

Is there a link between upper gastrointestinal polyps and colonic polyps? A retrospective study from a Turkish cohort

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OBJECTIVE: To investigate the incidence and associated demographical and clinical factors related to lower GI polyps and neoplasms in patients with upper GI polyps and neoplasms.

METHODS: We investigated 99 patients who had upper GI polyps and neoplasms and who were screened with colonoscopy: the following data were collected: demographical and clinical data consisting of age, sex, smoking status, presence of *H. pylori* infection, placement of upper GI polyps or neoplasms, presence of gastric atrophy, usage of proton pump inhibitors (PPI), presence of lower GI polyp or neoplasm, type of colon polyp, pathological grade of colon polyp. The patients were grouped according to having/not having lower GI polyps and neoplasms; data was compared between groups.

RESULTS: Smoking rate was significantly higher in patients with lower GI polyps and neoplasms (χ^2 : 4.35, p : 0.03). Furthermore, there was a significant association between presence of lower GI polyps and neoplasms vs. smoking (OR: 2.44 CI: 1.01-5.84, p : 0.04).

CONCLUSIONS: Patients with upper GI polyps and neoplasms who are smokers should be considered as candidates for having lower GI polyps and neoplasms and should be screened and followed more carefully. Additionally, we believe that large sampled and prospective studies are needed to highlight the association between upper GI polyps and presence of lower GI polyps and neoplasms.

KEYWORDS: Gastric polyps, Colon polyps, Risk factor, Retrospective.

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INTRODUCTION

Colorectal cancers are among the most prevalent cancer types worldwide in both male and female.¹ It is estimated that colorectal cancers are the third cause of death in the general population.^{2,3} Early detection of malignant colon polyps and removal of them may decrease mortality.⁴⁻⁶

Patients with upper gastrointestinal (GI) polyps and neoplasms might have synchronous and metachro-

nous polyps or neoplasms in lower GI tract, such as the rectum and the colon. The etiology of this coexistence still remains unclear. Possible explanations refer to genetic factors such as p 53, K-Ras, APC, etc.⁷⁻⁹ Others are environmental factors such as *H. pylori* infection, smoking and some additional factors.¹⁰ Because of this possible coexistence, the patients with upper GI polyps and neoplasms are recommended for screening their lower GI tract in terms of polyps and neoplasms. However, there is still no standard strategy, accepted for patients with upper GI polyps, to screen for colonic neoplasms as well as colonic polyps.

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In this study we aimed to investigate the incidence of lower GI polyps and neoplasms and to research associated factors in patients in whom upper GI polyps and neoplasms were detected.

METHODS

In present study we screened retrospectively the clinical records of 99 patients with upper GI polyps, whose diagnosis had been confirmed histopathologically by the same pathologist, who were admitted to the Turgut Özal University Department of Gastroenterology between January 2011 and December 2013. Of 798 patients with upper GI polyps 600 patients were excluded because they had not undergone colonoscopy; 50 patients were excluded because of insufficient data; 39 patients were not included because they had no upper GI polyps or neoplasms. After these exclusions, 99 patients were included in the study. The collected clinical data consisted of: age, sex, smoking status, the presence of *H. pylori* Infection, anatomical location of upper GI polyps or neoplasms, presence of gastric atrophy, usage of proton pump inhibitors (PPI), presence of lower GI polyp or neoplasm, subtype of colonic polyp such as hyperplastic, adenomatous or neoplastic, pathological grade of colon polyp such as absence of dysplasia, low grade dysplasia, high grade dysplasia.

Statistical Method

All data were evaluated through the Statistical Package for the Social Sciences, PC version 17.0 (SPSS, Chicago, IL). Confidence intervals (CI) of 95% and a 2-tailed P value of less than 0.05 were accepted to be statistically significant for all analyses. Numerical variables were tested for homogeneity of variance using the Levene test and for normality of distribution by the Kolmogorov-Smirnov test. Categorical variables were analyzed through the χ^2 test.

