

Characteristic of Mixed Hyperplastic-adenomatous Polyps at Ramathibodi Hospital

Pongsakorn Srichan, MD¹
Yodying Wasutit, MD¹
Weerapat Suwanthanma, MD¹
Chakrapan Euanorasetr, MD¹
Pattana Sornmayura, MD²
Onchuma Puanfoong, BNS³
Chaowalit Tinkornrusmee, PN³

¹Department of Surgery, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, Bangkok, Thailand.

²Department of Pathology, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, Bangkok, Thailand.

³Department of Nursing, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, Bangkok, Thailand.

Abstract

Introduction: Mixed hyperplastic-adenomatous polyps contain foci of hyperplastic change with dysplastic adenomatous change. These polyps are likely to be heterogeneous at a molecular level and may predispose to sporadic colorectal cancer through a distinct pathway. Aim of this study was to describe characteristics of mixed hyperplastic-adenomatous polyps in Thai patients.

Methods: A retrospective study included 272 polyps from 201 patients detected by colonoscopy in the General Surgery Unit at Ramathibodi Hospital during the past one year period (Jan-Dec 2007).

Results: There were 141 mixed hyperplastic-adenomatous polyps from 104 patients. There were 63 (60.5%) male and 41 (39.5%) female. The mean age was 62 (21-87 years). Most polyps (63.8%) were in left colon especially sigmoid colon (29.2%). Size of polyps was ≤ 0.5 cm in 69%, 0.6-1 cm in 23.8%, 1.1-2.0 cm in 4.7% and > 2 cm in 2.4%. Morphology of polyps was sessile in 56.8%, pedunculated polyps in 34% and others were flat polyps (9.2%). All detected polyps were endoscopically removed, which technically failed in 1 patient. Polypectomy (53.3%) was performed in medium and large size polyps. Hot biopsy (39%) was the main treatment in small polyps. Of 141 polyps identified, 54.8% of polyps were serrated adenoma. There were severe dysplasia in 5.7% and carcinoma in situ in 1.4%. Only 0.7% of removed polyps contain adenocarcinoma.

Conclusion: The majority of colorectal polyps at our hospital are small size sessile mixed hyperplastic-adenomatous polyps mainly located in left-sided colon. These polyps should be recognized and endoscopically removed to decrease risk of subsequent colorectal cancer.

Keywords: Mixed hyperplastic-adenomatous polyps, serrated adenoma

Correspondence address: Weerapat Suwanthanma, M.D., Division of General Surgery Unit B, Faculty of Medicine Ramathibodi Hospital, Bangkok, Thailand 10400; Phone: 662-201-1527; Fax: 662-354-7303; E-mail: tewsw@mahidol.ac.th

INTRODUCTION

Traditionally, hyperplastic polyps were considered no clinical significance for malignancy change since its first description by Schmieden and Westhaus in 1926. Since then, most reports classify colonic polyps into 2 distinct categories; hyperplastic and adenomatous, based on histologic criteria.¹ However, Urbanski et al in 1984 reported the first case of colonic adenocarcinoma arising within a polyp with the mixed histology of a hyperplastic polyp and tubular adenoma.² Literature reviews have growing evidences of case reports of mixed hyperplastic-adenomatous polyps which predispose to sporadic colorectal cancer.³⁻⁶

In 1990, Longacre and Fenoglio-Preiser classified and named "serrated adenoma (SA)" or "mixed hyperplastic adenomatous polyp (MHAP)" to differentiate it from other types of polyps and to emphasize its neoplastic nature.⁷ Recent evidences revealed that these polyps are likely to be heterogeneous at a molecular level and may be predispose to sporadic colorectal cancer through a distinct pathway via mechanism of DNA microsatellite instability.^{8,9} The prevalence of this new entity is still unknown and in Thailand, this entity is even not recognized by most clinicians.

The purpose of this study was to describe the clinic-pathologic characteristics of mixed hyperplastic-adenomatous polyps in Thai patients.

