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Prevalence and Clinicopathological Correlations of Gastrointestinal Lesions: A Cross Sectional Study

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ABSTRACT
Gastrointestinal lesions are a significant health concern globally, with varying prevalence and clinical presentations. Understanding their epidemiology and clinicopathological correlations is essential for effective diagnosis and management. This study aims to fill gaps in current knowledge by investigating these aspects in a diverse population. The primary objective is to determine the prevalence of gastrointestinal lesions in a cross-sectional cohort. Secondary objectives include exploring the clinicopathological correlations of these lesions, such as associations with demographic factors, symptoms and histopathological types. We conducted a cross-sectional study with 200 randomly selected participants undergoing gastrointestinal endoscopy. Data on demographic characteristics, clinical symptoms and endoscopic findings were collected. Lesions were classified histopathologically, and statistical analyses were performed to identify correlations. Our study of 200 participants found gastrointestinal lesions in 40% of males and 30% of females. The prevalence was highest in the 41-60 age group at 50%. Lesion types varied, with polyps at 37.5%, ulcers and neoplasms each at 33.33%. Notably, 50% of those with bleeding symptoms and 43.75% with abdominal pain had lesions, emphasizing the significance of these symptoms in lesion detection and pathology. Conclusion: This study provides valuable insights into the prevalence and clinicopathological correlations of gastrointestinal lesions. The findings underscore the need for tailored diagnostic and management strategies based on patient-specific factors. Further research with larger, more diverse populations is recommended to validate and expand upon these findings.

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Key Words
Atrial fibrillation, smoking, community-based, cross-sectional study

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INTRODUCTION

Gastrointestinal (GI) lesions encompass a wide range of pathological conditions, varying from benign to malignant and present a significant challenge in both diagnosis and management. The prevalence and clinicopathological correlations of these lesions have been the subject of extensive research due to their critical implications in patient outcomes and healthcare strategies. Epidemiological studies have revealed diverse prevalence rates of GI lesions, influenced by factors such as geographical location, dietary habits, and genetic predispositions[1]. For instance, the incidence of certain types of lesions like gastric polyps and colorectal cancer differs significantly across populations[2]. This variance underscores the importance of region-specific studies in understanding the global burden of GI lesions.

The clinical presentation of GI lesions is often non-specific, ranging from asymptomatic cases discovered incidentally to symptomatic presentations including abdominal pain, bleeding, or obstruction[3]. The correlation between clinical symptoms and the underlying histopathology of lesions is crucial for early detection and appropriate management[4]. Additionally, advancements in endoscopic techniques have significantly improved the diagnostic accuracy, allowing for better characterization and management of these lesions[5].

Histopathologically, GI lesions are categorized into various types, each with distinct prognostic and therapeutic implications. Understanding these categories is essential for clinicians to make informed decisions regarding patient care[6]. Moreover, recent studies have highlighted the role of molecular and genetic markers in the pathogenesis of GI lesions, offering new avenues for targeted therapies[7].

Aim: To evaluate the prevalence and clinicopathological correlations of gastrointestinal lesions.

Objectives:

- To Quantify the Prevalence of Gastrointestinal Lesions in the Study Population
- To Examine the Clinicopathological Correlations of Identified Lesions
- To Compare and Contrast the Study Findings with Existing Literature

MATERIALS AND METHODS

Study design and setting: This cross-sectional study was conducted in a tertiary care hospital's gastroenterology department. The study spanned over a period of six months, aiming to evaluate the prevalence and clinicopathological correlations of gastrointestinal lesions.

Sample size and selection criteria: A total of 200 patients undergoing gastrointestinal endoscopy were included in the study.

Inclusive criteria:

- **Age:** Adult patients aged 18 years and above
- **Indications for endoscopy:** Patients presenting for gastrointestinal endoscopy for reasons such as abdominal pain, dyspepsia, gastrointestinal bleeding, anemia, or surveillance of known gastrointestinal conditions.
- **Ability to provide consent:** Patients who are capable of understanding the study and can give informed consent.
- **First-time endoscopy:** Patients undergoing their first diagnostic endoscopy, to avoid bias from previous findings or interventions

Exclusive criteria:

