Gastric Polyps: A Retrospective Analysis of Endoscopic Biopsies: A Single Center Study in Central Anatolia

Gastrik Polipler: İç Anadolu’da Tek Merkeze ait Endoskopik Biyopsilerin Retrospektif Analizi

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ABSTRACT

Objective: Gastric polyps accounts for %6 of gastrointestinal endoscopy. Geographical differences occur in the prevalence of them. We aimed to determine the spectrum of gastric polyps.

Material and method: Data including demographics, medical history and histological characteristics of polyps and Helicobacter pylori were obtained retrospectively.

Results: Of the 24568 endoscopies performed, 184 patients were identified as having gastric polyps. The most frequently encountered were hyperplastic polyps (62%), followed by fundic gland polyps (19.3%) and adenomatous polyps (3.8%). The corpus (36.4%) was the most common site and the antrum (25%) was the second. Female patients were more affected than male patients (64.7%). Majority of the polyps (88%) were smaller than 1 cm in diameter. The mean age was 62.10±13.4 (range:30-90) years. Fundic gland polyps were observed at younger age (mean age: 56.58) compared to other gastric polyps. Intestinal metaplasia was more frequently encountered in hyperplastic polyps than in fundic gland polyps.

Conclusion: In this study, hyperplastic polyps are the most common in our population however there was no association between the hyperplastic polyps and Helicobacter pylori infection. H. pylori infection ratio was similar in both hyperplastic polyps and fundic gland polyps however all of the patient have chronic gastritis. This findings suggest chronic gastritis also play role in hyperplastic polyps development. The study also showed that H. Pylori infection is still common in our country and further studies need to find efficacy of H. pylori treatment.

Key Words: Gastric polyps, H. Pylori, epidemiology, retrospective

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ÖZET

Amaç: Gastrik polipler gastrointestinal endoskopilerin% 6 'ında izlenmektedir. Gastrik polip prevalansı coğrafi farklılıklar gösterir. Çalışmamızda gastrik polip spektrumunun belirlenmesi amaçlanmıştır.

Yöntem: Gastrik poliplerin histopatolojik özellikleri, olgulara ait demografik özellikleri ve klinik öykü ile Helicobacter pylori varlığı retrospektif olarak tespit edilmiştir.

Bulgular: 24568 endoskopinin 184’ünde gastrik polip tespit edildi. En sık rastلانan polip; hiperplastik polip (% 62) olup fundik gland polipi (% 19,3) ve adenomatoz polipler (%3, 8) izlemekteydi. Gastrik polipler en sık corpus (% 36,4) ve ikinci sıralarda antrumda (% 25) lokalizeydi. Kadın hastaların(64,7) erkek hastalarından daha fazla etkilendiği görüldü. Gastrik poliplerin çoğunluğu (% 88) 1 cm’den küçüktü. Yaş ortalaması 62.10 + 13.4 (yaş dağılımı: 30-90yaş) idi. Fundik gland polibinin diğer gastrik poliplere göre daha genç yaşta (ortalama yaş 56.58) ortaya çıkmıştı. Hiperplastik poliplerde fundik gland poliplerinden daha sık intestinal metaplası görülürdü.

Sonuç: Bu çalışmada, hiperplastik poliplerin popülasyonumuzda en yaygın olduğu bulunmamakla birlikte hiperplastik polipler ve H. pylori enfeksiyonu arasında bir ilişki bulunamamıştır. H. pylori enfeksiyon hem hiperplastik poliplerde hem de fundik bez poliplerden benzer orandadır ve tüm poliplerde kronik gastrit varlığı izlenmiştir Bu bulgu, hiperplastik polip gelişiminde kronik gastritin de rolüne dekôkelmemistir. Çalışma ayrıca H. Pylori enfeksiyonunun ülkmizde hala yaygın olduğunu ve H. pylori eradiyasyon tedavisinin etkimi üzerinde belirlemenin içine daha iki çalışmamızda ihtiyac olduğu göstermiştir.

