Association between colonic polyps and diverticular disease

Tetsuo Hirata, Yuko Kawakami, Nagisa Kinjo, Susumu Arakaki, Tetsu Arakaki, Akira Hokama, Fukunori Kinjo, Jiro Fujita

Tetsuo Hirata, Akira Hokama, Jiro Fujita, Department of Medicine and Therapeutics, Control and Prevention of Infectious Diseases, Faculty of Medicine, University of the Ryukyus, Okinawa 903-0215, Japan
Yuko Kawakami, Department of Internal Medicine, Nishinjo Hospital, Okinawa 900-0034, Japan
Susumu Arakaki, Tetsu Arakaki, Department of Coloproctology, Nishinjo Hospital, Okinawa 900-0034, Japan
Nagisa Kinjo, Fukunori Kinjo, Department of Endoscopy, Ryukyu University Hospital, Okinawa 903-0215, Japan
Tetsu Arakaki, Akira Hokama, Jiro Fujita, Department of Medicine, University of the Ryukyus, 207 Uehara, Nishihara, Okinawa 903-0215, Japan

Author contributions: Hirata T, Kawakami Y, Arakaki S, Arakaki T, Kinjo N Hokama A, Kinjo F, and Fujita J designed the research; Hirata T and Kawakami Y performed the research; Hirata T and Fujita J wrote the paper.

Correspondence to: Tetsuo Hirata, Department of Medicine and Therapeutics, Control and Prevention of Infectious Diseases, Faculty of Medicine, University of the Ryukyus, 207 Uehara, Nishihara, Okinawa 903-0215, Japan. b400314@med.u-ryukyu.ac.jp
Telephone: +81-98-8951144 Fax: +81-98-8951414
Received: December 6, 2007 Revised: February 18, 2008

Abstract

AIM: To evaluate the association between colonic polyps and diverticular disease in Japan.

METHODS: We retrospectively reviewed the medical records of 672 consecutive patients who underwent total colonoscopy between August 2006 and April 2007 at Nishinjo Hospital, Okinawa, Japan. Patients with a history of any of the following were excluded from the study: previous polypectomy, colonic resection, and inflammatory bowel diseases. The association between colonic polyps and diverticular disease was analyzed by logistic regression analysis, adjusted for age and sex.

RESULTS: Prevalence of colonic polyps in all patients with diverticular disease was significantly higher than that in those without diverticular disease (adjusted odds ratio 1.7).

CONCLUSION: Our data showed that patients with diverticular disease have a higher risk of colonic polyps compared to those without.

© 2008 WJG. All rights reserved.

Key words: Colonic polyps; Colonic neoplasm; Diverticular disease; Proximal diverticular disease; Colonoscopy

Peer reviewers: Francesco Costa, Dipartimento di Medicina Interna - U.O. di Gastroenterologia, Università di Pisa-Via Roma, 67-56122-Pisa, Italy; Francis Seow-Choen, Seow-Choen Colorectal Centre, Mt Elizabeth Medical Centre, Singapore, 3 Mt Elizabeth Medical Centre #09-10, 228510, Singapore; Marc Basson, Chief of Surgery, John D. Dingell VA Medical Center, 4646 John R. Street, Detroit, MI 48301, USA

Hirata T, Kawakami Y, Kinjo N, Arakaki S, Arakaki T, Hokama A, Kinjo F, Fujita J. Association between colonic polyps and diverticular disease. World J Gastroenterol 2008; 14(15): 2411-2413 Available from: URL: http://www.wjgnet.com/1007-9327/14/2411.asp DOI: http://dx.doi.org/10.3748/wjg.14.2411

INTRODUCTION

The prevalence of colonic neoplasia and diverticular disease has increased in recent years[1-5]. Both have common risk factors such as age and a lack of dietary fiber[6-10]. Despite common epidemiological trends and risk factors, any association between these diseases has not been clarified. Although some data have been reported regarding the association between these diseases in Western countries[11-14], there has been no study in Japan. There are differences between diverticular disease in Western countries and that seen in Asia, including Japan[15-19]. Diverticular disease of the right colon is rare in Western countries[20-22], whereas in Asia, diverticular disease of the right colon is common and has been increasing in recent years[23-27].