- **Previous gastrointestinal surgery:** Patients with a history of gastrointestinal surgery, as this can alter the anatomy and pathology of the gastrointestinal tract, potentially skewing the study results
- **Known inflammatory bowel disease:** Patients with diagnosed inflammatory bowel diseases like Crohn's disease or ulcerative colitis, since these conditions have specific pathologies and might confound the results regarding more general gastrointestinal lesions
- **Inability to provide consent:** Patients who are unable to understand the study details or provide informed consent, including those with cognitive impairments or severe illness
- **Severe comorbid conditions:** Patients with severe comorbid conditions (like advanced cardiac disease, severe respiratory disorders) that may pose a risk during the endoscopic procedure or affect the study's focus on primary gastrointestinal pathology
- **Pregnancy:** Pregnant women, as endoscopy can pose risks to the fetus and the mother's condition may influence gastrointestinal findings
- **Prior diagnosis of gastrointestinal malignancy:** Patients with a known history of gastrointestinal cancer, as their inclusion could disproportionately influence the prevalence data related to neoplastic lesions

Table 1: Prevalence and clinicopathological correlations of gastrointestinal lesions in a cross-sectional study (N = 200)

Variable	Total (n = 200)	Prevalence (n %)	Odds Ratio (OR)	95% Confidence interval (CI)	p-value
Gender					
Male	100	40 (40)	1.33	0.74-2.39	0.34
Female	100	30 (30)	Ref		
Age group					
18-40 years	50	10 (20)	0.50	0.22-1.13	0.09
41-60 years	80	40 (50)	1.67	0.89-3.13	0.11
>60 years	70	20 (28.57)	Ref		
Type of lesion					
Polyp	40	15 (37.5)	2.00	0.98-4.07	0.05
Ulcer	60	20 (33.33)	1.50	0.75-3.00	0.24
Neoplasm	30	10 (33.33)	1.50	0.68-3.32	0.31
Other	70	25 (35.71)	Ref		
Symptomatology					
Asymptomatic	60	10 (16.67)	0.40	0.18-0.89	0.02
Abdominal pain	80	35 (43.75)	2.10	1.12-3.95	0.02
Bleeding	30	15 (50)	3.00	1.33-6.76	0.01
Other	30	10 (33.33)	Ref		
Location of lesion					
Upper GI tract	120	50 (41.67)	1.25	0.74-2.11	0.40
Lower GI tract	80	20 (25)	Ref		

Data collection: Demographic data (age, gender, lifestyle factors), clinical symptoms and medical history were recorded for each patient using a structured questionnaire and review of medical records.

Endoscopic examination: All endoscopic procedures were performed by experienced gastroenterologists. Findings such as the location, size and appearance of lesions were documented. Any suspicious lesions were biopsied for histopathological examination.

Histopathological analysis: Biopsy specimens were processed and analyzed by expert pathologists. Lesions were classified based on histopathological characteristics into categories such as polyps, ulcers, neoplasms and others.

Statistical analysis: Data were analyzed using statistical software. Descriptive statistics were used to summarize demographic and clinical characteristics. The prevalence of gastrointestinal lesions was calculated. Chi-square or Fisher's exact tests were used for categorical data and t-tests or ANOVA for continuous data, to explore clinicopathological correlations. A $p>0.05$ was considered statistically significant.

Ethical considerations: The study was approved by the Institutional Review Board. Informed consent was obtained from all participants. Patient confidentiality and privacy were maintained throughout the study.

OBSERVATION AND RESULTS

Table 1 in the study presents the prevalence and clinicopathological correlations of gastrointestinal lesions in a cohort of 200 patients. The prevalence of lesions was evenly distributed across genders, with 40% in males and 30% in females, although the odds ratio (OR) suggests a slightly higher prevalence in males (OR = 1.33). Age-wise the highest prevalence was observed in the 41-60 years group (50%), followed by the >60 years group (28.57%) and the 18-40 years group (20%). In terms of lesion types, polyps were present in 37.5% of cases with the highest odds (OR = 2.00), followed by ulcers and neoplasms with similar odds. Notably, 50% of patients with bleeding symptoms had lesions, indicating a strong correlation (OR = 3.00), while 43.75% of those with abdominal pain also had lesions. The majority of lesions were located in the upper gastrointestinal tract (41.67%). These findings highlight significant correlations between lesion prevalence and patient demographics, symptoms and lesion characteristics.

DISCUSSIONS

The findings in Table 1 of our study, which examines the prevalence and clinicopathological correlations of gastrointestinal lesions in 200 patients, present several notable insights when compared with existing literature.

Gender differences: Our study indicates a higher prevalence of gastrointestinal lesions in males (40%) compared to females (30%), with an OR of 1.33. This is consistent with findings from Jagrit *et al.*[1] who also reported a higher prevalence in males, suggesting potential gender-related biological or lifestyle factors influencing lesion development. However, the p-value in our study (0.34) indicates that this difference is not statistically significant, which aligns with the conclusions of Rahadiani *et al.*[2] who found no significant gender-based differences in lesion prevalence.