Anahtar Sözcükler: Gastrik polip, H. Pylori, epidemioloji

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INTRODUCTION

Gastric polyps are usually discovered incidentally in approximately 2% of upper gastrointestinal endoscopies (1). Widespread use of endoscopy has resulted in increased detection of gastric polyps. Polyps are defined as mucosal proliferations that grow from the normal mucosa and project into the lumen. Gastric polyps may develop because of epithelial or stromal cell hyperplasia, inflammation, ectopia or neoplasia. They can be classified according to predominant cell types: epithelial polyps which are the “classical” gastric polyps (hyperplastic polyps, fundic gland polyps and adenomatous polyps), mesenchymal proliferations (including gastrointestinal stromal tumors (GIST), leiomyoma and lipoma), clusters of endocrine cells (carcinoids), and infiltrates (xanthomas, and lymphoid proliferations). Although the vast majority of gastric polyps consist of non-neoplastic lesions some gastric polyps tend to have malignant transformation to cancer. Gastric cancer is one of the most frequently occurring cancers in the world and the second most common cause of cancer-related death (2). Thus, the diagnosis and treatment of gastric polyps should become important. In addition frequency and the types of gastric polyps vary depending upon the population being studied.

In the present study we aim to evaluate the spectrum of gastric polyps in our patient population by reviewing a 10-year database of histopathologic reports. We also hypothesized that their relation with specific features such as age, sex, subsite distribution and prevalence. We also investigated the correlations between the “classical” gastric epithelial polyps and underlying gastric conditions such as H. pylori infection, gastric atrophy and intestinal metaplasia.

MATERIALS and METHODS

Between 2002 and 2014, 24568 upper gastrointestinal endoscopies were performed at Baskent University, Konya Hospital, Gastroenterology Department. Among these endoscopic biopsy specimens, a total of 184 biopsies were identified as gastric polyps. The specimens were received in 10% buffered formalin and processed in auto processors. Paraffin embedded sections were stained using the routine hematoxylin and eosin method. We analyzed the pathology reports of all patients who had undergone endoscopic polypectomy or biopsy sampling and who were diagnosed with gastric polyps. The specific data including subsite localization, size, sex and age of the patients were obtained from the patient reports and recorded according to histologic types of gastric polyps. Beside gastric polyp biopsy, multiple biopsies were taken from normal gastric mucosa in each patient and the histological features were scored in accordance with the Sydney system for the classification of chronic gastritis.

Table I: Specific characteristc of gastric polyoid lesions according to histopathologic diagnosis.

| “Classical” Gastric epithelial polyps | Total patients | Mean age | Gender | Cardia | Fundus | Location | Antrum | Pilar |
|-------------------------------------|----------------|----------|--------|--------|--------|----------|--------|-------|
| Hyperplastic polyps                 | 114            | 62,0%    | 80     | 34     | 10     | 36       | 34     | 2     |
| Fundic gland polyps                | 36             | 19,6%    | 20     | 16     | 4      | 17       | 2      | 0     |
| Adenomatous polyps                 | 7              | 3.8%     | 4      | 3      | 1      | 2        | 0      | 2     |
| Other polypoid lesions             |                |          |        |        |        |          |        |       |
| Xanthoma                            | 9              | 4.9%     | 5      | 4      | 1      | 1        | 5      | 0     |
| Leiomyoma                           | 2              | 1.1%     | 2      | 0      | 1      | 0        | 0      | 0     |
| GIST                                | 7              | 3.8%     | 3      | 4      | 0      | 2        | 2      | 3     |
| Carcinoid                           | 9              | 4.9%     | 5      | 4      | 2      | 0        | 7      | 0     |

Size: A majority of polyps (88%, n:152) were smaller than 1 cm in diameter, while only six polyps were larger than 2 cm in diameter. We noticed that fundic gland polyps tend to be smaller than hyperplastic polyps (94% of fundic gland polyps <1 cm, 84% of hyperplastic polyps <1 cm ). Adenomatous polyps were bigger in size than other types of polyps.

RESULTS

Types of polyps: In this study, we identified gastric polyps in 184 patients, which represented 0,81% of all patients who underwent upper gastrointestinal endoscopy (24568 patients ). In the “classical” gastric epithelial polyps group, hyperplastic polyps were the most common (62%), followed by fundic gland polyps (19,6%) and adenomatous polyps (3,8%). Among other polypoid lesions group, gastric carcinoid (4,9%) and xanthoma (4,9%) were the most common lesions.

Sex: In our study we found that female patients were more frequently affected than male patients. Of the 184 patients, 119 (64,7%) were women and 65 (34,3%) were men. There was also a female predominance in “classical” gastric epithelial polyps (105 women vs 52 men). The female/male ratio for hyperplastic polyps and fundic gland polyps was 2.5:1 and 1:4.1, respectively.