MATERIAL AND METHOD

A retrospective study included 272 polyps from 201 patients detected by colonoscopy in the General Surgery Unit at Ramathibodi Hospital during the past one year period (Jan-Dec 2007). The detected polyps were removed by hot biopsy or polypectomy. The specimens were examined by pathologists. The data collected included patient characteristics, indication for colonoscopy, type of polyps, size, site, morphology of polyps, methods of polyp removal and the pathological reports of dysplasia and/or carcinoma. The data was expressed in Table as number and percentage.

RESULTS

There were 773 patients undergoing colonoscopy at our surgical unit in one year period (Jan to Dec

2007). Five patients had incomplete colonoscopy. The polyps were detected in 201 patients (26%) which were 110 male (54.7%) and 91 female (45.3%). The common age group which was found to have polyp detected was 61-70 years. Reported indication for colonoscopy was described in Table 1.

From 201 patients, 272 polyps were removed by polypectomy or hot biopsy. Of 272 polyps removed, 15 polyps (5.5%) had inadequate tissue for pathological examination. The pathological diagnosis of removed polyps were described in Table 2 and revealed that the main pathology (54.8%) were mixed hyperplastic-adenomatous polyp.

Table 1 Indication for colonoscopy

Indication	%
1. GI bleeding	20
2. NA	17
3. Clinical suspected malignancy	16
4. Surveillance after polypectomy	15
5. Screening	11
6. Bowel habit change	9
7. Others (abdominal pain, fistula, anemia)	7
8. Abnormal CT colonography	2.5
9. Family history of cancer, FAP	2.5

NA = Not available

Table 2 The pathological diagnosis of removed polyps (n = 257)

Pathology	Number (%)
1. Mixed hyperplastic-adenomatous	141 (54.8)
2. Adenomatous	15 (6)
3. Hyperplastic	85 (33)
4. Inflammatory	9 (3.5)
5. Adenocarcinoma	4 (1.5)
6. Juvenile/harmatomatous	3 (1.2)

Table 3 Location of removed colorectal polyps

Location	Number (%)
1. Cecum	16 (6.3)
2. Ascending colon	30 (11.7)
3. Hepatic flexure	19 (7.4)
4. Transverse colon	17 (6.6)
5. Splenic flexure	3 (1.2)
6. Descending colon	44 (17)
7. Sigmoid colon	65 (25.3)
8. Rectum	57 (22.2)
9. Unknown	6 (2.3)

Most polyps detected were in left-sided colon (67.3%) especially sigmoid colon (25.3%). The overall distribution of removed polyps were shown in Table 3. Most of removed polyps were small size (≤ 0.5 cm). The largest polyp was sessile type with 5 cm in diameter (Table 4).

Of 141 removed polyps with mixed hyperplastic-adenomatous pathology, there were 63 male (60.5%) and 41 female (39.5%) with range of age between 21-87 years (mean 62 year). The distribution of age was described in Table 5.

In this type of polyp, the most common site is still in left-sided colon (63.8%). The distribution of this mixed polyps were shown in Table 6.

Table 4 Size of removed colorectal polyps

Size	Number (%)
≤ 0.5 cm	188 (73.2)
0.6-1.0 cm	40 (15.6)
1.1-2.0 cm	11 (4.3)
2.1-3.0 cm	3 (1.2)
> 3.0 cm	6 (2.3)
Not recorded	9 (3.4)

Table 5 Age group distribution of removed mixed type colorectal polyps (n = 104)

Age (year)	Number (%)
20-30	2 (1.98)
31-40	5 (4.8)
41-50	8 (7.7)
51-60	28 (26.92)
61-70	34 (32.7)
71-80	21 (20.2)
81-90	6 (5.7)

Table 6 Location of removed colorectal polyps with mixed pathology (n = 141)

Location	Number (%)
1. Cecum	7 (5.0)
2. Ascending colon	15 (10.6)
3. Hepatic flexure	12 (8.5)
4. Transverse colon	5 (3.6)
5. Splenic flexure	2 (1.4)
6. Descending colon	26 (18.4)
7. Sigmoid colon	43 (30.5)
8. Rectum	30 (21.3)
9. Unknown	1 (0.7)

Nearly 90% of mixed polyps size were < 1.0 cm. The size of removed mixed polyps was shown in Table 7.

