aimed to assess the histological diagnosis of stomach endoscopic biopsies and compare the endoscopic and histopathological diagnosis of these neoplastic and non-neoplastic gastric lesions in Bangladeshi patients. **Materials and Methods:** This cross-sectional observational study was conducted in the Department of Pathology, Ad-din Akij Medical College, Khulna, from November 2021 to October 2022. In this study, fifty-two samples of endoscopic biopsies were collected, processed, and stained with hematoxylin, and eosin. All data were recorded in a pre-designed data sheet. Statistical analyses were carried out by using SPSS version 24 for Windows. A descriptive analysis was performed for all data. Frequencies and percentages indicated observations. The Statistical significance was set at a "p" value<0.05. **Result:** In this study, the mean age of the patients was 56.96±13.99 with the minimum and maximum ages of the patient were 18 years and 80 years, respectively. A male predominance was observed in the series (65%). Regarding endoscopy, all of the 'growth' found was diagnosed as 'neoplastic' by histopathology, whereas most of the 'ulcer' found in endoscopy was diagnosed as 'non-neoplastic' by histopathology. However, about 2 endoscopically found 'ulcer' cases were diagnosed as 'neoplastic' by histopathological examination. Regarding histological classification, most of the cases about 27 cases were adenocarcinoma, among which 19 cases were intestinal type, whereas 6 cases were diffuse type of adenocarcinoma. Age and endoscopic findings in this investigation were shown to be positively correlated. The correlation between the histological and endoscopic diagnoses of upper GIT lesions was 72.0%. **Conclusion:** Endoscopic examination and biopsy are practical approaches for a quick and reliable objective evaluation of patients with gastrointestinal complaints. Without a biopsy, endoscopy is not comprehensive, and the best method for determining the cause of lesions found during endoscopy is pathology. A large-scale prospective study with standardized techniques is desirable to validate the present study's findings.

Keywords: Endoscopy guided biopsy, histopathology.

Introduction

The human digestive system is a long, winding process. Endoscopy and histology work together to help diagnose various stomach lesions. The gastroenterologist and the pathologist must have a close working relationship. The endoscopic findings are highly suggestive but not pathognomic, and they require histological confirmation, it has become apparent over time. A good conversation between a physician, endoscopist, radiologist, and pathologist is necessary for the final diagnosis in the majority of diseases when the histological diagnosis is corroborated (1).

One of the most typical issues in clinical practice is illnesses of the upper gastrointestinal tract, which account for a significant amount of morbidity and mortality. In 1968, the first gastrointestinal flexible fiberoptic endoscope was employed (2).

A lighted, flexible fiber optic or video endoscope is used in upper GI endoscopy to visually examine the upper gastrointestinal tract. Most pathological lesions, which can vary from inflammation to cancer, are found in the upper gastrointestinal tract's oesophagus, stomach, and duodenum. The current gold standard for evaluating individuals with upper GIT symptoms is endoscopically guided biopsy, which is a diagnostic tool. It is essential for the therapy and follow-up of patients as well as for the surveillance of premalignant diseases of the upper GI tract (3).

This study was done at the Department of Pathology in Ad-din Akij Medical College Hospital to determine the relationship between endoscopic findings and histopathological diagnosis.

Materials and Methods

Type of Study   A hospital-based cross-sectional descriptive study

Place of study   Department of Pathology, Ad-din Akij Medical and Hospital, Khulna.

Study period   November 2021 to October 2022

Study population   All patients with endoscopic gastric biopsies in the Department of Pathology, Ad-din Akij Medical College, during the specified time duration comprised the study population.

Sampling technique   Consecutive sampling.

Inclusion criteria

1. Patients with upper GIT problems have had endoscopies.
2. Patients who had given consent.

Exclusion criteria

1. Patients who had not given consent.
2. Those who had received chemotherapy or radiation therapy for gastric carcinoma.
3. Inadequate smear.

Data collection

It was a cross-sectional descriptive study in which endoscopic biopsy material had taken after getting permission from the Institutional Review Board. Then, after taking properly informed written consent from the patient attending the Department of Pathology, Ad-din Akij Medical College from November 2021 to October 2022, this study was started. For this study, those with upper gastrointestinal issues who had undergone endoscopies were chosen.

The procedure of the histopathological study

The study's eligible patients were contacted after receiving the endoscopic biopsy results and offered to participate. Each patient's brief medical history was obtained after they gave their informed consent, paying close attention to their age, anatomical location, and current problems. For each patient, one to two slides were prepared from endoscopic biopsy samples at the Ad-din Akij Medical College Hospital's Department of Pathology according to the standard protocol for processing histopathological slides. Under a light microscope, all prepared slides were inspected, and reporting was completed.