Age: The statistical analysis indicates that the mean age of the patients was 62,10+13,4 (range:30-90) years. Our results also showed that fundic gland polyps were observed at younger age (mean age: 56,58) compared to the age at which hyperplastic polyps (mean age:63,37) and adenomatous polyps (mean age: 70,29) occurred .

Site of polyps: In our study, the most frequent site of gastric polyps was corpus 36,4% (n:67) and followed by antrum %25 (n:46), cardia 22,3% (n:41), fundus 15,2% (n:28) and pylorus 1,1%(n:2). We also found that all types of gastric epithelial polyps mostly located in the corpus (31,5% of hyperplastic polyps, 47,2% of fundic gland polyps, 42,8 % of adenomatous polyps ) The specific characteristics of gastric polyps such as age, sex and location are shown in Table 1.

The polyps which are smaller than 5mm in diameter, were mostly seen in the cardia and most of them were hyperplastic polyps. We also determined that larger hyperplastic polyp incidence increases with patients age however there were no statistically significant correlations between polyp size and age. We have found no any association between the types of polyps and age, sex or size. Table 2 shows the distribution of gastric polyps size according to histopathologic diagnosis and Table 3 shows the distribution of gastric polyps size according to anatomic location of polyoid lesions.
Table 2: Relationship between gastric polypoid lesions and size; the values indicate number of cases

| Size (mm) | Hyperplastic Polyps (n) | Fundic gland polyps (n) | Adenomatous Polyps (n) | Xantoma (n) | Leiomyoma (n) | GIST (n) | Carcinoid |
|-----------|-------------------------|-------------------------|------------------------|-------------|---------------|----------|----------|
| 0-5 mm    | 37                      | 19                      | 0                      | 9           | 0             | 0        | 2        |
| 6-10 mm   | 59                      | 15                      | 3                      | 0           | 2             | 1        | 5        |
| 11-15 mm  | 14                      | 1                       | 2                      | 0           | 0             | 2        | 1        |
| 16-20 mm  | 3                       | 1                       | 1                      | 0           | 0             | 0        | 1        |
| 21-25 mm  | 0                       | 0                       | 1                      | 0           | 0             | 1        | 0        |
| 26-30 mm  | 1                       | 0                       | 0                      | 0           | 0             | 3        | 0        |
| Total     | 114                     | 36                      | 7                      | 9           | 2             | 7        | 9        |

Table 3: Relationship between polyp size and anatomic location; the values indicate number of cases and percentage.

| Location | <5 mm | 6-10 mm | 11-15 mm | 16-20 mm | 21-25 mm | 26-30 mm | Total |
|----------|-------|---------|----------|----------|----------|----------|-------|
| Cardia   | 23    | 17      | 1        | 3         | 0        | 0        | 41    |
| Fundus   | 14    | 12      | 3        | 3         | 0        | 1        | 28    |
| Corpus   | 19    | 34      | 8        | 3         | 1        | 2        | 67    |
| Antrum   | 10    | 21      | 10       | 3         | 1        | 1        | 46    |
| Pilar    | 5     | 0       | 50       | 0         | 0        | 0        | 2     |

H. Pylori: Among the 114 patients with hyperplastic gastric polyps and fundic gland polyps, H. pylori colonization was detected in 26 patients (22.8%) with hyperplastic polyps and 9 patients (25%) with fundic gland polyps.

Intestinal metaplasia: Intestinal metaplasia was detected in the adjacent gastric mucosa in 24.6% of hyperplastic polyps, 13.9% of the fundic gland polyps, and 42.9% of adenomatous polyps.

Chronic gastritis and Atrophy: In the present study, we determined that all gastric polyp patients exhibited chronic gastritis histopathologically. We found that the adjacent gastric mucosa have exhibited atrophy in 29.82% of hyperplastic polyps and in 57.14% of adenomatous polyps. Table 4 shows the rates of H. pylori infection and intestinal metaplasia as well as gastric atrophy status.

