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Original Article

Evaluation of Gastric Polyps: A Single-Center Study Conducted in Turkey's Southeast Anatolia Region

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ABSTRACT

Background Gastric polyps are often detected incidentally during endoscopic procedures performed for different reasons and may sometimes manifest by gastric bleeding, pyloric stenosis, iron deficiency anemia and abdominal pain. Our study aimed to investigate the demographic data of the cases found to have gastric polyps at the gastroenterology endoscopy unit, histologic type of the polyps, their localization and size, and their relationship with *Helicobacter pylori.*

Material and Methods Between September 2016 - September 2019, gastric polyps were detected in 255 of 9,771 cases who underwent upper gastrointestinal system endoscopy at the Gastroenterology Endoscopy Unit of our hospital. Demographic data, endoscopy reports and pathology results of these patients were retrospectively reviewed from the hospital registry system.

Results Of 255 cases included in the study, 160 (62.7%) were female, and 95 (37.3%) were male, with a mean age of 56.9 (min: 19, max: 95). A total of 336 polyps were detected in 255 cases, with 1.3 polyps per case. 36 (10.7%) of gastric polyps were found to be fundic gland polyps, 32 (9.5%) were found to be foveolar hyperplasia, 137 (40.8%) were found to be hyperplastic polyps, 5 (1.5%) were found to be xanthomas, and 6 (1.8%) were found to be neuroendocrine tumors.

Conclusions According to this study, 90% of gastric polyps detected endoscopically in southeast Turkey are smaller than 5 mm and located most commonly in the corpus; the most common histologic subtype is hyperplastic polyps.

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Introduction

Gastric polyps are usually asymptomatic mucosal protrusions originating from the gastric mucosa or submucosa and extending into the lumen. Gastric polyps are detected incidentally during endoscopic procedures performed for different reasons. Sometimes they can cause gastric bleeding, pyloric stenosis, iron deficiency anemia and abdominal pain.[1] The frequency of gastric polyps in the general population varies between 0.3% and 6%.[2,3] Hyperplastic polyps (HPs) and fundic gland polyps (FGPs) constitute most polyps classified according to their histopathological features, and adenomatous polyps comprise a small portion.[2] HPs are associated with *Helicobacter pylori* (HP) infection, while FGPs are related to the use of proton pump inhibitors.[3] While HPs decrease in western society due to the decline in the frequency of HP, there is an increase in FGPs. However, HPs are the most common polyps in Asian countries where HP infection is common.[4] Histopathological evaluation should be performed by biopsy, especially for adenomatous polyps, as gastric polyps may be associated with familial polyposis syndromes and can potentially be premalignant or malignant lesions.[5] Due to the malignant potential of gastric polyps, their diagnosis and follow-up gain importance.

This study aims to investigate the frequency of polyps detected during gastroscopy procedures in our hospital, demographic characteristics of the cases with polyps, histopathological features, localization, size and number of polyps and their relationship with HP infection.

Material and Methods

We detected gastric polyps in 299 of 9,771 patients who underwent upper gastrointestinal system endoscopy between September 2016 and September 2019 at the Gastroenterology Endoscopy Unit of our hospital. We retrospectively reviewed these patients' demographic data, endoscopy reports, and pathology results from the hospital registry system. Since our study was retrospective, informed consent was not obtained from the patients. The ethics committee of our hospital approved this study.

Some patients underwent multiple procedures, and 44 of the 299 patients studied had polyps. Together with the data of 255 patients, we evaluated only the first endoscopy and pathological findings of these 44 patients. We recorded the total number, size, anatomical localization, histopathological features and presence of HP in all patients and divided the polyps into groups according to their localization as gastric cardia, fundus, corpus, antrum and multiple regions. We considered the size of the giant polyp to be determinant in patients with various polyps of different sizes. All gastroscopy procedures were performed with 10% lidocaine spray (xylocaine 10% spray; Astra Zeneca, Sweden) under topical pharyngeal anaesthesia. All patients gave written informed consent before the procedure. Polypectomy was performed on all polyps except those that could not be removed due to anatomical localization or anticoagulant use. Small polyps (<5 mm) were removed with forceps and large polyps (>5 mm) with a snare. We classified polyps according to the modified classification of the World Health Organization (WHO). We excluded patients with gastric tumour and subepithelial lesions and a history of gastric surgery.

