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RESEARCH ARTICLE

Importance of Gastroduodenal Endoscopic Findings in Patients with Classic Familial Adenomatous Polyposis Syndrome

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Abstract

Background: Familial adenomatous polyposis (FAP) is an autosomal dominant disorder caused by a mutation in the adenomatous polyposis coli (APC) gene. FAP is characterized by development of multiple adenomatous polyps (>100) in the colon. The aim of this study was to evaluate the prevalence of gastroduodenal polyps in FAP patients referred to the Taleghani hospital, a teaching referral center in Tehran, Iran. **Materials and Methods:** Front-view and side-view endoscopies were performed in 33 FAP patients. Papillary biopsies were taken for all patients. Site of polyps, their number and size, histologic findings, patient general information (gender, age and family history of FAP/colorectal cancer/gastroduodenal polyps) were collected and reported. 28 patients of the study were evaluated using upper GI endoscopy again after 5 years for changes in characteristics and probable transformation of polyps into cancer. **Results:** Gastric polyps were seen in 42.4 % of patients. 76.45% of the patients had fundic gland polyps and hyperplastic polyps were noticed in 39.93% of them. Duodenal adenomas were found in 30.3% of patients which were reported to be tubular adenomas with low grade dysplasia and tubulovillous adenomas with low grade dysplasia in 60% and 45% of patients, respectively. **Conclusions:** Findings of this study bespeak the high prevalence of gastroduodenal polyps and the presence of dysplasia in duodenal polyps among FAP patients referred to the hospital. Therefore, it appears that routine gastroduodenal endoscopy in FAP patients is necessary.

Keywords: Gastric polyp- Duodenal adenoma- Familial adenomatous polyposis- Spigelman stage

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Introduction

FAP is an autosomal dominant disorder induced by a mutation in the adenomatous polyposis coli (APC) gene. FAP is characterized by the development of multiple adenomas in the colorectum (>100). Colorectal polyposis appeared at the age of 15 in 50% and at the age of 35 in 95% of patients. The lifetime risk of colorectal carcinoma would be virtually 100% if colectomy was not accomplished in FAP patients. In addition to increased risk of colon cancer, the overall risk of small bowel cancer in patients with FAP is 4-12% which is up to 300 times higher than the risk of general population [1-3]. Duodenal cancer is the second leading cause of death after colorectal cancer. Other commonly established gastrointestinal manifestations in FAP patients are duodenal adenomas, gastric fundic glands and adenomatous polyps. Duodenal adenomas are found in 30%-60% of mentioned patients [1] [4]. Fundic gland polyps (FGP) are estimated to be 12.5% to 84% among patient with FAP, whereas sporadic FGPs are distinguished in 0.8 to 1.9% of non FAP patients undergoing upper gastrointestinal endoscopy [5, 6]. FGPs associated with FAP tend to be more numerous, at a younger age, and have a more equal gender distribution than sporadic FGPs [5] [7]. In 1980, Spigelman et al, published an endoscopic and histological classification system for evaluation of the severity of duodenal adenomatosis, and the Spigelman classification has become the method of choice for duodenal adenomatosis management in several studies. This classification delineates five (0-5) stages. Points are aggregated for number, size, histology, and severity of dysplasia of polyps. Given this classification, approximately 70%-80% of FAP patients have stage 2 or stage 3 duodenal disease, and 20%-30% have stage 1 or

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stage 4 disease [1] [8].

