Original Article / Özgün Araştırma

Frequency, Locations and Histopathological Features of Polyps Detected in Upper Gastrointestinal System Examination and Its Association with *Helicobacter Pylori* Infection

Üst Gastrointestinal Sistem İncelemesinde Saptanan Poliplerin Sıklığı, Yerleşim Yerleri, Histopatolojik Özellikleri ve Helicobacter Pylori Enfeksiyonuyla Birlikteliği

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Abstract

Objective: Gastric polyps are often detected incidentally during endoscopic examination performed for a different purpose. Hyperplastic polyp is the most common type of polyp in the stomach. This study aimed to determine the frequency, locations and histopathological features of polyps detected in gastroscopic procedures performed at the Gastroenterology Department of Aydın State Hospital and their relationship with *Helicobacter pylori (H. pylori)* infection.

Materials and Methods: Data of 129 patients with polyps during 8,787 gastroscopic procedures performed between July 2016 and January 2020 at the Gastroenterology Department were retrospectively analysed. The size, location and histopathological features of the polyps, *H. pylori* positivity, presence of intestinal metaplasia and gastric atrophy and use of proton pump inhibitors were recorded.

Results: Polyps were localised in the corpus in 43 (33.3%) patients, in the antrum in 36 (27.9%) patients and in the fundus in 20 (15.5%) patients. On histopathological examination, hyperplastic polyp was detected in 84 (65.4%) patients, fundic gland polyp in 19 (14.7%) patients, adenomatous polyp in 11 (8.5%) patients, squamous papilloma in 6 (4.7%) patients and inflammatory polyp in 5 (3.9%) patients. *H. pylori* positivity was significantly higher in hyperplastic polyps compared to other polyps (40.8% vs 23.4%) (p=0.04), while it was found to be significantly less in fundic gland polyps compared to other polyps (15.8% vs 41.8%) (p=0.03).

Conclusion: In this study, hyperplastic polyp is the most common type of polyp found on gastroscopic examination. While *H. pylori* positivity rate was significantly higher in hyperplastic polyps, it was significantly less in fundic gland polyps. Fundic gland polyps are more common with long-term use of proton pump inhibitors. In the literature, the histopathology of polyps and the relationship of *H. pylori* infection show similarities.

Öz

Amaç: Gastrik polipler, sıklıkla farklı bir nedenle yapılan endoskopik inceleme esnasında tesadüfen saptanırlar. Midede en sık rastlanan polip türü hiperplastik poliptir. Bu çalışmanın amacı, Aydın Devlet Hastanesi Gastroenteroloji Bölümü'nde yapılan gastroskopi işlemlerinde saptanan poliplerin sıklığını, yerleşim yerlerini, histopatolojik özelliklerini ve *Helicobacter pylori (H. pylori)* ile ilişkilerini saptamaktır.

Gereç ve Yöntemler: Gastroenteroloji bölümünde Temmuz 2016 ve Ocak 2020 tarihleri arasında yapılan 8.787 gastroskopi işlemi esnasında polip saptanan 129 hastanın verileri retrospektif olarak incelenmiştir. Poliplerin boyutu, yeri, histopatolojik özellikleri, *H. pylori* pozitifliği, intestinal metaplazi ve gastrik atrofi varlığı ve hastaların proton pompa inhibitörü kullanım durumları kaydedilmiştir.

Bulgular: Polip lokalizasyonunun 43 (%33,3) hastada korpusta, 36 (%27,9) hastada antrumda, 20 (%15,5) hastada fundusta olduğu tespit edilmiştir. Histopatolojik incelemede 84 (%65,4) hastada hiperplastik polip, 19 (%14,7) hastada fundik gland polipi, 11 (%8,5) hastada adenomatöz polip, 6 (%4,7) hastada skuamöz papillom, 5 (%3,9) hastada enflamatuvar polip tespit edilmiştir. *H. pylori* pozitifliği hiperplastik poliplerde diğer poliplere göre anlamlı şekilde daha fazla iken (%40,8'e %23,4) (p=0,04), fundik gland poliplerinde diğer poliplere göre anlamlı şekilde daha az olarak tespit edilmiştir (%15,8'e %41,8) (p=0,03).