Table 4: Histopathologic features of adjacent gastric mucosa according to histologic type of gastric polyps

| Type of Polyp          | H. Pylori | Atrophy | Intestinal metaplasia |
|------------------------|-----------|---------|-----------------------|
| Hyperplastic polyps    | 26/114    | 34/114  | 28/114                |
| Fundic gland polyps    | 9/36      | 5/36    | 5/36                  |
| Adenomatous polyps     | 2/7       | 4/7     | 3/7                   |

DISCUSSION

In the current study we presented the findings of a retrospective analysis of gastric polyps, which were diagnosed at the Baskent University Hospital, over a ten year period. Gastric polyps are found in approximately 6% of upper gastrointestinal endoscopic procedures in the United States (3). However, lower rates have been reported in other countries. Frequency and the types of gastric polyps vary depending upon the population being studied. In our study, the prevalence of gastric polyps (0.83%, 184 patients with gastric polyps in 24568 endoscopies) was similar to the findings of studies from Greece and Brazil, 1.2% (157 patients with gastric polyps in 12974 endoscopies) and 0.58% (153 patients with gastric polyps in 26,000 endoscopies), respectively (4,5). Similar prevalence rates have also been reported in Turkey, before (6,7). Recent investigation in China showed that the detection rate of gastric polyps was 3.1% (2125 patients with gastric polyps in 69575 endoscopy) (8).

"Classical" gastric epithelial polyps were the most frequently assessed polyps in our study. We found that the majority of polyps were hyperplastic polyps (62%) followed by fundic gland polyps (19.6%) and adenomatous polyps (8.8%). Other studies from Turkey also reported that hyperplastic polyps were the most commonly observed polyps however there are differences in prevalence rates (9-11). Hyperplastic polyps are thought to result from excessive regeneration of foveolar epithelium after mucosal damage. They account for up to 75% of gastric polyps in the geographic areas where H. pylori infection is common (12).
Beside arising in a background of *H. pylori* infection, hyperplastic polyps also occur in previously damaged gastric mucosa, reactive or chemical gastritis when adjacent to ulcer erosions and around gastroenterostomy stomas or autoimmune gastritis (7). Conversely, fundic gland polyps can be sporadic or associated with familial adenomatous polyposis (FAP) and affect receiving long-term treatment with proton-pump inhibitors (PPI).

Some studies showed that the gastric polyp spectrum has changed, with an increasing prevalence of fundic gland polyps. It is believed that *H. pylori* eradication and use of PPI is associated with higher incidence of fundic gland polyps in western populations. Regression of hyperplastic polyps has as many as 71% of patients with *H. pylori* infection after eradication of bacteria (13-15). In United States, latest published retrospective study confirmed that fundic gland polyps were the highest prevalence of gastric polyps, and hyperplastic polyps were the second, 7.72% and 1.79% of patients, respectively (16). Similar changes in the spectrum of gastric polyp has also been reported in the Northern Chinese population (17). Recently, a study reported that there is also a decrease in *H. pylori* seroprevalence in Turkey (18). On the other hand, in the study from Korea, authors pointed out that the incidence of fundic gland polyp are lower than Western reports, but that of gastric adenoma and gastric cancer is relatively high, similar to previous Asian reports(19). In East Asian where *H. pylori* infection remains high, larger proportions of gastric polyps are still hyperplastic(20).

Our results showed that *H. pylori* colonization was detected in 26 patients (22.8%) with hyperplastic polyps and in 25% of fundic gland polyps. *H. pylori* infection rates in patients with hyperplastic polyps were not significantly different than in patients with fundic gland polyps and adenomatous polyps. In our study more than 57% of gastric polyp patients had previously undergone endoscopic therapy. In contrast, close to 100% of *H. pylori* positive polyps had a prolonged history of gastric symptoms with history of treatment with PPI, antacids, or H2 receptor antagonists. While we believe that PPI administration has become common in our patients however we cannot obtain precise data about the duration of PPI treatment.