Materials and Methods

This study was designed as a cross-sectional study and follow up to the previous study of the author [9]. Cases were collected from patients listed at gastroenterology and liver disease Research Center, Taleghani hospital (since 2007-2019). 33 patients (from 25 families) were included in the study. The diagnosis of FAP was suspected based on the presence of multiple adenomatous polyps in colon and rectum and was proved by APC gene study. General information about gender, age, age at diagnosis, and family history of FAP/ gastroduodenal polyps/ gastroduodenal cancer/ colorectal cancer was accumulated and was inserted in the IBM SPSS statistics V22. Then endoscopy was performed and the presence of polyps, site, size and number of polyps, shape of polyps (whether sessile or pedunculated) and other abnormalities were described by gastroenterologist. Specimens were achieved from biopsy of polyps or polypectomy. Side-view endoscopy in order to evaluate the duodenum and papilla was used. Pathologic study was done. In regard to number and site of polyps, histology and grade of dysplasia were attained. The Spigelman classification was used for better clarification of duodenal engagement. Finally, all gathered information was analysed. 28 patients of the previous study were recalled and re-evaluated using upper GI endoscopy for changes in characteristics and probable transformation of polyps into cancer.

Results

33 patients (13 Females, 20 males) with the mean age of 37.4 ±14.52 (range 19-69 y) registered to this study (Table 1). 2 patients (7.1%) were involved by colorectal cancer (associated with FAP) at the age of 25. 42.4% (n=14) and 33.3% (n=11) of patients had family history of colorectal cancer or FAP. Additionally, family history of gastric polyps and duodenal polyps was remarkable in 7 patients (24.2%) and 8 patients (24.2%), respectively. Front-view and side-view endoscopies were done in all patients (Table 2) and the discoveries revealed the following: gastric polyps were detected in 42.4% of cases. 71.4% of patients with gastric polyps had FGPs and 35.7% had hyperplastic polyps. Hyperplastic polyps were noted in antrum. Only one patient had both FGPs and hyperplastic polyps, simultaneously. Duodenal adenomas were noticed in 21.2% (7 patients). Tubular adenomas with low grade dysplasia were spotted in 57.1% of patients with duodenal adenomas. Tubulovillous adenomas with low grade dysplasia were identified in 42.8% of patients with duodenal adenomas. Adenomas of papilla (peri-ampullary) were reported in two 22-year-old male patients. There were not any patients with duodenal or gastric cancer, in our study. FGPs were the most common polyps. Histology of polyps and location of lesions were established in Table 2. According to the Spigelman classification, 6 patients were in stage I (with 4 points, 85.7%) and 1 patient was in stage II (with 5 points, 14.3%) from 7 patients with duodenal adenoma. 14 patients did not have any polyps in upper GI endoscopy (42.4%). To the contrary, 2 patients had both gastric and duodenal polyp (6.06%). 2^{end} part of duodenum was the most common site (8 patients). No patient with normal feature of papilla had periampullary adenoma. All the gastroduodenal polyps had sessile appearance. One 36-year-old female patient had colonic manifestation, osteoid osteoma in frontal bone and desmoid tumor in left ureter (indicative of Gardner syndrome). Amid 145 gastric polyps, the sizes of 5 polyps (3.4%) were between 5-10 mm and the others were smaller than 5 mm (96.6%). One patient had a duodenal polyp with a size between 5-10 mm and residual polyps were smaller than 5 mm. The evaluation of 28 patients of the previous study demonstrated no gastric or duodenal cancer. The characteristics of polyps were not different from the previous study.

Table 1. Age at Diagnosis of FAP

Age	Frequency	Percent (%)
15-20	9	27.20
20-25	9	27.20
25-30	4	12.10
30-40	1	3.03
>40	10	30.30
Total	33	100