A series of logistic regressions examined the strength of associations between the presence of colon polyps (dependent variable) and age, sex, smoking status, the presence of *H. pylori* Infection, anatomical location of upper GI polyps or neoplasms, presence of gastric atrophy, usage of proton pump inhibitors (PPI). Results are presented as adjusted odds ratios (ORs) for independent variables of interest with associated 95% confidence intervals (CIs).

RESULTS

Ninety-nine patients with upper GI polyps or neoplasms were included to the study. The mean age of participants was 59.18 ± 13.28 years. Forty patients were male (40.4%), 59 female (59.6%). Table 1. Presents general information on the included patients

Table 2 shows the characteristics of the polyps and neoplasms found in the upper gastrointestinal tract of the included patients. It also shows the various indications for the gastroduodenoscopy procedures which led to the findings of the polyps and neoplasms. Polyps/neoplasms located in the stomach were evenly distributed between fundus, corpus and antrum; only four lesions were found in the duodenum. A vast majority of the lesions were hyperplastic polyps. Only three instances of adenocarcinoma were detected.

Table 3 shows that 47 out of the 99 patients with upper gastrointestinal tract polyps or neoplasia also presented lower gastrointestinal polyps or neoplasia. Hyperplastic polyps were again the most frequent type of lesion.

The patients were compared in terms of demographic and clinical characteristics as to whether they had lower GI polyps or neoplasms. The smoking rate was significantly higher in patients with GI polyps or neoplasms (χ^2 : 4.35, p : 0.03). The other comparisons of sociodemographic and clinical characteristic of groups were found to be non significant ($p > 0.05$).

A logistic regression model examined associations between presence of colon polyps or neoplasms (dependent variable) and gender, age, histology of gastric mucosa, *H. pylori* infection, presence of gastric atrophy and usage of PPIs. There was a significant association between presence of lower GI polyps or neoplasms and smoking (OR: 2.44 CI: 1.01-5.84, p : 0.04), as shown in Table 4.

DISCUSSION

In present study, the most important finding is the significant association between presence of lower GI polyps or neoplasms and smoking.

The mechanisms underlying the coincidence of upper GI polyps or neoplasms and lower GI polyps and neoplasms is complex and not completely elucidated. As aforementioned, the etiology of this coincidence may be related with genetics as well as with some environmental factors.¹¹ Evidence derived from epidemiologic studies supports this correlation: investigators have reported that patients who had colonic polyposis syndromes had higher incidence of gastric and duodenal polyps;^{12,13} in addition, the risk of colon cancer might be increased in patients who had gastric fundic gland polyps.¹⁴ Lee et al. reported that the percentage of colorectal neoplasm in gastric cancer vs. control groups were 35.8% vs. 17.9%, respectively.¹⁵ Park et al. also reported higher colorectal adenoma and colorectal cancer in patients with gastric cancer compared to control group.¹⁶ In the present study, 52 patients were found to have lower GI polyps or neoplasms (52.5%). When compared with previous studies, the presence of lower GI polyps and neoplasms was higher in patients with upper GI polyps. It is possible that the high percentage reported in this study might be due to the small sample size of the present study.

Table 1 - Comparison of demographical and clinical parameters between groups.

| | Patients with Lower GI Polyps | Patients without Lower GI Polyps | Statistic |
|-----------------|-------------------------------|----------------------------------|--------------------------|
| Age (years) | 57.28 ± 12.97 | 60.98 ± 13.35 | t: -1.97, p: 0.16 |
| Gender | | | |
| Total | 52 | 47 | |
| Female | 28 (53.8%) | 31 (66%) | χ^2 : 1.50, p: 0.15 |
| Male | 24 (46.2%) | 16 (34%) | |
| Smoking Status | | | |
| Smokers | 25 (48.1%) | 13 (27.7%) | χ^2 : 4.35, p: 0.03 |
| Nonsmokers | 27 (51.9%) | 34 (72.3%) | |
| H. pylori | | | |
| Present | 15 (28.8%) | 16 (34%) | χ^2 : 0.31, p: 0.36 |
| Absent | 37 (71.2%) | 31 (66%) | |
| Gastric Atrophy | | | |
| Present | 19 (36.5%) | 19 (40.4%) | χ^2 : 0.15, p: 0.42 |
| Absent | 33 (63.5%) | 28 (59.6%) | |
| PPI treatment | | | |
| Present | 24 (%46.2) | 26 (55.3%) | χ^2 : 0.02 p: 0.52 |
| Absent | 28 (%53.8) | 21(44.7%) | |