The morphology of removed polyps with mixed pathology were comparable between sessile (37.6%) and pedunculated type (34%). This was shown in Table 8.

From 104 patients with mixed polyps, the polyps were removed by various techniques with only one failure. The large/pedunculated polyps were removed with snare polypectomy while the small polyps were removed with hot biopsy. The preferred removal methods were polypectomy (53.3%) and hot biopsy (39%) All removal methods were shown in Table 9.

Table 7 Size of removed colorectal polyps with mixed pathology

Size	Number (%)
≤ 0.5 cm	96 (68.0)
0.6-1.0 cm	30 (21.4)
1.1-2.0 cm	6 (4.25)
2.1-3.0 cm	1 (0.7)
> 3.0 cm	2 (1.4)
Not recorded	6 (4.25)

Table 8 Morphology of removed polyps with mixed pathology

Morphology	Number (%)
Sessile	53 (37.6)
Pedunculated	34 (34.0)
Flat	2 (1.4)
Not stated (benign looking)	6 (4.25)
Not recorded morphology	46 (32.6)

Table 9 Technique of mixed polyp removal (n = 141)

Technique	Number (%)
Hot biopsy	55 (39)
Polypectomy	75 (53.3)
Biopsy alone	10 (7)
Failed	1 (0.7)

Table 10 Pathology of mixed polyps with neoplastic change (n = 141)

Neoplastic change	Number (%)
Mild dysplasia	84 (59.6)
Moderate dysplasia	46 (32.6)
Severe dysplasia	10 (7.1)
Adenocarcinoma	1 (0.7)

Table 11 Incidence of high grade dysplasia and carcinoma in SA, mixed polyps

Author	Year	Patients	Most common site of polyps	Incidence of	
				High grade dysplasia (%)	Carcinoma (%)
Longacre & Fenoglio-Preiser ⁷	1990	110	NA	37	10
Matsumoto ¹⁰	1999	52	NA	18	NA
Song ¹¹	2007	116	Sigmoid	2.4	0.8
Our study	2007	104	Sigmoid	7.1	0.7

The pathology of mixed polyps with neoplastic change was shown in Table 10. Most polyps were mild grade dysplasia (59.6%). There were 10 patients reported as severe dysplasia (7.1%) and one adenocarcinoma (0.7%).

DISCUSSION

The mixed polyps are a combination of hyperplastic glands and adenomatous glands in the same polyps and were well-reported in 1970 by Goldman et al and later by William et al.¹² Serrated adenomas are characterized morphologically by the architectural features of hyperplastic polyp and the cytological features of a tubular adenoma.^{7,10}

Based on our study, the most common colonic polyp was neoplastic polyp (adenoma or mixed types) (60.8%). The second most common type was hyperplastic polyps (33%). Our results were correlated with previous study by the national polyp study. (66.5% was adenoma and 11.2% was hyperplastic polyp).¹³

In Thailand, there was recent study from Wisedopas et al.¹⁴ which was a retrospective 5-year study at King Chulalongkorn Memorial Hospital. This study described the pathology of 776 removed polyps which were tubular adenoma 36%, hyperplastic polyp 39%. Adenoma was the most common polyp pathology.

Our study focused on the mixed hyperplastic-adenomatous polyps which were the major component of our removed polyps. The prevalence of this group was in the age 60-70 years. The site predilection was sigmoid colon (30.5%). Most polyps (68%) were < 5 mm in size with sessile morphology (37.6%). Of 141 polyps identified, there were moderate dysplasia in 32.6% and severe dysplasia in 7.1%. Only 0.7% of removed polyps contain adenocarcinoma.

There was no study regarding the natural history and prevalence of neoplastic change in the mixed type

polyps. For the traditional adenomas, the rate of malignancy increases with size. For the serrated adenomas, the natural history is still unknown but the prevalence of malignant changes were shown in Table 11.