Discussion

The present study is a follow-up and complementary study to the previous study carried on patients with FAP referred to the gastroenterology and liver diseases center of Taleghani hospital [9]. Our study demonstrated that the prevalence duodenal polyps was (21.2%), that was less than valves in major series (58%-74%) [10]. Most of the polyps among FAP patients were in stage 1 of Spigelman classification 85.7% (with mean age of 29), and the majority of them were found in second part of duodenum (21.2%). None of the patients had duodenal cancer or duodenal adenoma with high grade dysplasia. Study by Bulow et al [10] revealed that 65% of FAP patients had duodenal adenomas (mean age of 38) of whom 12% were invisible. The Spigelman classification in Bulow study showed 123 patients (34%) with stage 0, 55 patients (15%) with stage I, 97 (27%) with stage III and 27 (7%) with stage IV. Two patients had duodenal carcinomas. Gabriele Lami et AL, described 52 (68%) of FAP patients had duodenal polyps (7 in the bulb, 35 in second &third, 10 both in the bulb and the second part of duodenum), with low Spigelman stage (9.2% stage 3, 0% stage 4 [11]. Gastric cancer in western FAP patients with a recorded lifetime risk of 0.6% is similar to the general population but in Asian study was higher than general Asian population (4.2% in Korea, 2.1% in Japan) [12] [13]. Bianchi study et al [14] revealed that FGPs are found in 88% of FAP patients, low-grade dysplasia is seen in 38% and high-grade dysplasia is detected in 3% [12]. In Mankaney G et al study [12], gastric cancer is seen in

Table 2. Characteristics of Gastroduodenal Polyps in FAP Patients

	Number of patients (% of total FAP patients)
Gastric Polyp	14 (42.4)
*Fundic gland polyp	10 (30.3)
*Hyperplastic polyp	5 (15.1)
*Fundic gland+Hyperplastic polyps	1 (3.03)
*Tubular adenoma (low grade)	0 (0)
*Tubular adenoma (High grade)	0 (0)
Duodenal Polyp	7 (21.2)
**Tubular adenoma (low grade)	4 (12.1)
**Tubular adenoma (high grade)	0 (0)
**Tubulovillous adenoma (low grade)	3 (9.09)
**Tubulovillous adenoma (high grade)	0 (0)
**Villous adenoma	0 (0)
Gastric+Duodenal Polyps	2 (6.06)
Site of polyps	
Cardia of stomach	3 (9.09)
Fundus of stomach	8 (24.2)
Body of stomach	5 (15.1)
Antrum of stomach	5 (15.1)
Bulb of duodenum	2 (6.06)
2end part of duodenum	7 (21.2)
3rd part of duodenum	2 (6.06)
Ampulla of Vater (periampullary)	2 (3.03)
Size of polyps	% of total polyps
Less than 5mm	3.40
5-10mm	96.60
Larger than 10mm	0

1.3% of FAP patients. In contrast to the mentioned studies, our study revealed no patient with gastric cancer. Laura D et al [15] found that 65% of FAP patients had at least 1 fundic gland polyp, 23% of patients had at least 1 gastric adenoma, and only 1 patient developed carcinoma in stomach. Approximately 25% of FAP patients associated FGPs are manifested with low grade dysplasia [16]. In our study, we identified the prevalence of fundic gland polyps without dysplasia or invasive carcinoma in 10 patients (30.3%). There were 5 patients (15.1%) with hyperplastic polyps. All of the hyperplastic polyps were found in antrum. There is an approximate 1000-fold increase of developing desmoid tumor in FAP patients [17]. In current study, only one patient (3.57% of patients) had desmoid tumor. The lifetime risk associated with these tumors in a Finnish and Italian registry was estimated to be approximately 21% [18-20]. As a conclusion, findings of this study revealed that the prevalence of gastroduodenal polyps in FAP patients referred to Taleghani hospital and presence of dysplasia is high enough to suggest effective preventive strategies for duodenal polyposis in patients with documented FAP syndrome. Regular upper gastrointestinal endoscopy is recommended. But, given the results of 5-year follow up of patients in the study, detailed knowledge of course is a necessity to justify such recommendations for all patients in different stages of Spigelman.

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Conflict of interest

The present study does not have any conflict of interest.

Ethical approval

To be in line with moral principles, this study was designed and performed under supervision of research institute for gastroenterology and liver diseases, Shahid Beheshti University of Medical Sciences, Tehran, Iran although it was not a clinical trial it did not put patients at risk for unnecessary procedures and drugs.

Informed consents

All participants in the study were demanded to read and sign a written informed consent if they were consciously agreed upon participation in the study.

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