PPI: Proton Pump inhibitor; significant p values are presented in bold characters.

As aforementioned, patients who had gastric fundic gland polyps were reported to have increased risk for presence of colorectal cancer.¹⁴ In the present study, 21 patients had fundic gland polyps and most of them had hyperplastic polyps of upper GI system. However, the incidence of lower GI polyps and neoplasms did not differ significantly according to the type of gastric polyps. Some studies reported a link between H. pylori infection and colon polyps and neoplasms.¹⁵⁻¹⁸ However, other studies reported no association between H. pylori infection and lower GI polyps and neoplasms.¹⁹⁻²² Furthermore, a meta-analysis concluded that there is no association between H. pylori infection and colon polyps or neoplasms.¹¹ In present study, no association was found between H. pylori infection and lower GI polyps or neoplasms. Our finding agrees with reported data negating a link between H. pylori infection and colonic polyps.^{11,14}

Patients with lower GI polyps and neoplasms had similar incidence of gastric atrophy compared to patients

with no lower GI polyps and neoplasms. To the best of our knowledge, there is no report linking gastric atrophy and colon polyps.

Only one study by Hsu et al.²³ investigated the association between the use of proton pump inhibitors and colon polyps; no association was reported; similarly, we found no differences between groups in terms of PPI treatment. We suggest that further studies are needed to investigate whether there is a link between PPI treatment and colon polyps. We also failed to demonstrate a significant difference between groups in terms of placement of upper GI polyps and neoplasms. In the literature, there was no noteworthy association between placement of upper GI polyps and neoplasms and colon polyps.

A meta-analysis which investigated the association between smoking and colorectal cancers reported a link between smoking and colorectal cancers.²⁴ Smoking has also been considered as a well-established risk factor of colon neoplasms. In our study, the rate of smoking was found to be significantly higher in patients with lower GI polyps and neoplasms. Furthermore, there was a significant association between smoking status and presence of lower GI polyps and neoplasms.

Our study has a limitation: the numbers of participants might be considered low for a retrospective study. This limitation is due to the inclusion criteria of the study. We consider that further and prospective studies are needed for comparing patients with and without upper GI polyps and neoplasms.

In conclusion, we suggest that patients who had upper GI polyps and neoplasms should be screened carefully for the presence GI polyps and neoplasms. Particularly, patients with upper GI polyps and neoplasms who are smokers should be considered as candidates for having lower GI polyps and neoplasms and should be screened and followed up more carefully. Further, large sampled and prospective studies are needed to highlight the association between upper GI polyps and presence of lower GI polyps and neoplasms.

■ AUTHOR CONTRIBUTION

Sozen M: planned the study, analyzed results, performed clinical research; wrote the article; Yalaza M : collected the data; Turkey C: wrote and approved the final text.

Table 2 - Position and types of Upper Gastro-Intestinal tract polyps and neoplasms.

| Indications for gastroduodenoscopy | Upper GI Bleeding | Anemia | Refractory Gastric Pain | Gastroesophageal Reflux | Other |
|------------------------------------|-------------------|-------------|-------------------------|-------------------------|------------|
| | 5 (5.1%) | 6 (6.1%) | 43 (43.4%) | 16 (16.2%) | 21 (21.2%) |
| Position | Fundus | Corpus | Antrum | Overall Gastric | Duodenum |
| | 33 (33.3%) | 34 (34.3%) | 25 (25.2%) | 3 (3.1%) | 4 4.1%) |
| Type | Fundic Gland | Adenomatous | Hyperplastic | Adenocarcinoma | |
| | 21 (21.2%) | 7 (7.1%) | 66 (66.7%) | 5 (5.1%) | |