Sonuç: Gastroskopik incelemede en sık rastlanan polip tipi hiperplastik poliptir. Hiperplastik poliplerde *H. pylori* pozitifliğinin anlamlı şekilde yüksekken, fundik gland poliplerinde anlamlı şekilde daha az olduğu saptanmıştır. Hastaların uzun süre proton pompa inhibitörü kullanımı durumlarında fundik gland polipinin daha çok görüldüğü tespit edilmiştir. Literatüre bakıldığında poliplerin histopatolojileri ve *H. pylori* enfeksiyonu ilişkisi benzerlik göstermektedir.

Introduction

The term polyp in the gastrointestinal system is used to describe proliferative or neoplastic lesions originating from the mucosal epithelium (1). Gastric polyps are usually detected incidentally during upper gastrointestinal system endoscopy performed for different reasons. They present less commonly as iron deficiency anaemia, bleeding, pyloric outlet obstruction and abdominal pain (2-3).

The incidence of gastric polyps during endoscopic interventions has been reported up to 6% (4). The polyps found most common in the stomach are hyperplastic and fundic gland polyps. However, localization and histopathological types of polyps may differ according to their geographical distribution. While hyperplastic and adenomatous polyps are prominent in areas with *Helicobacter pylori* (*H. pylori*) density, fundic gland polyps can be encountered more frequently in areas where proton pump inhibitors (PPI) are used extensively (5,6).

The aim of this study is to determine the frequency, locations, histopathological features of polyps detected in gastroscopy procedures and their relations with *H. pylori*.

Materials and Methods

The data of 129 patients, who were found to have polyps, during the 8,787 gastroscopy procedures performed between July 2016 and January 2020 at the Gastroenterology Department were retrospectively analysed. The ethics committee approval for the study was obtained from the Aydın Adnan Menderes University Non-Interventional Clinical Research Ethics Committee (decision no: 05, date: 03.09.2020). The study was conducted in accordance with the principles of the Declaration of Helsinki. The size, location, histopathological features, *H. pylori* positivity, presence of intestinal metaplasia (IM) and gastric atrophy of the polyps removed from these 129 patients and the patients' usage status of PPI were recorded. Endoscopic procedures were performed with local anaesthesia (10% lidocaine). Polyp removal procedure was performed with biopsy forceps for polyps <5 mm and sclerotherapy needle for polyps larger than 5 mm, with the help of cautery after 1/10,000 adrenaline injection applied to the submucosal area.

Statistical Analysis

Statistical analysis was performed by using the SPSS 26.0 (SPSS Inc., Chicago, IL, USA) program. The conformity of the variables to normal distribution was examined by visual (histogram and probability graphics) and analytical methods (Kolmogorov-Smirnov/Shapiro-Wilk tests). Descriptive analyses were performed by giving mean ± standard deviation for normally distributed variables. It is given by using the median and interquartile for variables that are not normally distributed. Gender according to polyp types, most common complaints, long PPI use, presence of *H. pylori*, presence of IM and atrophy were evaluated

with chi-square or Fisher Exact tests and the age was evaluated with Wilcoxon test. In cases where the p-value was less than 0.05, they were considered as statistically significant results.

Results

One hundred and twenty nine patients [85 women (65.9%), 44 men (34.1%)], who were found to have polyps after gastroscopy, were included in our study. During this period, polyp was detected in 129 patients (1.46%) during 8,787 gastroscopy procedures. The mean age of the patients with polyp was 59.8±14.4, and their ages ranged from 25 to 89. Localization of polyps was detected as corpus in 43 patients (33.3%), as antrum in 36 patients (27.9%), as fundus in 20 patients (15.5%), as cardia in 14 patients (10.9%), as esophagus in 10 patients (7.8%), as duodenum in 3 patients (2.3%), as hernia pouch in 2 patients (1.6%), as the anastomosis line in 1 patient (0.8%) (Table 1).