This study evaluated the association between colonic polyps and diverticular disease in Japanese patients undergoing total colonoscopy.

MATERIALS AND METHODS

We retrospectively reviewed the medical records of consecutive patients who underwent total colonoscopy between August 2006 and April 2007 at Nishinjo Hospital, Okinawa, Japan. The major indications for total colonoscopy were screening examination after hemorrhoidectomy and rectal bleeding. Patients with a history of any of the following were excluded from this study: Previous polypectomy, colonic resection, and inflammatory bowel diseases. The location of diverticula and polyps was classified into three groups: Distal, proximal and bilateral colon. The borderline between the distal and proximal colon was set at the splenic flexure. Diverticular disease was defined as the presence of one...
or more diverticula, and all polyps were diagnosed as adenoma by histological examination.

Statistical analysis
The chi-square test was used to compare sex and prevalence of colonic polyps, and the t-test to compare mean age. Logistic regression analysis was used to examine the association between diverticular disease and colonic polyps, adjusting for age and sex. P < 0.05 was considered statistically significant. All statistical analyses were performed with SPSS 15.0 for Windows.

RESULTS
The present study included 672 consecutive patients. Of these, 165 (24.5%) had diverticular disease and 189 (28.1%) had colonic polyps. The most common segment for diverticular disease was the proximal, followed by the bilateral and distal colon. The most common segment for colonic polyps was the distal, followed by the proximal and bilateral colon (Table 1). Among patients with diverticular disease, none had active segmental colitis.

Table 1  Number of patients with diverticular disease and colonic polyps by colon segment n (%)

| Colon segment | Patients with diverticular disease (%) | Patients with polyps (%) |
|---------------|---------------------------------------|--------------------------|
| Distal colon  | 20 (3.0)                              | 89 (13.2)                |
| Proximal colon| 98 (14.6)                             | 53 (7.9)                 |
| Bilateral colon| 47 (7.0)                             | 47 (7.0)                 |
| Total         | 165 (24.5)                            | 189 (28.1)               |

Table 2  Comparison of demographic features between patients with or without diverticular disease

|                          | Patients with diverticular disease | Patients without diverticular disease |
|--------------------------|-----------------------------------|---------------------------------------|
| No. of patients          | 165                               | 508                                   |
| Mean age (SD)            | 58.0 (13.6)t                       | 47.3 (14.7)                           |
| Sex (female: male)       | 52:113                             | 219:289                               |
| No. of patients with polyps (%) | 71 (43.0)t                        | 118 (23.2)                           |

1P < 0.01 vs without diverticular disease using the t-test; 2P < 0.01 vs without diverticular disease using the chi-square analysis.

The prevalence of colonic polyps in patients with diverticular disease was significantly different at 43% and 23.2%, respectively.

Using logistic regression analysis adjusted for age and sex, we calculated the adjusted odds ratio (OR) for colonic polyps (Table 3). This confirmed that the prevalence of colonic polyps in all patients with diverticular disease or those with diverticular disease in the proximal colon was significantly higher than that in patients without diverticular disease (adjusted OR 1.7 and 1.9, respectively).