Statistical Analyses

Statistical analysis was performed using SPSS 16.0 (Chicago, USA) program. While the arithmetic means±SD, minimum and maximum values were used to define numerical data, categorical data were expressed as percentages (%). Kolmogorov-Smirnov test was used to determine the normality of data. Independent T-test was used for normally distributed numerical data, and chi-square test was used to test the differences between the categorical subgroups. A p-value of <0.05 was considered statistically significant.

Results

A total of 255 cases with gastric polyps were included in the study. 160 (62.7%) of these cases were female, 95 (37.3%) were male, and the mean age was 56.9 (min: 19, max: 95). A total of 336 polyps were detected in 255 cases, with 1.3 polyps per case. Histopathological features, size, localization and number of polyps were

Table 1. Number, size, localization and histopathological features of stomach polypoid lesions.

	Localization of polyps					Size of polyps			Number of cases	
Histopathological type of polyps	Cardia	Fundus	Corpus	Antrum	Total (%)	<5 mm n (%)	5-10 mm n (%)	≥10 mm n (%)	Single polyp	Multiple polyps
Fundic gland polyp	7	17	11	1	36 (10.7)	21 (95.5)	1 (5.6)	0	7	17
Foveolar hyperplasia	12	11	5	4	32 (9.5)	18 (100)	0	0	7	15
Gastritis/stomach mucosa	32	24	38	21	115 (34.2)	90 (95.7)	4 (4.3)	0	66	36
Hyperplastic polyp	37	32	45	23	137 (40.8)	87 (81.3)	12 (11.2)	8 (7.5)	68	41
Xanthoma	1	1	1	2	5 (1.5)	5 (100)	0	0	4	1
Neuroendocrine tumor	1	0	5	0	6 (1.8)	5 (100)	0	0	1	5
Polyps with nobiopsy	1	2	2	0	5 (1.5)	5 (100)	0	0	4	1
Total	91	87	107	51	336	230 (90.2)	17 (6.7)	8 (3.1)		

given in Table 1. Single polyp was detected in 157 cases (61.5%), while more than one polyp was detected in 98 cases (38.5%). The mean age was 56.3±17.4 years in the patients who had a single polyp and 57.7±12.4 years in the patients who had more than one polyp (p=0.449). Considering the size of the largest polyp, it was smaller than 5 mm in 230 cases (90.2%), between 6-10 mm in 17 cases (6.7%) and 10 mm and above in 8 cases (3.1%). Polyps were detected only in the cardia in 58 (23%) cases, only in the fundus in 41 (16%) cases, only in the corpus in 66 (26%) cases, only in the antrum in 41 (16%) cases and in multiple anatomical regions in 49 (19%) cases. Totally, the polyps were detected mostly in the cardia (31.9%). Histopathological evaluation of the lesions which were endoscopically considered polyp in 102 (40%) cases revealed gastritis or normal gastric mucosa. 36 (10.7%) of gastric polyps were found to be FGPs, 32 (9.5%) were found to be foveolar hyperplasia, 137 (40.8%) were found to be HPs, 5 (1.5%) were found to be xanthomas, and 6 (1.8%) were found to be neuroendocrine tumors. More than one histologic type was detected in 18 cases. Since polypectomy could not be performed, five (1.5%) cases did not have pathological examination. Considering the frequency of polyps by age, polyps were detected in a total of 38 cases in the age range of 19-40 years with more than one polyp in 7 of them, in a total of 109 cases in the age range of 41-60 years with more than one polyp in 51 of them and in a total of 108 cases aged above 60 years with more than one polyp in 40 of them *(Figure 1)*. The relationship of polyps with age, gender and HP according to histopathological features was given in Table 2. HP was studied in 195 of the patients included in the study, and it was found to be negative in 54 cases (27.7%) and positive in 141 cases (72.3%). No statistical significance was found between the histopathology of gastric polyps and HP positivity.

Discussion

Gastric polyps are generally asymptomatic and detected incidentally in endoscopic procedures performed for any reason. In our study, polyps were seen in a total of 255 patients among 9,771 gastroscopy procedures performed at the gastroenterology endoscopy unit. The frequency of gastric polyps has been reported to range between 0.3% and 6% in the literature.[2,3,6] This rate has been reported to be 1.2%[7], 2.2%[5] and 1.86%[8] in the studies conducted in different regions of Turkey. In this study conducted in our hospital which admits patients from Turkey's Southeastern Anatolia Region, the frequency of gastric polyps was 2.6%. This rate is consistent with the world data, while slightly higher than studies conducted in Turkey. In a study of 269 patients with polypoid lesions, the average age of the patients

Table 2. Relationship of polyps with age, gender, HP, intestinal metaplasia according to histopathological features.