The histopathology of polypectomy materials were most frequently listed as hyperplastic polyp, fundic gland polyp and adenomatous polyp (Table 2).

Table 1. Locations of polyps

Polyp location	n	%
Corpus	43	33.3
Antrum	36	27.9
Fundus	20	15.5
Cardia	14	10.9
Esophagus	10	7.8
Duodenum	3	2.3
Hernia pouch	2	1.6
Anastomosis line	1	0.8

When the reasons for the endoscopy request are examined, it was seen that 92 (71.3%) of the cases were dyspepsia, 27 (20.9%) of them were anaemia, 6 (4.7%) of them were weight loss, and 4 (3.1%) of them were bleeding (Table 3).

When patients with hyperplastic polyp type were compared with other patients, *H. pylori* presence was significantly higher in hyperplastic polyp type (40.8% & 23.4%, p=0.04) (Table 4).

When patients with fundic gland polyps were compared with other patients, while long PPI use was significantly higher in patients with fundic gland polyp (89.5% & 46.4%, p=0.001), the presence of *H. pylori*

Table 2. Histopathological results of polyps

Histopathology	n	%
Hyperplastic polyp	84	65.4
Fundic gland polyp	19	14.7
Adenomatous polyp	11	8.5
Squamous papilloma	6	4.7
Inflammatory polyp	5	3.9
Neuroendocrine tumour	1	0.8
Hamartematous cystic polyp	1	0.8
Auxintic gland poly	1	0.8
Gastritis cystica profunda	1	0.8

Table 3. Reasons for requesting endoscopy

Reason for request	n	%
Dyspepsia	92	71.3
Anemia	27	20.9
Weight loss	6	4.7
Bleeding	4	3.1

Table 4. Characteristics of patients according to hyperplastic polyp type

	Hyperplastic polyp	Other patients	p
Gender (F/M)	61/23	24/21	0.367
Age (mean ± SD)	61.4±14.2	57.7±14.4	0.118
Most common application complaint (%)	67.6 dyspepsia	76.4 dyspepsia	0.488
Long PPI use (%)	47.3	60	0.105
H. pylori presence (%)	40.8	23.4	0.04
Polyp size (mean ± SD, mm)	4.9±1.97	5.07±2.57	0.883
IM presence (%)	28.4	16.45	0.082
Presence of atrophy (%)	4.1	7.3	0.339

SD: Standard deviation, F: Female, M: Male, PPI: Proton pump inhibitors, *H. pylori*: *Helicobacter pylori*, IM: Intestinal metaplasia

and IM was significantly higher in the other patient group (15.8% & 41.8%, respectively, p=0.03; 5.3% & 26.4%, p=0.03) (Table 5).

When patients with adenomatous polyp type were compared with other patients, no significant variable was found (Table 6).

Discussion

Structures that protrude from the mucosa to the lumen in the gastrointestinal system are called polyps. These lesions can be neoplastic or non-neoplastic and may arise from the mucosa or submucosa. The diagnosis of polyp can only be made after histopathological examination (7).

Gastric polyps can be encountered in up to 6% of upper gastrointestinal system endoscopic examinations (4). In our study, 129 patients (1.46%) were diagnosed with polyps after 8787 upper endoscopy procedures. Although the most common polyps are hyperplastic polyps, the incidence and histopathological types of polyps may differ geographically. The most common type of polyp in our study was hyperplastic polyp (65.4%). Fundic gland polyp (14.7%) and adenomatous polyp (8.5%) followed this. In a study in which 26,000 patients were included, hyperplastic polyp was found at a rate of 71.3%, fundic gland polyp at a rate of 16.3%, and adenomatous polyp at a rate of 12.4% (5). The rates of our study were consistent with the literature.