DISCUSSION
Colonic neoplasia and diverticular disease have common epidemiological trends and risk factors such as age and a lack of dietary fiber [6,7]. However, little is known about any association between these diseases. Morini and others found an increased risk for sigmoid colon adenoma in Italian patients with diverticular disease, in a prospective study [23]. Kieff and others have reported an increased risk for distal neoplasia in women in the USA with extensive distal diverticulosis, in a cross-sectional study [26]. Although the sample size and distribution of patients included in the present study might inadequately reflect the general population of Japan, our data showed a 1.7-fold increased risk for colonic polyps in patients with diverticular disease, as compared to those without. In addition, although the prevalence of colonic polyps in patients with diverticular disease in the proximal colon and that in patients without was significantly different, the prevalence of colonic polyps in patients with diverticular disease in the distal or bilateral colon and that in patients without diverticular disease was not significantly different. This observation may be the result of the limited number of patients with diverticular disease in the distal and bilateral colon. However, this result was similar to a previous study in Korea, in which patients with proximal diverticular disease had a higher risk of any proximal neoplasia than did other patients [24]. Diverticular disease of the proximal colon is rare in Western countries, whereas in Asia including Japan, diverticular disease of the proximal colon is relatively common [16,17,23,24]. These results suggest that, regardless of the segment with diverticular disease or race, patients with diverticular disease have a higher risk of colonic neoplasia.

In conclusion, our data showed patients with diverticular disease have a higher risk of colonic polyps compared to those without (OR 1.7). This finding needs to be taken into account in surveillance for colonic neoplasia. However, further research is needed to clarify the mechanism of the association between these diseases.

COMMENTS

Background
Prevalences of colonic neoplasia and diverticular disease have increased in recent years. Both colonic neoplasia and diverticular disease have common risk factors such as age and a lack of dietary fiber. Despite common epidemiological trends and risk factors, any association between these diseases has not been clarified.
Research frontiers
There is an increasing body of epidemiological evidence regarding an association between diverticular disease and colonic polyps.

Innovations and breakthroughs
This study clarified the strong association between diverticular disease and colonic polyps. Moreover, this study suggested that regardless of the segment with diverticular disease or race, patients with diverticular disease have a higher risk of colonic neoplasia.

Applications
These results need to be taken into account in surveillance for colonic neoplasia.

Peer review
It is interesting that in the authors’ series there were similar associations between left and right sided diverticulosis and polyps.