Data analysis

After compilation, the data was presented as tables by meticulous checking and rechecking. Statistical data analysis was done using computer-based statistical software, SPSS 24.0 version (SPSS Inc, Chicago, IL, USA). Results were shown as bar diagrams, pie charts for frequency & percentage and histograms to show the correlations. An agreement test was done using SPSS, and the kappa value was used to show the agreement rate between the tests. A 'p-value <0.05 was considered statistically significant because all analyses were considered to have a 95% confidence level.

Results

Among 52 cases studied, the mean age of the patients was 56.96±13.99, with a minimum of 18 and a maximum of 80 years of age. Male patients (65%, n = 34) were more than the female (35%, n = 18).

In this study, the endoscopic findings were 'growth' in most cases (52%, n = 27) **(Figure 1)**. The second common endoscopic finding was 'ulcer' (35%, n = 18). The distribution of the endoscopic findings is shown in **Figure 1**.
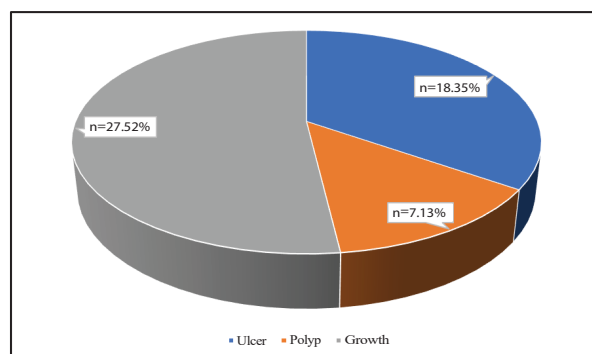
Figure 1: Distribution of the endoscopic findings among the patients

The study revealed that all of the 'growth' found in endoscopy was diagnosed as 'neoplastic' by histopathology, which was significant statistically (p = 0.000). In contrast, histopathology diagnosed most of the 'ulcers' found in endoscopy as 'non-neoplastic', which was also significant statistically (p = 0.000) **(Figure 2)**. However, about 11% (n = 2) of endoscopically found 'ulcer' cases were diagnosed as 'neoplastic' by histopathological examination. The overall neoplastic and non-neoplastic cases are plotted in **Figure 2.**
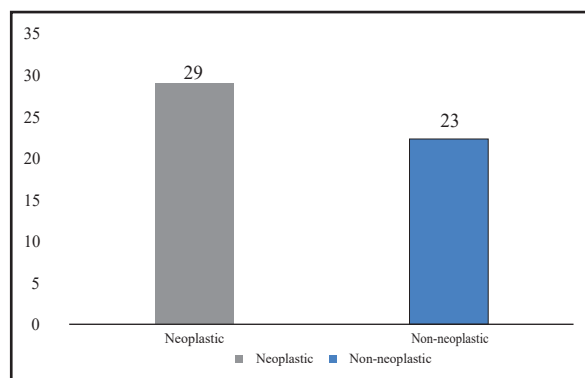
Figure 2: . Distribution of neoplasia among the patients (as diagnosed by histopathology)

The detailed histopathological examination showed that most of the cases (52%, n = 27) were adenocarcinoma, among which 37% (n = 19) were intestinal type, whereas 12% (n = 6) were diffuse type of adenocarcinoma **(Figure**

3). Meanwhile, about 31% (n = 16) of cases were diagnosed as gastritis by histopathological examination. The distribution of other histopathological diagnoses is shown in **Figure 3.**
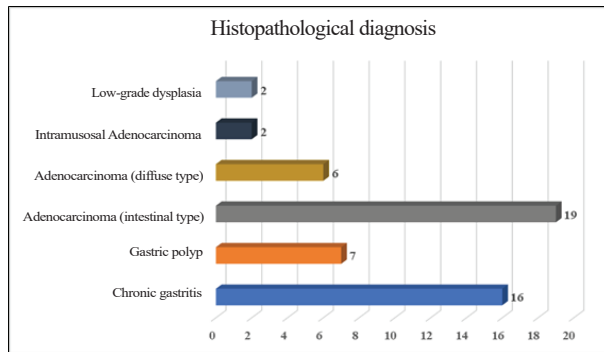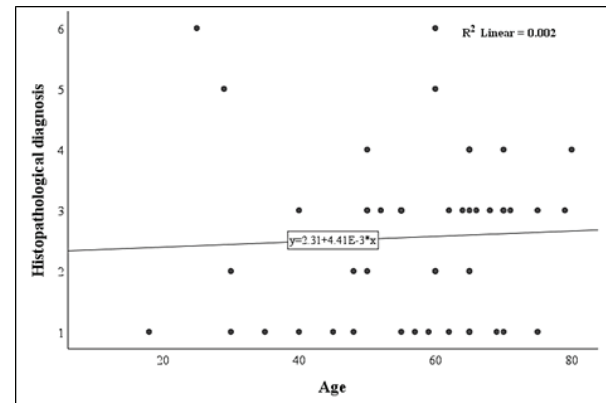

