Histologic characteristics of gastric polyps in Korea: Emphasis on discrepancy between endoscopic forceps biopsy and endoscopic mucosal resection specimen

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Abstract

AIM: To investigate histological characteristics of gastric polyps in the Korean population.

METHODS: We reviewed endoscopic photographs and medical records of patients with gastric polyps who underwent endoscopic mucosal resection from April 1996 through February 2003.

RESULTS: A total of 85 gastric polyps from 74 patients were reviewed. Male-to-female ratio was 1:1.96. Mean age was 59.9 ± 10.8 years. Multiple polyps were observed in 10.8%. Gastric polyps occurred most frequently in the antrum (58.8%). Pathological results on resected specimens were as follows: tubular adenoma 45.9%, hyperplastic polyp 31.8%, inflammatory polyp 9.4%, hamartoma 3.5%, fundic gland polyp 2.4%, tubulovillous adenoma 2.4%, adenocarcinoma 2.4%, dysplasia 1.1%, and mucosal pseudolipomatosis 1.1%. Discrepancy rate between endoscopic biopsy and pathology of resected specimens was 27.1%. There was no relationship between the size of the polyp and concordance rate.

CONCLUSION: There is considerable discrepancy in histologic findings between endoscopic forceps biopsy and resected specimens. Approaches to review of the histology of an entire polyp should be performed, especially when an adenoma is suspected.

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Endoscopic procedures
In the presence of gastric polyps, the size of the polyps was measured using biopsy forceps (open size = 6 mm in diameter). Two to 4 biopsy specimens were taken from each polyp. They were fixed in formalin and sent to the pathologists for further investigation. EMR was performed on a different occasion. Resection margins were marked with a needle knife. Saline was injected submucosally to lift the diseased mucosa off the muscularis propria. After grasping the lesion with forceps, resection was done with a snare that was placed around the lesion.

Histological procedures
EMR specimens were compared with the previous biopsy specimens by a single pathologist. Sections were assessed according to the WHO classification of gastrointestinal tumors published in 1990.

Statistical analysis
Statistical analysis was done using SPSS-PC 11.0 (Statistical package for the social sciences, SPSS Inc., Chicago, IL, USA) for MS Windows®. Data were expressed as mean ± SD. Categorical data were compared using the χ² test. Two-tailed P values < 0.05 were considered statistically significant.

RESULTS
Patient characteristics
A total of 74 patients were enrolled to this study. Twenty-five patients were male (a male : female ratio of 1:1.96). Mean age was 59.9 ± 10.8 years (Table 1).

Number of polyps
Sixty-six patients had one polyp (89.2%), 2 patients had 2 polyps (6.8%), and 3 patients had 3 polyps (4.0%). A total of 85 polyps were identified in 74 patients (Table 1).

Location of polyps
Fifty polyps were located in the antrum, 16 in the low body, 9 in the midbody, 5 in the high body, 3 in the angle, and 2 in the fundus (Table 1).

Diameter of polyps
Thirty-six polyps (42.4%) were < 1 cm in diameter, 38 (44.7%) were 1-1.9 cm in diameter, 11 (12.9%) were 2-3 cm in diameter (Table 1).

Classification of polyps according to Yamada classification
Thirty-three (38.8%) polyps were Yamada type I, 24 (28.2%) were Yamada type II, 12 (14.1%) were Yamada type III, and 16 (18.9%) were Yamada type IV (Table 1).

Results of endoscopic forceps biopsy (EFB)
Forty-one (48.2%) polyps were tubular adenoma, 26 (30.6%) were hyperplastic polyps, 13 (15.3%) were inflammatory polyps, 2 (2.4%) were fundic gland polyps, 2 (2.4%) were dysplasia, and 1 (1.1%) was tubulovillous adenoma (Table 1).

Pathology of EMR specimens (Table 2)
Pathology of EMR specimens were as follows: tubular adenoma, 39 (45.9%); hyperplastic polyp, 27 (31.8%); inflammatory polyp, 8 (9.4%); hamartoma, 3 (3.5%); fundic gland polyp, 2 (2.4%), tubulovillous adenoma, 2 (2.4%); adenocarcinoma, 2 (2.4%); dysplasia, 1 (1.1%); and mucosal pseudolipomatosis, 1 (1.1%). Twenty-four polyps from 18 patients were positive for H pylori. Of 24 polyps, 13 were hyperplastic polyps, 5 were tubular adenoma, 2 were inflammatory polyps, 1 was...
Comparison of histology between EFB and EMR specimens (Table 3)

Of 41 polyps diagnosed as tubular adenoma in EFB, 35 (85.4%) were tubular adenoma, 2 (4.9%) were inflammatory polyps, 1 (2.4%) was tubulovillous adenoma, 2 (4.9%) were adenocarcinoma, and 1 (2.4%) was dysplasia. Four cases (9.8%, 1 tubulovillous adenoma, 2 adenocarcinoma, and 1 dysplasia) were underdiagnosed in EFB group when compared with EMR specimens. Two cases (4.9%, inflammatory polyps) were overdiagnosed in EFB as against EMR specimens.

