

Gastric and duodenal polyps in familial polyposis coli*

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SUMMARY Endoscopy with multiple biopsies of the upper gastrointestinal tract was repeated yearly over a two to six year period in nine patients with familial polyposis coli from three families. Adenomatous polyps, one to 20 in number and 2-8 mm in size, were detected in the antrum and the first and second duodenal portions in seven patients, while hyperplastic polyps were detected in four patients in the gastric body. In two patients adenomatous tubules were observed in the biopsies of endoscopically normal mucosa from the same area where adenomatous polyps later developed. Lymphoid polyps were detected in the antrum in three cases. Double contrast radiology correlated poorly with endoscopy in the gastric body; it allowed detection of polyps in the third duodenal portion in two more patients. These results confirm that the incidence of adenomas in the upper gastrointestinal tract in familial polyposis coli may be higher than previously suspected.

Duodenal and gastric adenomas and carcinomas have occasionally been described in familial polyposis coli (FPC) by different authors,¹⁻¹⁰ carcinomas being particularly frequent in the pancreaticoduodenal region.^{2,4-6,9} We have already reported duodenal adenomatous polyps and tubules in biopsies from endoscopically normal antral mucosa in two patients with FPC.¹¹

Systematic studies have recently been conducted in Japan on gastric and duodenal neoplasias in FPC,¹²⁻¹⁵ which suggest that the incidence of these tumours may be higher than previously suspected. The present investigation aimed to detect any polyps or other gastroduodenal mucosal anomalies in nine FPC patients during a two to six year follow-up period by endoscopy, histology, and radiology.

Methods

PATIENTS

Nine patients with FPC (three male and six female, aged 23 to 50 years), from three different families, were studied (Table). They had never presented with gastroduodenal symptoms except for one woman (B₁) who had complained of occasional episodes of postprandial nausea and epigastric pain.

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Cutaneous cysts were present in seven patients and osteoma in three, while no extraintestinal involvement was observed in two patients (A₁ and C₁).

Colectomy and ileorectal anastomosis were performed on all the patients and no metastases were found. After surgery three patients developed desmoid tumours (B₂, C₂, and C₃) and one of them an associated peritoneal fibrosis (B₂).

The patients were submitted to upper gastrointestinal endoscopy and biopsies annually. Patients A₁, B₁, and C₂ were followed up for six, four, and three years respectively, and the others for two years. At the last investigation, double contrast radiology of the upper gastrointestinal tract was also performed a few days after endoscopy, except for case B₃ when there was a delay of four months.

ENDOSCOPY

An Olympus GFD₂ endoscope was used. Before the investigation all patients were given atropine and diazepam, and the upper gastrointestinal tract was studied as far as the second portion of the duodenum.

HISTOLOGICAL INVESTIGATION

Biopsies were performed on the polypoid lesions seen endoscopically and on areas of apparently normal mucosa. At least 15 biopsies from the gastric body, antrum, and duodenum were obtained during each examination. The maximum number studied was 62 gastric and 24 duodenal samples from patient A₁ (five endoscopies in six years of follow-up), and the minimum was 20

Table Number of polyps detected in upper gastrointestinal tract by double contrast radiology (X-ray) or by endoscopy (Endo.) and histological features (Hist.) of biopsies from polyps or apparently normal mucosa in nine FPC patients from three families (A, B, C)

Patients	Body			Antrum			Duodenum		
	X-ray	Endo.	Hist.	X-ray	Endo.	Hist.	X-ray	Endo.	Hist.
A ₁	20	5	HP	D	D	AP, LP	10	15	AP
A ₂	30*	0	n	0	1*	n	10†	0	—
B ₁	0	5*	HP	D	D	AP, LP	0	0	n
B ₂	0	0	n	4	0	n	4	2	AP
B ₃	0	1*	n	0	3	AP, LP	4	6	AP
C ₁	15	10	HP	0	0	n	6	8	AP
C ₂	30*	5	n	3	5	AP, HP	6	5	AP
C ₃	30*	1*	csg	0	0	n	2	3	AP
C ₄	30*	1	HP	0	0	n	10†	0	—

n: normal. D: diffuse 'sago-grain' nodularity. AP: adenomatous polyps. HP: hyperplastic polyps. LP: lymphoid polyps. csg: chronic superficial gastritis. *Equivocal finding. †Third portion.

gastric and 11 duodenal samples from patient C₄ who was followed up for the least period of time (two years four months).