Percentages relate to the total of included patients

Table 3 - Occurrence and types of lower Gastrointestinal tract polyps and neoplasms

| Occurrence | Polyps/Neoplasia present | Polyps/Neoplasia absent | | | |
|------------|---------------------------|---------------------------|-------------------------|---------------------------|--------------------------|
| | 47 (47.5% [†]) | 52 (52.5% [†]) | | | |
| Type* | hyperplastic | Adenomatous | Neoplasia | Low grade dysplasia** | High grade dysplasia** |
| | 28 (59.6% ^{††}) | 21 (44.7% ^{††}) | 3 (6.4% ^{††}) | 12 (25.5% ^{††}) | 9 (19.1% ^{††}) |

*Some patients presented with more than one type of polyp; ** Dysplasia was a diagnosis independent of type of polyp; [†] percentage of total included patients; ^{††} percentage of patients with lower gastrointestinal tract polyps/neoplasia.

Table 4 - Logistic regression analysis of presence of lower gastrointestinal system or neoplasms. Significant p values are displayed in bold character

| Variable | OR | p | Confidence interval |
|-----------------|------|------|---------------------|
| Gender | 1.66 | 0.23 | 0.73-3.89 |
| Age | 1.02 | 0.08 | 0.99-1.06 |
| Smoking | 2.44 | 0.04 | 1.01-5.84 |
| H.pylori | 1.29 | 0.57 | 0.52-3.16 |
| Gastric atrophy | 0.73 | 0.47 | 0.29-1.75 |
| PPI treatment | 0.99 | 0.97 | 0.42-2.28 |

CONFLICT OF INTEREST

Authors declare no conflict of interest regarding this study.

EXISTE CONEXÃO ENTRE PÓLIPOS GASTROINTESTINAIS PROXIMAIS E PÓLIPOS COLÔNICOS? ESTUDO RETROSPECTIVO DE UMA COORTE TURCA

OBJETIVO: investigar a incidência, demografia associada e fatores clínicos relativos a pólipos e neoplasias gastrointestinais distais em pacientes com pólipos e neoplasias do trato gastrointestinal superior.

MÉTODOS: Foram investigados 99 pacientes que apresentaram pólipos ou neoplasias gastrointestinais superiores selecionados através de colonoscopia: os seguintes dados foram coletados: dados demográficos e clínicos consistentes em idade, sexo, tabagismo, presença de infecção por H. pylori, a presença de pólipos ou neoplasias gastrointestinais proximais, presença de atrofia gástrica, uso de inibidores da bomba de prótons (IBP), presença de pólipo ou neoplasia gastrointestinal distal, tipo de pólipo de cólon, grau patológico de pólipo de cólon. Os pacientes foram agrupados de acordo com ter/não ter pólipos ou neoplasias distais; os dados foram comparados entre os grupos.

RESULTADOS: A taxa de tabagismo foi significativamente maior nos pacientes com pólipos e neoplasias distais (χ^2 : 4.35, p: 0,03). Além disso houve uma associação significativa entre a presença de pólipos e neoplasias distais e tabagismo (OR: 2,44 CI: 1,01-5,84, p: 0,04).

CONCLUSÕES: Os pacientes fumantes com pólipos e neoplasias do trato gastrointestinal superior devem ser

considerados candidatos a pólipos e neoplasias distais e devem ser rastreados e seguidos com mais cuidado. Adicionalmente, grandes amostras e estudos prospectivos são necessários para esclarecer a associação entre pólipos gastrointestinais superiores e a presença de pólipos e neoplasias gastrointestinais distais.

PALAVRAS-CHAVE: pólipos gástricos, pólipos no cólon, fator de risco, estudos retrospectivos

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