It has been reported that hyperplastic and adenomatous polyps are more common than fundic gland polyps in geographical areas where *H. pylori* infection is intense (5,8). In our study, *H. pylori* positivity was significantly higher in patients with hyperplastic polyp compared to patients with other polyp types (40.8% & 23.4%, p=0.04). However, in our study, the relationship between *H. pylori* positivity for adenomatous polyp was not found similarly. This situation can be explained by the low number of patients with adenomatous polyp.

It has been reported in previous studies that fundic gland polyps are more common in areas where PPI

Table 5. Characteristics of patients according to fundic gland polyp type

	Fundic gland polyp	Other diseases	p
Gender (F/M)	(14/5)	(76/34)	0.458
Age (mean ± SD)	55.6±12.5	60.5±14.6	0.527
Most frequent application complaint (%)	89.5 dyspepsia	68.2 dyspepsia	0.05
Long PPI use (%)	89.5	46.4	0.001
H. pylori presence (%)	15.8	41.8	0.03
Polyp size (mean ± SD, mm)	4.1±1.01	5.1±2.3	0.06
IM presence (%)	5.3	26.4	0.03
Presence of atrophy (%)	5.3	5.5	0.726

SD: Standard deviation, F: Female, M: Male, PPI: Proton pump inhibitors, *H. pylori: Helicobacter pylori*, IM: Intestinal metaplasia

Table 6. Characteristics of patients according to the type of adenomatous polyp

	Adenomatous polyp	Other patients	p
Gender (F/M)	7/4	78/40	0.419
Age (mean ± SD)	61.5±14.3	59.5±14.4	0.584
Most frequent application complaint (%)	78.3 dyspepsia	69.8 dyspepsia	0.505
Long PPI use (%)	47.8	53.8	0.386
H. pylori presence (%)	52.2	34.9	0.96
Polyp size (mean ± SD, mm)	5.08±1.8	4.9±2.3	0.492
IM presence (%)	30.4	21.7	0.259
Presence of atrophy (%)	13	3.8	0.107

SD: Standard deviation, F: Female, M: Male, PPI: Proton pump inhibitors, *H. pylori: Helicobacter pylori*, IM: Intestinal metaplasia

are used extensively (6). At the same time, it is known that *H. pylori* positivity is lower in those with fundic gland polyp and the presence of *H. pylori* is protective against the formation of fundic gland polyp (4). In our study, *H. pylori* positivity was significantly lower in patients with fundic gland polyp (15.8% & 41.8%, p=0.03) and the incidence of fundic gland polyp was significantly higher in patients using long PPI (89.5% & 46.4%, p=0.001).

In our study, the presence of IM was found to be significantly lower in patients with fundic gland polyp. This can be explained by the low presence of *H. pylori* in patients with fundic gland polyps. In a study conducted in our country, the rates of *H. pylori* and IM were found to be significantly lower in patients with fundic gland polyp (9).

Neuroendocrine tumours are nodular lesions with smooth surfaces, most commonly found in the corpus. Although there is evidence that its frequency has increased in recent years (10), neuroendocrine tumours are observed at around 1% (11). In our study, neuroendocrim tumour was detected in the corpus location in 1 case (0.8%). The low rate in our study indicates that a larger cohort may be needed.

Conclusion

Hyperplastic polyps were found at most, as similar to the literature. *H. pylori* positivity was found to be significantly associated with hyperplastic polyp. Fundic gland polyps were at the 2nd frequency, and *H. pylori* positivity and IM frequency were found to be significantly less in this polyp type.

Ethics

Ethics Committee Approval: The ethics committee approval for the study was obtained from the Aydın Adnan Menderes University Non-Interventional Clinical Research Ethics Committee (decision no: 05, date: 03.09.2020).

Informed Consent: Retrospective study.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Concept: İ.T., Design: E.K., Supervision: İ.T., Fundings: İ.T., Materials: İ.T., Analysis or Interpretation: İ.T., Literature Search: E.K., Writing: E.K., Critical Review: E.K.

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