RADIOLOGICAL EXAMINATION

The technique used, similar to that of Laufer,¹⁶ consists of hypotonisation with N-methyl hyoscine bromide or glucagon followed by oral administration of Gastrovison effervescent powder and a barium suspension, 250% (wt/vol). Various projections were taken, and particular attention was paid to obtaining a good double contrast of the duodenum.

Results

The total number of polyps detected in the stomach and duodenum by endoscopy and radiology, as well as the histological results of the biopsies performed, are reported in the Table.

BODY

In four patients, one to 10 polyps of diameter <3 mm were detected by endoscopy and identified as protrusions from the surrounding mucosa of the same colour. Histological examination of these lesions showed that they were of the hyperplastic type in three patients, while in the fourth completely normal mucosa was found. In three patients, less well-defined protrusions were found on the folds of the great curve which were difficult to interpret: in one patient biopsies of one of the lesions showed a hyperplastic polyp, in another superficial gastritis was present, and no lesions were found in the third. Definite evidence of the presence of polyps was provided by radiology in only two patients in whom such lesions had also been demonstrated by endoscopy and histology. Equivocal radiological evidence of polyps was found in four other patients: biopsies

from two of them were abnormal, a hyperplastic polyp was found in the third, and chronic superficial gastritis in the fourth.

ANTRUM

Endoscopy revealed small and rare polyps of diameter <3 mm, lighter in colour than the surrounding mucosa, in four patients, as well as a single prepyloric polyp of 8 mm diameter in patient B₁.

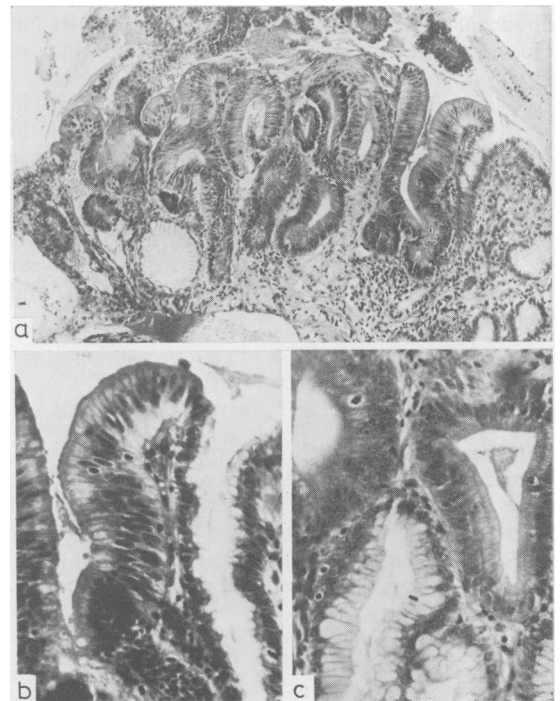


Fig. 1 Patient B₃. (a) Gastric adenoma. (b) and (c) High-power view of same polyp.

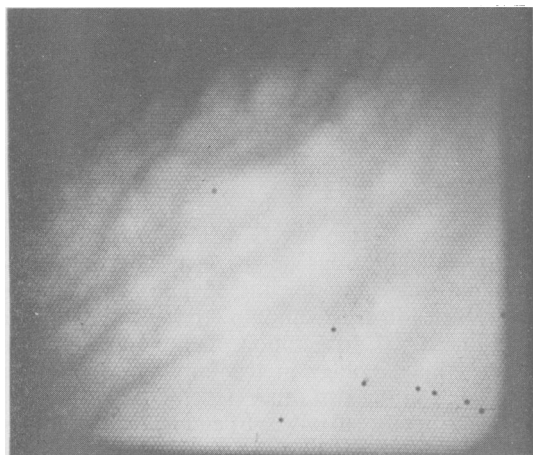


Fig. 2 Patient A₁. Endoscopic picture of diffuse 'sago-grain' nodularity of antral mucosa.

Histological examination showed that some of these polyps were adenomas with mild dysplasia (Fig. 1). In addition, lymphoid polyps were detected in three patients and a single hyperplastic polyp associated with the adenomas in another patient. During follow-up, it was observed that diffuse 'sago-grain' nodularity appeared over all the antral region in two patients (Fig. 2); biopsies from these areas showed the presence of lymphoid hyperplasia (Fig. 3) in addition to adenomas. It is interesting that no polypoid lesions were evidenced at the first endoscopic examination of two of these patients, A₁ and B₁, six and four years ago respectively, but biopsies taken of the apparently normal mucosa showed the