	Age mean±SD (min-max)	Gender n (%)			Helicobacter pylori n (%)			Intestinal metaplasia n (%)		
Histopathological type of polyps		Female	Male	p value	Negative	Positive	p value	Negative	Positive	p value
Fundic gland polyp	58.95±11.261 (33-78)	15 (68.2)	7 (31.8)	0.523	6 (42.9)	8 (57.1)	0.533	22 (100)	0 (0)	0.059
Foveolar hyperplasia	59.94±13.383 (37-80)	8 (44.4)	10 (55.6)	0.127	5 (38.5)	8 (61.5)	0.309	16 (88.9)	2 (11.1)	0.933
Hyperplastic polyp	59.25±16.203 (21-95)	71 (67)	35 (33)	0.228	20 (26)	57 (74)	0.719	89 (84)	17 (16)	1.000
Xanthoma	59.25±14.385 (38-69)	3 (60)	2 (40)	0.616	2 (66.7)	1 (33.3)	0.658	4 (80)	1 (20)	1.000
Neuroendocrine tumor	63±16.529 (40-75)	5 (83.3)	1 (16.7)	0.530	1 (25)	3 (75)	1.000	3 (50)	3 (50)	0.069
Gastritis/stomach mucosa	52.83±16.219 (19-86)	56 (60.2)	37 (39.8)	1.000	20 (23.8)	64 (76.2)	0.111	77 (82.8)	16 (17.2)	0.500

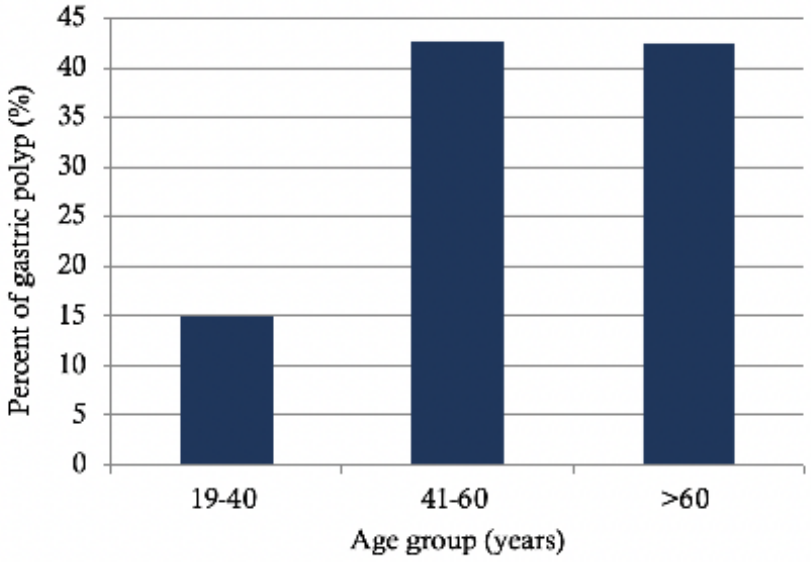

Figure 1. Frequency of gastric polyps according to age ranges.

was 65, and the rate of women was 61%.[9] In another study conducted by Atalay et al.[7], the average age of patients with polyps was 58.4 years, and the rate of women was 67.2%. In our study, the average age of the patients was 56.8, and the rate in women was 62.7%.

Histopathological examination reveals gastritis or normal mucosa rather than polyp in approximately 16-37.5% of the lesions considered polyp endoscopically.[9] In our study, histopathological examination revealed gastritis or normal mucosa in 40% of the lesions that were endoscopically considered polyp. 95.7% of these lesions were polypoid lesions smaller than 5 mm.

Gastric polyps can develop anywhere on the gastric mucosa. Li et al.[10] reported that the most common site for gastric polyps was the antrum, and it constituted 40.7% of all gastric polyps. Another study reported that the most common localization of polyps was the antrum, followed by the corpus.[6] A study conducted in China

reported that the frequency of polyps in the antrum decreased, and the frequency of polyps in the corpus increased.[11] Polyps were also found most commonly in the corpus, with a rate of 31.9% in our study supporting this study. The corpus was followed by the cardia, fundus and antrum, respectively, in polyp frequency. The higher number of polyps in the cardia and fundus than the antrum is associated with FGPs, which are seen in the proximal part of the stomach and tend to be multiple.