The morphologic features of mixed polyps were different from the serrated adenoma based on criteria of Li, et al.¹⁵ which concluded that serrated adenomas are common at right-sided colon/appendix with flat morphology and the size usually more than 5 mm.

Recently, there were proposed useful histologic features to distinguish serrated adenomas from hyperplastic polyp including crypt pattern, nuclear shape, cytoplasm, mitotic figures and immunohistochemistry.^{16,17}

In our institution, there was no previous report of mixed hyperplastic-adenomatous polyps or serrated adenomas.

CONCLUSION

The majority of colorectal polyps at our hospital are small size sessile mixed hyperplastic-adenomatous polyps mainly located in left-sided colon. These polyps should be recognized and endoscopically removed. Even not recognized as serrated adenomas, our mixed polyps contain significant risk of neoplastic change for development of colorectal cancer. More evidences are required to support recommendation regarding the detection, management and follow up for these lesions to prevent subsequent colorectal cancer.

REFERENCES

1. Rembacken BJ, Trecca A, Fujii T. Serrated adenomas. *Digest Liver Dis* 2001;33:305-12.

2. Urbanski SJ, Kossakowska AE. Mixed hyperplastic adenomatous polyps-An underdiagnosed entity. *Am J Surg Pathol* 1984;8:551-6.
3. Cooper HS, Patchefsky AS, Marks G. Adenomatous and carcinomatous changes within hyperplastic colonic epithelium. *Dis Colon Rectum* 1979;22:152-6.
4. Estrada RG, Spjut HJ. Hyperplastic polyps of the large bowel. *Am J Surg Pathol* 1980;4:127-33.
5. Franzin G, Novelli P. Adenocarcinoma occurring in a hyperplastic (metaplastic) polyp of the colon. *Endoscopy* 1982;14:28-30.
6. Jass JR, Lino H, Ruzskiewicz A, et al. Neoplastic progression occurs through mutator pathways in hyperplastic polyposis of the colorectum. *Gut* 2000;47:43-9.
7. Longacre TA, Fenoglio-Preiser CM. Mixed hyperplastic adenomatous polyps/serrated adenomas. A distinct form of colorectal neoplasia. *Am J Surg Pathol* 1990;14:524-37.
8. Goldstein NS, Bhanot P, Odish E, et al. Hyperplastic-like colon polyps that preceded microsatellite-unstable adenocarcinomas. *Am J Clin Pathol* 2003;119:778-96.
9. Cunningham KS, Riddell RH. Serrated mucosal lesions of the colorectum. *Curr Opin Gastroenterol* 2006;22:48-53.
10. Matsumoto T, Mizuno M, Shimizu M, et al. Serrated adenoma of the colorectum: colonoscopic and histologic features. *Gastrointest Endosc* 1999;49:736-42.
11. Song SY, Kim YH, Yu MK, et al. Comparison of malignant potential between serrated adenomas and traditional adenomas. *J Gastroenterol Hepatol* 2007;22:1786-90.
12. William GT, Arthur JF, Bussey HJR, et al. Metaplastic polyps and polyposis of the colorectum. *Histopathology* 1980;4:155-70.
13. O'Brien MJ, Winawer SJ, Zauber AG, et al. The National Polyp Study. Patient and polyp characteristics associated with high-grade dysplasia in colorectal adenoma. *Gastroenterol* 1990;98:371-9.
14. Wisedopas N, Thirabanjasak D, Taweewisit M. A retrospective study of colonic polyps in King Chulalongkorn Memorial Hospital. *J Med Assoc Thai* 2005;88 Suppl 4: S36-41.
15. Li SC, Burgart L. Histopathology of serrated adenoma, its variants, and differentiation from conventional adenomatous and hyperplastic polyps. *Arch Pathol Lab Med* 2007;131:440-5.
16. Torlakovic E, Skovlund E, Snover DC, et al. Morphologic Reappraisal of serrated colorectal polyps. *Am J Surg Pathol* 2003;27:65-81.
17. Higuchi T, Sugihara K, Jass JR. Demographic and pathological characteristics of serrated polyps of colorectum. *Histopathology* 2005;47:32-40.