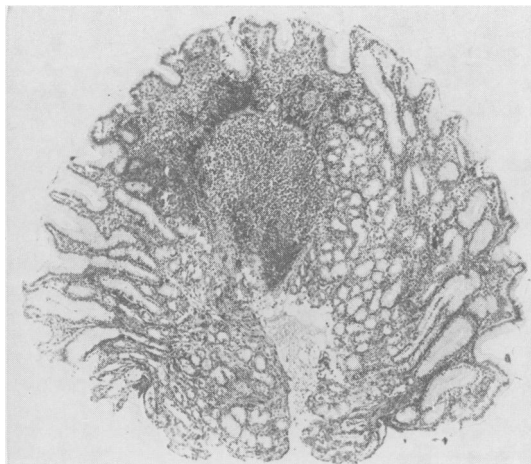


Fig. 3 Patient B₁. Lymphoid follicle situated within lamina propria of the gastric antrum.

presence of distinct foci of adenomatous tubules (Fig. 4).

Radiology visualised polyps in four patients; in two of them there was diffuse 'sago-grain' nodularity over all the antrum, which accorded with the endoscopic picture; endoscopy and histology confirmed the presence of the polyps in only one of the other two patients.

DUODENUM

In six of the nine patients endoscopy revealed two to 15 scattered polyps, <3 mm in diameter, much lighter in colour than the surrounding mucosa, in the first or second portion of the duodenum (Fig. 5).

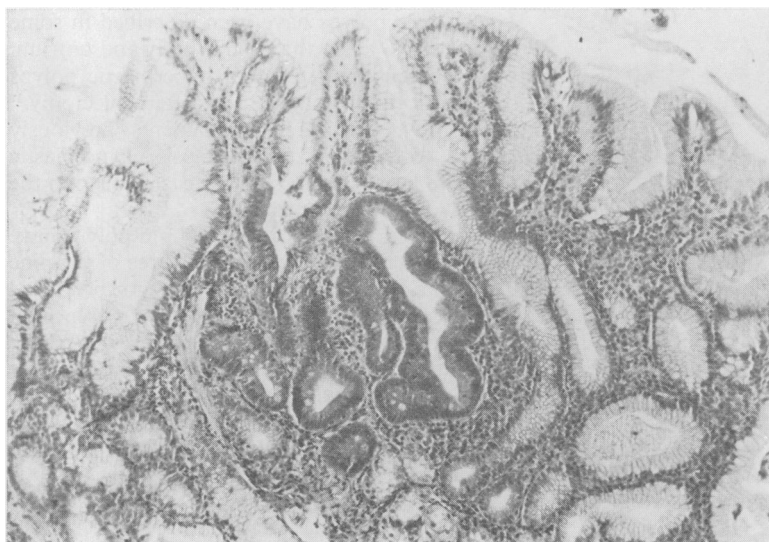


Fig. 4 Patient B₁. Adenomatous tubules detected in a biopsy taken from endoscopically normal antral mucosa. █

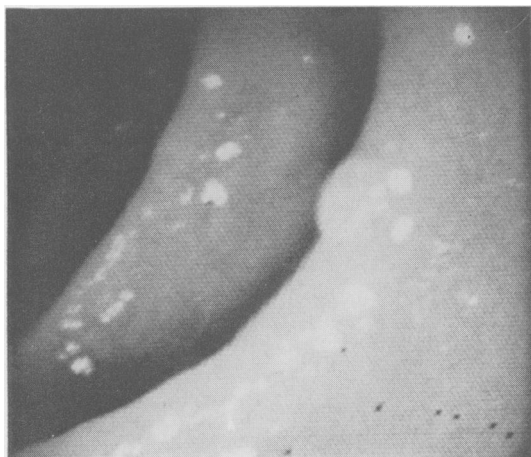


Fig. 5 Patient C₁. Endoscopic picture of a small duodenal polyp.