REFERENCES
1. Painter NS, Burkitt DP. Diverticular disease of the colon: a deficiency disease of Western civilization. Br Med J 1971; 2: 450-454
2. Parks TG. Natural history of diverticular disease of the colon. Clin Gastroenterol 1975; 4: 53-69
3. Korzenik JR. Case closed? Diverticulitis: epidemiology and fiber. J Clin Gastroenterol 2006; 40: S112-S116
4. Jemal A, Siegel R, Ward E, Murray T, Xu J, Smigal C, Thun MJ. Cancer statistics, 2006. CA Cancer J Clin 2006; 56: 106-130
5. Giacosa A, Frascio F, Munizzi F. Epidemiology of colorectal polyps. Tech Coloproctol 2003; 8 Suppl 2: S243-S247
6. Howe GR, Benito E, Castelletto R, Corre J, Esteve J, Gallagher RP, Iscovich JM, Deng-ao J, Kaaks R, Kune GA. Dietary intake of fiber and decreased risk of cancers of the colon and rectum: evidence from the combined analysis of 13 case-control studies. J Natl Cancer Inst 1992; 84: 1887-1896
7. Aldoori WH, Giovannucci EL, Rockett HR, Sampson L, Rimm EB, Willett WC. A prospective study of dietary fiber types and symptomatic diverticular disease in men. J Nutr 1998; 128: 714-719
8. Painter NS, Burkitt DP. Diverticular disease of the colon, a 20th century problem. Clin Gastroenterol 1975; 4: 3-21
9. Globor GA, Kamiyama S, Nomura A, Shimada A, Abba BC. Bowel transit-time and stool weight in populations with different colon-cancer risks. Lancet 1977; 2: 110-111
10. Munakata A, Nakaji S, Takami H, Nakajima H, Iwane S, Tsuchida S. Epidemiological evaluation of colonic diverticulosis and dietary fiber in Japan. Tohoku J Exp Med 1993; 171: 145-151
11. Stefansson T, Ekboom A, Saren P, Pahlman L. Increased risk of left sided colon cancer in patients with diverticular disease. Gut 1993; 34: 499-502
12. McCallum A, Eastwood MA, Smith AN, Fulton PM. Colonic diverticulosis in patients with colorectal cancer and in controls. Scand J Gastroenterol 1988; 23: 284-286
13. Morini S, de Angelis P, Manurita L, Colavolpe V. Association of colonic diverticula with adenomas and carcinomas. A colonoscopic experience. Dis Colon Rectum 1988; 31: 793-796
14. Soran A, Harlak A, Wilson JW, Nesbitt L, Lembersky BC, Wienad HS, O’Connell MJ. Diverticular disease in patients with colon cancer: subgroup analysis of national surgical adjuvant breast and bowel project protocol C-06. Clin Colorectal Cancer 2006; 6: 140-145
15. Vajrabukka T, Saksornchai K, Jimakorn P. Diverticular disease of the colon in a far-eastern community. Dis Colon Rectum 1980; 23: 151-154
16. Lee YS. Diverticular disease of the large bowel in Singapore. An autopsy survey. Dis Colon Rectum 1986; 29: 330-335
17. Nakaji S, Danjo K, Munakata A, Sugawara K, MacAuley D, Kernohan C, Baxter D. Comparison of etiology of right-sided diverticula in Japan with that of left-sided diverticula in the West. Int J Colorectal Dis 2002; 17: 365-373
18. Nakada I, Ubuakata H, Goto Y, Watanabe Y, Sato S, Tabuchi T, Soma T, Umeda K. Diverticular disease of the colon at a regional general hospital in Japan. Dis Colon Rectum 1995; 38: 755-759
19. Chen SC, Wei TC, Wang SM, Hsu CY. Distributional pattern of diverticular disease of the colon in Taiwan. J Formos Med Assoc 1993; 92: 662-664
20. Fearonhead NS, Mortensen NJ. Clinical features and differential diagnosis of diverticular disease. Best Pract Res Clin Gastroenterol 2002; 16: 577-593
21. Petruzzelli L, Iacopini F, Bulajic M, Shah S, Costamagna G. Review article: uncomplicated diverticular disease of the colon. Aliment Pharmacol Ther 2006; 23: 1379-1391
22. Hughes LE. Postmortem survey of diverticular disease of the colon. I. Diverticulosis and diverticulitis. Gut 1969; 10: 336-344
23. Takano M, Yamada K, Sato K. An analysis of the development of colonic diverticulosis in the Japanese. Dis Colon Rectum 2005; 48: 2111-2116
24. Miura S, Kodaira S, Shatari T, Nishioka M, Hosoda Y, Hisa TK. Recent trends in diverticulosis of the right colon in Japan: retrospective review in a regional hospital. Dis Colon Rectum 2000; 43: 1383-1389
25. Chia JG, Ville CC, Ngoi SS, Goh PM, Ong CL. Trends of diverticular disease of the large bowel in a newly developed country. Dis Colon Rectum 1991; 34: 498-501
26. Chan CC, Lo KK, Chung EC, Lo SS, Hon TY. Colonic diverticulosis in Hong Kong: distribution pattern and clinical significance. Clin Radiol 1998; 53: 842-844
27. Levy N, Stermer E, Simon J. The changing epidemiology of diverticular disease in Israel. Dis Colon Rectum 1985; 28: 416-418
28. Morini S, Hassan C, Zullo A, De Francesco V, Festa V, Barbarani F, Paleo D, Stroffolini T. Diverticular disease as a risk factor for sigmoid colon adenomas. Dig Liver Dis 2002; 34: 653-659
29. Kieff BJ, Eckert CJ. Imperiale TF. Is diverticulosis associated with colorectal neoplasia? A cross-sectional colonoscopic study. Am J Gastroenterol 2004; 99: 2007-2011
30. Choi CS, Choi SC, Seo GS, Cho EY, Cho HJ, Kim YS, Kim KH, Kim TH, Nah YH. [Association between diverticulosis and colonic Neoplasm in Koreans]. Korean J Gastroenterol 2007; 49: 364-368

S-Editor S-Editor Li DL L-Editor Kerr C E-Editor Lu W