Archimandritis et al.[12] reported that most of the polyps (61.9%) were smaller than 5 mm in their study. In another study, 97.2% of all polyps were reported to be smaller than 10 mm.[13] The size of the largest polyp in our study was found to be smaller than 5 mm at a rate of 90.2%, between 6-10 mm at a rate of 6.7% and 10 mm and above at a rate of 3.1%; these findings are compatible with the literature.

HPs are the most common type of gastric polyps.[5] Focal inflammatory reactions and mucosal damage are blamed for the etiology of this type, and these polyps are associated with HP infection and atrophic gastritis.[14] HPs are more common in middle and advanced age individuals, and there was no gender difference.[15] Their incidence in the stomach differ among studies and vary between 18.2% and 76%.[13] Although HPs are considered as benign, these polyps may show dysplastic and malign transformation. Dysplastic foci can be observed in 1-20% of HPs. However, the overall prevalence of dysplasia is 2% in HPs. Only %0.5-8.6 of all HPs are malignant.[5,7] In our study, the mean age of occurrence of HPs was 59.2 years, while 67% in female patients, 40.8% of all gastric polyps were HP and 81.3% were smaller than 5 mm. Eight of HPs (7.5%) were larger than 10 mm, and the polyp size was found to be larger than 10 mm only in HPs in the patients included in the study. In our study, HP was studied in 77 cases diagnosed with HPs, and positivity was detected in 57 cases (74%). However, the high HP positivity was not statistically significant.

FGPs are the most common type of gastric polyps in developed countries, often seen in the proximal stomach.[16] They are typically smaller than 10 mm and frequently multiple, though they can be single.[17] They are known to be closely related to prolonged use of proton pump inhibitors.[18] They are mostly benign and have malignant potential in polyposis syndromes.[19] The frequency of FGPs varies between 6.1% and 77% in the literature.[3,7] In our study, we found this rate to be 10.7%. In our study, all FGPs were smaller than 10 mm and 95.8% were smaller than 5 mm. There was no significant relationship between FGPs, and gender and also HP. Intestinal metaplasia was not detected in any cases with FGPs. More than one polyp was present in 70.8% of cases with FGPs.

Neuroendocrine tumors of the stomach are extremely rare and originate from enterochromaphine-like cells in the gastric fundus and corpus mucosa.[20] Gastric neuroendocrine tumors are relatively rare and they are three types; type I, II, and III. These are histologically slowly progressive tumors. Metastasis via muscular layer is infrequent and observed in relatively large lesions. Therefore, endoscopic ultrasonography is required to assess invasion, prior to polypectomy. Annually endoscopic examination is recommended for the follow-up.[21] They are common in females and at advanced age. In a retrospective study, the frequency of neuroendocrine tumor in patients with gastric polyps was found to be 3.5%, the mean age was 49.9 years, and the female/male ratio was 2.3/1.[5] In our study, one of the neuroendocrine tumors was detected in the cardia and five were detected in the corpus; neuroendocrine tumors constituted 2.4% of the cases with gastric polyps. In addition, we found the mean age of occurrence to be 63 years, and the female/male ratio was found to be 5/1. More than one polyp was present in 83.3% of cases with neuroendocrine tumor and it was statistically significant. Our data supports the literature.

The facts that our patients could not be followed up as the study was a retrospective study, HP could not be tested in all patients who were found to have polyps, and the study was a single-center study, were all limiting factors.

Conclusion

We found that the most frequently detected polyps in the stomach were HPs, the majority of

the cases had single polyps, most of the polyps (%90) were smaller than 5 mm, and polyps were found most commonly in the corpus and least commonly in the antrum. Our study included the highest number of cases with gastric polyps conducted in Turkey's eastern and southeastern regions, and it completed studies conducted previously on this issue in Turkey.

Conflict of Interest

Authors declare that there is no conflict of interest with regard to this manuscript.

Authors' Contribution

Study Conception: NE, BE; Study Design: FB[3], BE; Supervision: EA, IS; Materails: NE; Data Collection and/or Processing: EA; Statistical Analysis and/or Data Interpretation: BE; Literature Review: FB[3], FB[6]; Manuscript Preparation: NE; Critical Review: FB[6].

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