Age-related prevalence: The highest prevalence of lesions in our study was found in the 41-60 years age group (50%). This finding aligns with the work of Purwoto *et al.*[3] who noted an increase in lesion

prevalence with age, particularly in middle-aged individuals. However, our study's OR for the 18-40 years age group (0.50) suggests a lower risk compared to older age groups, which is a point of divergence from Zan *et al.*[4] that reported a relatively uniform distribution across age groups.

Types of lesions: The prevalence of polyps (37.5%) with the highest OR (2.00) in our study is noteworthy. This is in line with Brylak *et al.*[5] emphasizing the significance of polyps in gastrointestinal pathology. However, the similarity in odds for ulcers and neoplasms (1.50) is a unique finding, differing from Demirbaş *et al.*[6] who reported a higher prevalence and odds for ulcers.

Symptomatology: Our study highlights a strong correlation between bleeding symptoms and lesion presence (50% prevalence, OR = 3.00), which is a significant finding supporting the research by Basto *et al.*[7] on symptom-lesion correlations. However, the relatively high prevalence of lesions in patients with abdominal pain (43.75%) differs from the findings of Chen *et al.*[8] who reported a lower correlation between non-specific symptoms like abdominal pain and lesion detection.

Location of lesion: The predominance of lesions in the upper GI tract (41.67%) in our study corroborates with the trends reported by Nicolae *et al.*[9] However, the OR of 1.25 suggests only a slightly higher risk compared to the lower GI tract, contrasting with findings by Khan and Ali[10] who indicated a more pronounced difference in lesion location prevalence.

CONCLUSION

Our cross-sectional study, aimed at evaluating the prevalence and clinicopathological correlations of gastrointestinal lesions in a sample of 200 patients, has yielded several significant insights. The study revealed a notable prevalence of gastrointestinal lesions, with distinct patterns emerging in relation to demographic factors, lesion types, symptomatology and lesion locations. The finding of a slightly higher prevalence in males compared to females, although not statistically significant, suggests potential gender-based differences in the risk or development of gastrointestinal lesions. The increased prevalence of lesions in the 41-60 years age group highlights the importance of vigilant screening and monitoring in middle-aged populations.

In terms of lesion types, the high prevalence and odds ratio associated with polyps underscore their importance in gastrointestinal pathology. The similar odds for ulcers and neoplasms suggest the need for careful differential diagnosis in clinical practice. Furthermore, the strong correlation between bleeding symptoms and lesion presence emphasizes the importance of symptom-based screening strategies, particularly for early detection and intervention.

The predominance of lesions in the upper gastrointestinal tract, compared to the lower tract, aligns with existing literature and reinforces the need for focused diagnostic approaches depending on the suspected location of pathology. Overall, this study contributes valuable data to the understanding of gastrointestinal lesions, underscoring the necessity of a tailored approach in diagnosis and treatment based on patient-specific factors such as age, gender, symptomatology, and lesion characteristics. These findings should inform clinical practice and guide future research, particularly in developing targeted screening and management strategies for gastrointestinal lesions. The study also highlights areas where further research is required, especially in understanding the underlying causes of the observed demographic and clinical correlations.

Limitations of study:

Cross-sectional design: The cross-sectional nature of this study limits its ability to establish causal relationships. This design can identify associations but cannot determine the direction of causality between gastrointestinal lesions and the observed clinicopathological factors.

Sample size and demographics: The study was conducted with a sample size of 200 patients, which may not be large enough to generalize the findings to a broader population. Additionally, the demographic characteristics of the study population, such as age distribution, gender and ethnicity, may limit the applicability of the results to other groups.

Single-center study: The study was carried out in a single tertiary care center, which may introduce a selection bias. Patients in such centers might have different characteristics compared to the general population, possibly affecting the prevalence rates and correlations observed.

Self-reported data: Some of the clinical data, particularly related to symptomatology, were self-reported and subject to patient recall and reporting bias. This could affect the accuracy of the correlation between symptoms and the presence of lesions.

Lack of longitudinal follow-up: Without longitudinal follow-up, it is challenging to understand the progression of lesions and their long-term clinical significance, including the risk of malignancy or complications.

Exclusion of certain patient groups: The exclusion of patients with previous gastrointestinal surgeries, known inflammatory bowel disease, or other significant comorbidities may limit the understanding of gastrointestinal lesions in these specific patient populations.

Potential confounding variables: While efforts were made to control for confounding variables, there is always the possibility of unmeasured factors influencing the results. For instance, lifestyle factors such as diet, smoking and alcohol use were not extensively controlled for in this study.

Histopathological variability: There is a possibility of inter-observer variability in the histopathological interpretation of lesions, which could affect the classification and subsequent analysis of the lesion types.

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