Of 26 polyps diagnosed as hyperplastic polyps in EFB, 1 (3.8%) was a tubular adenoma, 22 (84.8%) were hyperplastic polyps, 1 (3.8%) was an inflammatory polyp, 1 (3.8%) was a hamartoma, and 1 (3.8%) was a mucosal pseudolipomatosis. One case (3.8%, tubulovillous adenoma) was underdiagnosed in EFB compared with EMR specimen.

Of 13 polyps diagnosed as inflammatory polyps in EFB, 2 (15.4%) were tubular adenoma, 5 (38.5%) were hyperplastic polyps, 4 (30.7%) were inflammatory polyps, and 2 (15.4%) were fundic gland polyps. Two cases (15.4%, tubular adenoma) were underdiagnosed in EFB compared with EMR specimens.

Two polyps diagnosed as fundic gland polyps in EFB were proven to be hamartomas in EMR specimen. Two polyps diagnosed as dysplasia in EFB were found to be a tubular adenoma and an inflammatory polyp, respectively. One polyp diagnosed as a tubulovillous adenoma was found to be a tubulovillous adenoma in EMR.

Concordance rate between EFB and EMR was 72.9%. When stratified according to the diameter of polyps, concordance rate was 66.7% (24/36) in polyps <1 cm in diameter, 78.9% (30/38) in polyps 1-1.9 cm in diameter, 72.7% (8/13) in polyps 2-3 cm in diameter. The concordance rate was not associated with polyp diameter (P > 0.05). Concordance rate was not associated with Yamada type or with H pylori infection (P > 0.05).

Table 3  Histological comparison between results of endoscopic biopsy and resected specimen

| Endoscopic biopsy          | Tubular adenoma | Hyperplastic polyp | Inflammatory polyp | Hamartoma | Dysplasia | Total |
|---------------------------|-----------------|--------------------|--------------------|-----------|-----------|-------|
| Tubular adenoma           | 35 (85.4%)      | 0                  | 2 (4.9%)           | 0         | 2 (4.9%)  | 35    |
| Hyperplastic polyp        | 1 (3.8%)        | 22 (84.8%)         | 1 (3.8%)           | 1 (3.8%)  | 0         | 26    |
| Inflammatory polyp        | 2 (15.4%)       | 5 (38.5%)          | 4 (30.7%)          | 0         | 0         | 13    |
| Fundic gland polyp        | 0               | 0                  | 0                  | 2 (100%)  | 0         | 2     |
| Dysplasia                 | 1 (50%)         | 0                  | 1 (50%)            | 0         | 0         | 2     |
| Tubulovillous adenoma     | 0               | 0                  | 0                  | 0         | 1 (100%)  | 1     |
| Total                     | 39              | 27                 | 8                  | 3         | 2         | 85    |

MP, Mucosal pseudolipomatosis

DISCUSSION

Gastric polyps are found in less than 1% of the general population[14]. The rate of malignant transformations in this polyp is less than 1%, usually occurring in polyps with a diameter larger than 1 cm[13]. Most polyps that undergo malignant transformations are adenomatous polyps. It has been reported that about 11% of adenomatous polyps progress to carcinoma in situ within 4 years of detection[13].

In a previous study, adenomatous polyps were most frequently encountered in our study. Although this may be due to selection bias, the high frequency of adenomatous polyps (> 40%) in our series imply racial difference in gastric polyp histology.

Discrepancy between EFB and EMR specimen has been reported, with rates ranging from 10 to 25%[18-20]. In our study, the discrepancy rate between EFB and EMR specimen was 27.1%. Of interest, 2 cases which were diagnosed as tubular adenoma in EFB were later proven to be adenocarcinoma in EMR specimen. Fujiwara and colleagues[21] reported that 14 of 50 borderline gastric adenomas were diagnosed as containing adenocarcinoma after EMR and that adenocarcinoma could not be detected despite a repeated EFB in 9 patients. In our study, 4 of 41 polyps (9.8%) diagnosed as tubular adenoma were underdiagnosed. This suggests that EFB specimens may not be representative of the entire lesion. Therefore, to obtain a final diagnosis and as well as definitive treatment, lesions should be completely resected by EMR.

It may be expected that as the size of gastric polyp decreases, the biopsy specimen will be more representative of the entire lesion. This was not the case in our study. Although not reaching statistical significances, we found greater discrepancy in smaller polyps.

H pylori infection is reported to be associated with the development of hyperplastic polyps[8,22]. In our study, hyperplastic polyps were associated with H pylori infection. However, H pylori infection was not associated with the diagnostic discrepancy observed.

In conclusion, results of our observation of EFB and EMR specimens of gastric polyps showed a certain degree of discrepancy. The size of polyps was not associated with the diagnostic discrepancy. Therefore, especially when adenoma is suspected, evaluation of entire polyp by EMR is warranted regardless of size, to obtain an accurate diagnosis and management plan.

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