Fig 3. Distribution of the histopathological diagnoses

A positive correlation (r = 0.312) was found in this study between age and the endoscopic findings that were significant statistically (p = 0.025) (**Figure 4)**. Moreover, a weak positive correlation (r = 0.045) was also found between age and the histopathological diagnoses that were not statistically significant (p = 0.747) **(Figure 5).**
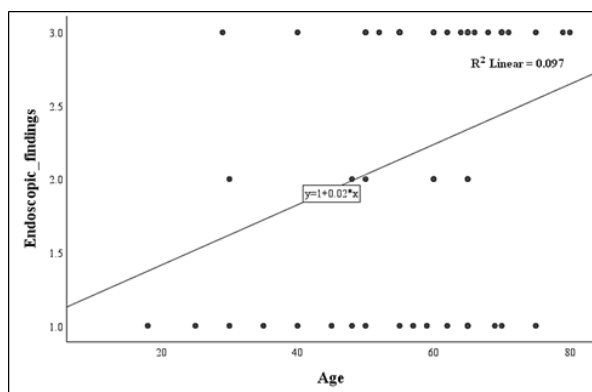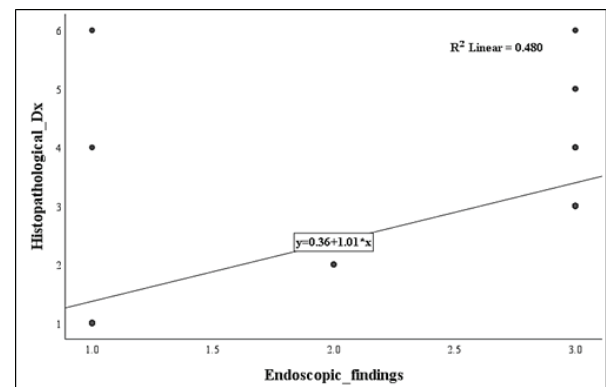

Fig 4. Correlation of the endoscopic findings with age

Fig 5. Correlation of the histopathological diagnoses with age

This study evidenced a strong positive correlation (r = 0.693) between the endoscopic findings and the histopathological diagnoses having a significant statistical result (p = 0.000) (Figure 6). The agreement test also shows a significant value (kappa = 0.720), indicating that the findings of endoscopy and the diagnoses by histopathology significantly (p = 0.000) agree with each other.

Fig 6. Correlation of the endoscopic findings with the histopathological diagnoses

Discussion

The present study consisted of 52 (100%) gastric biopsies, of which 23 cases were non-neoplastic, and 29 were neoplastic. The mean age of the patients was 56.96±13.99. The age of the patients ranged from 18 to 80 years. The median age was 55.5 years, almost simulating research by Behar et al.(4) and Bogomeltz et al. (5) The age-related discrepancy may result from distinct risk factors in the various age groups.

In our study, male patients were (65%, n = 34) and female (35%, n = 18); male to female ratio was 1.89:1 which is similar to the study of Sheikh BA et al. (2) & Kumar et al.(6)

Growth was the most frequent endoscopic observation in this study (52%, n = 27), which is identical to the study of Sharma S. et al. (3) According to the study, the majority of the "ulcers" discovered during endoscopy were classified as "non-neoplastic" by histopathology, in contrast to all of the "growth" discovered through endoscopy. However, according to histological analysis, about 11% (n = 2) of the endoscopically discovered "ulcer" cases were classified as "neoplastic."

Pailoor K et al.(3) showed that gastritis was identified in 12 patients on endoscopy. Three of these instances had dysplasia. On endoscopy, 8 cases (57.12%) of benign stomach ulcers were determined to be adenocarcinomas histologically.

The detailed histopathological examination showed that most of the cases (52%, n = 27) were adenocarcinoma, among which 37% (n = 19) were intestinal type, whereas 12% (n = 6) were diffuse type of adenocarcinoma. Meanwhile, about 31% (n = 16) of cases were diagnosed as gastritis by histopathological examination.