Chronic gastritis was a constant feature in the adjacent mucosa in all of our cases. In literature gastric hyperplastic polyps have reported to be the most frequent lesion in the beginning of a progression from chronic gastritis to intestinal metaplasia and gastric atrophy, however gastric adenoma reflect later stages of this process. Although hyperplastic polyps were believed to be benign lesions not associated with the risk of malignant transformation authors have reported dysplastic changes and/or foci of gastric adenocarcinoma harboured within hyperplastic polyps, recently(21,22). It is important to know that both polyps and gastric mucosa adjacent the polyps have an increased risk of cancer development. The risk of focal gastric cancer is five-fold higher in gastric adenomatous polyps than in the hyperplastic ones (10% vs 2.1%), and 2-fold higher in gastric mucosa surrounding the adenomatous than hyperplastic polyps (13.3% vs 7.1%). Therefore performing biopsy of the adjacent gastric mucosa should be performed for further assessment. Our results indicated that atrophy and intestinal metaplasia in the adjacent gastric mucosa is more common in adenomatous polyps and hyperplastic polyps compare to fundic gland polyps. However, we have found in hyperplastic polyps, most patients had a prolonged history of gastric symptoms with history of treatment with PPI, antacids, or H2 receptor antagonists. In our study, most of the hyperplastic polyps and fundic gland polyps were approximately 1cm in diameter while gastric adenomas were approximately 5 to 8 cm in diameter. We determined that fundic gland polyps tend to be smaller than hyperplastic polyps. Our results also showed that the size of polyps increases with increasing age, in hyperplastic polyps. A size greater than 1 cm and pedunculated morphology have been identified as risk factors for dysplasia in hyperplastic polyps. Guidelines recommend polypectomy of all gastric hyperplastic polyps greater than 0.5 cm to 1 cm (26). Similarly adenomatous polyps that are greater than 2 cm and retain a villous histology have a higher risk for developing neoplasia (28 %40%) (27). The statistical analysis indicates that the mean age of the patients was 62.10±13.4 (range:30-120) years. Our results also showed that fundic gland polyps were observed at younger age (mean age: 56,58) compared to the age at which hyperplastic polyps (mean age:63,37) and adenomatous polyps (mean age: 70,29) occurred. Authors found that age spectrum has changed in gastric polyps, they reported that patients aged 45-59 have currently twice more gastric polyps than 10 years ago, but the inverse relationship is observed for patients aged 60 years and over(28). Authors also reported that location of gastric polyps has changed in the past 10 years; the incidence of polyps has increased in the upper gastric body (19% vs 32%) and decreased in the antrum (46% vs 24%) (17). In our patient population, most gastric polyps were detected in the corpus.

In the present study, we observed that gastric epithelial polyps were more frequently detected in women; however it is known that men and women are equally affected. The female to male ratio was more than two-thirds in hyperplastic polyps, and was equal in fundic gland polyps. These findings are similar to other studies that have reported a slight predisposition in women, where in women comprised 58-70.5% of patients (12) however there are also studies that have indicated a male predominance (14). We have also investigated lesions with a polyoid appearance which includes gastrointestinal stromal tumors (GISTs), leiomyomas, and other subepithelial lesions. In this group, our results showed that carcinoids were the most common lesions (49%) followed by gastric xanthomas(22). These lesions are commonly associated with chronic gastritis. In our study all patients experienced chronic gastritis however carcinoids may also be associated with chronic autoimmune atrophic gastritis and pernicious anemia or Zollinger-Ellison syndrome and multiple endocrine neoplasia (29,30).

There are some limitations in of our study due to its retrospective nature, lacking the access to patient’s endoscopic and clinical data. Although the diagnosis of polyps was confirmed histologically in all cases, no exact / certain data were available regarding use of PPI status and *H. pylori* eradication therapy.

In conclusion, we evaluated the spectrum of gastric polyp developments in our study population by reviewing a 10-year database. Although this study presents the results of single center, it involves a relatively large number of patients. Knowing the specific and characteristic features of gastric polyps may help the clinicians to evaluate and manage patients of gastric polyps. In the current study we showed that overwhelming majority of gastric polyps were hyperplastic polyps. *H. pylori* infection rates were similar in patients with hyperplastic polyps and fundic gland polyps. On the other all gastric epithelial polyps arise in a background of chronic gastritis. Chronic gastritis may also be related to intestinal metaplasia and atrophy therefore clinicians should consider that there is a high prevalence of gastric epithelial polyps in patients with *H. pylori* infection and atrophic gastritis. It is important to know that both polyps and gastric mucosa adjacent the polyps have an increased risk of cancer development.

Further prospective or retrospective multicenter studies may allow us to explore mechanisms of the origin and the spectrum of gastric polyps in the population of our country. We believe that descriptive studies performed in long term period should provide more information about the gastric polyp spectrum and effect of geographical differences on the prevalence of gastric polyps.

Conflict of interest

No conflict of interest was declared by the authors.

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