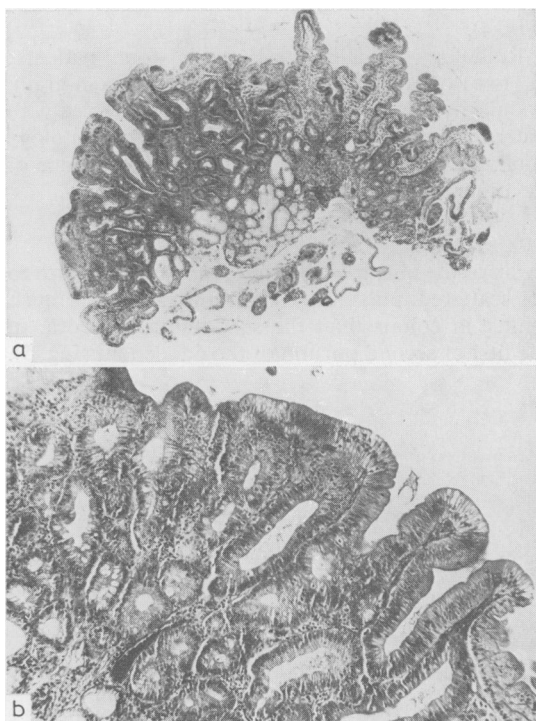


Fig. 6 Patient A₁. (a) Low-power microphotograph of a duodenal adenomatous polyp. (b) High-power view of same polyp.

The second portion was always involved, the first in only two cases. In all six cases the histological diagnosis was adenomatous polyps (Fig. 6). Radio-

logy accorded with endoscopy in demonstrating the presence of polyps in these six patients; moreover, it detected polyps in two other patients in whom the polyps were present only in the third portion of the duodenum.

Discussion

In the present study we have demonstrated small multiple adenomatous polyps in the upper gastrointestinal tract of seven out of nine FPC patients which varied in size from 2 to 8 mm and in number from one to 20. In addition, multiple polyps were detected by radiology in the third portion of the duodenum in the two other patients.

Detection of small polyps by endoscopy sometimes presented difficulties particularly in the gastric body because in this region the colour of the polyps was similar to that of the surrounding mucosa and the folds could not always be distended completely. For the latter reason, it was even more difficult to interpret small filling defects at radiology of the gastric body, particularly when they were situated along the crest of a fold or on a fold crossing. Radiology of antral and duodenal polyps presented less interpretative problems and was particularly useful in detecting polyps in the third portion of the duodenum outside the endoscopic field.

Adenomatous polyps in the antrum and duodenum have been described occasionally in the past by different authors^{1 3 4 7 10} but only Japanese workers^{12 1b} have reported a percentage of detection as high as in the present investigation. It is interesting to note that we have never detected adenomatous polyps in the gastric body; the only report of such polyps is by Itai in one case.⁸

Hyperplastic polyps have been described in some FPC patients^{10 12 17} in the gastric body and antrum, and it has been suggested that hyperplastic polyps in the gastric body may regress after colectomy.¹³ In our study, performed on patients previously submitted to ileorectal anastomosis, hyperplastic polyps have been detected in four cases (three in the body and one in the antrum).

In the present investigation lymphoid polyps have also been detected in the antrum in three of the nine FPC patients, which, in two of the patients, presented a diffuse 'sago-grain' nodularity. The presence of lymphoid polyps in the ileum and colon of FPC patients has already been reported,¹⁸ and we have observed such lesions in the ileum of five of our patients; however, this is the first time they have been reported in the antrum. *Giardia lamblia* infestations and abnormal serum levels of gamma globulin, which are frequently associated with lymphoid hyperplasia, were not found in our

patients. A lymphatic reaction to the adenomatous tissues can probably be excluded in our cases as no contiguity between adenomatous and lymphoid tissues could be detected by careful microscopic study of serial sections. The lymphoid lesions could perhaps be interpreted as a follicular variant of atrophic gastritis, as suggested by Ou-Tim¹⁹ who described lymphoid polyps in the antrum of two young South African patients, not affected with FPC, which presented a diffuse 'sago-grain' nodularity similar to that which we have observed.

It is interesting to note that during follow-up, which varied from two to six years in the different patients, we have observed the appearance or increase of adenomatous and other types of polypoid lesions. In two cases adenomatous tubules were detected in biopsies taken from an apparently normal antral mucosa and subsequently polypoid lesions appeared in the same area.

Cancer has been reported in some FPC patients in the duodenum⁹ and less frequently in the stomach.¹⁶ The difference between the high number of adenomatous polyps observed by us, which is in line with recent literature, and the relatively low number of reports of gastroduodenal cancer in FPC patients suggests that the sequence adenoma-cancer in the stomach and duodenum of such patients is not very common or requires a very long time to develop. Longer follow-up of a larger number of patients is needed to investigate this question.

The present and other systematic studies of the stomach and duodenum¹³⁻¹⁵ in FPC show that in reality this disease is a familial diffuse adenomatosis of the gastrointestinal tract, which affects the colon overtly and the stomach and duodenum silently; only limited data are available regarding the jejunum and ileum in FPC, and additional studies are necessary to establish their possible involvement.

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