Our research was comparable to the Sneha Jawalkar et al. (3) study, in which there were 41.66% adenocarcinoma cases and 39.58% chronic gastritis patients.

Rashmi et al. (7) conducted a similar study, finding that out of 68 patients who had stomach pathology biopsies, 41 patients (60%) had non-neoplastic lesions, and 27 patients (39.75%) had neoplastic lesions. The most prevalent malignancy among neoplastic lesions was adenocarcinoma.

Age and endoscopic findings in this investigation were shown to be positively correlated (r = 0.312), additionally, a slight positive correlation (r = 0.045) between age and histological diagnosis was discovered.

The endoscopic results and the histological diagnoses were shown to be strongly positively correlated in this study (r = 0.693), with a statistically significant result (p = 0.000). In the present study, the correlation between the histological and endoscopic diagnoses of upper GIT lesions was 72.0%, which is in accordance with Krishnappa et al.(7)

Conclusion

Information is usefully obtained from the gastricbiopsy sampled during diagnostic endoscopy. A simple approach for precise objective evaluation of individuals with upper gastrointestinal symptoms is endoscopic examination and biopsies. The prevalence of neoplastic lesions was found to be higher than that of non-neoplastic lesions. These gastric lesions had a 70% concordance between endoscopic and histological diagnosis. The diagnosis of lesions discovered during the endoscopy is best accomplished by histopathology, and endoscopy is not complete without a biopsy. Endoscopic biopsy correlation reflects significant advancements in our understanding of the biology and pathophysiology of the disease. It provides updated diagnostic information, and knowledge of current events, and supports improved patient care.

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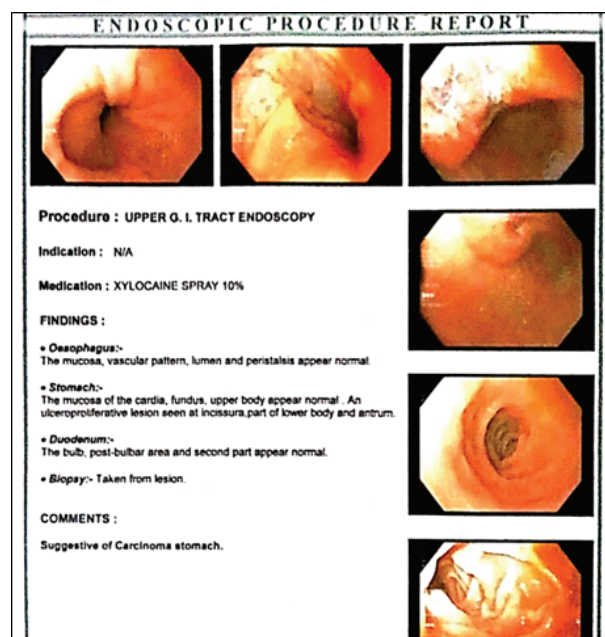
Fig 7. Sample endoscopic procedure report
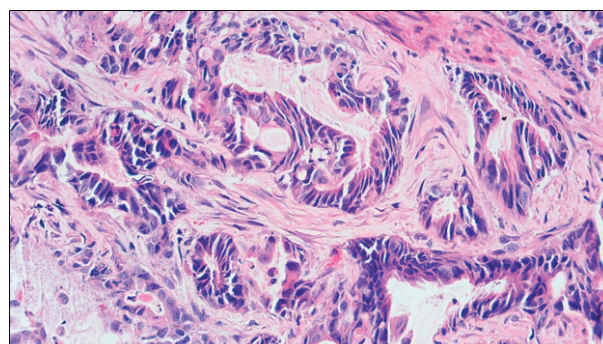
Fig 8. Macroscopic appearance of the adenocarcinoma (intestinal type) of the stomach (10X view)
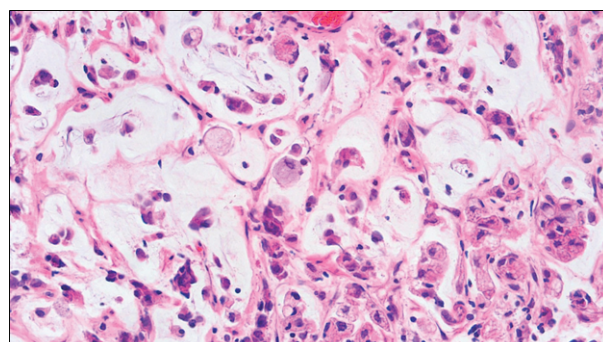
Fig 8. Macroscopic appearance of the adenocarcinoma (diffuse type) of the stomach (40X view)