Low-dose aspirin and the severity of ıschemic colitis: A single-center retrospective study

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Cite this article as: Xiao W, Zhou Y, Wu K, et al. Low-dose aspirin and the severity of ıschemic colitis: A single-center retrospective study. Turk J Gastroenterol 2020; 31(12): 848-52.

ABSTRACT

Background/Aims: This retrospective study aimed to evaluate the effect of low-dose aspirin (50-150 mg/d) on the severity of ischemic colitis.

Materials and Methods: A total of 244 patients admitted to our hospital for ischemic colitis between 2013 and 2018 were included in the study. Patients were divided into two groups—aspirin and non-aspirin groups—based on their recent history of aspirin use before the onset of ischemic colitis. Clinical performance, biochemical indices, and endoscopic findings were compared.

Results: The average age and the proportion of underlying disease, including hypertension, cerebral infarction, and coronary heart disease in the aspirin group was significantly higher than those in the non-aspirin group ($p<0.05$). In terms of clinical symptoms, the proportion of diarrhea in the aspirin group was significantly higher than that in the non-aspirin group, while the proportion of abdominal pain was significantly lower in the aspirin group compared with the non-aspirin group. Colonoscopy results showed that the incidence of ulceration was significantly higher in the aspirin group than in the non-aspirin group ($p<0.05$).

Conclusion: The use of low-dose aspirin may aggravate the severity and mask the symptoms of abdominal pain in ischemic colitis.

Keywords: Colitis, ischemic, aspirin, colonoscopy, disease severity

INTRODUCTION

Ischemic colitis (IC), first described in 1963, is a group of independent diseases with certain clinical pathological features. It is mainly caused by mesenteric artery vascular lesions (1, 2). IC is an inflammatory change in the intestinal mucosa caused by ischemic injury of the intestinal wall due to insufficient arterial blood supply or obstruction of venous return. At present, statistical data support the descending colon as the most common area affected by IC, and the sigmoid colon is the most common site of IC (3-5).

The pathogeny of IC is multifactorial, and clinical manifestations vary with the severity of disease. Current studies have found that intestinal surgery, homeopathy, infection, and cardiac drugs are considered as major potential risk factors for IC (6, 7). The prognosis of IC mainly depends on the degree of ischemic injury and related complications (8, 9). Most patients usually recover within 1-3 months without sequelae, whereas there are also a few patients with irreversible diseases such as intestinal gangrene, peritonitis, and shock, which can eventually lead to death. The incidence of adverse outcome in IC remains high till date (10, 11). Right colon, shock, arterial hypotension (< 90 mmHg), and peritonitis may be the most important predictors of severity of IC (12). However, there is no conclusion on the clinical factors affecting the prognosis of IC.

It is generally known that antiplatelet therapy is a basic component of the prevention and management of vascular diseases. Aspirin, as a classical antiplatelet drug, has been widely used in clinical practice and is far more effective than other anticoagulants. However, there are many controversies in the use of aspirin; clinical practitioners have indirectly confirmed that aspirin can lead to a definite gastrointestinal mucosal injury, eventually leading to gastrointestinal mucosal damage, ulcers, and even gastrointestinal bleeding (13). However, to the best of our knowledge, there is no literature focusing on the effect of aspirin on the severity of IC. Therefore, in this study, we focus on the impact of aspirin on IC in patients and found that the use of low-dose aspirin may aggravate the severity and mask the symptoms of abdominal pain in IC (14).

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Received: **September 13, 2019** Accepted: **January 30, 2020**

DOI: **10.5152/tjg.2020.19507**

MATERIALS AND METHODS

Materials

IC patients admitted to the Affiliated Hospital of Yangzhou University between January 2013 and December 2018 were enrolled. The inclusion criteria were as follows: (1) patients with hypertension, arteriosclerosis, coronary heart disease, diabetes, constipation, infection, a history of antihypertensive drugs use, arrhythmia, shock or other diseases that might induce IC; (2) patients in whom the main clinical manifestations were abdominal pain, blood in the stool, or diarrhea; (3) patients whose microscopic examination showed intestinal mucosal hyperemia, edema, ecchymosis, submucosal hemorrhage, dark red mucosa, absent vascular network, and some mucosal necrosis followed by mucosal shedding and ulceration; and (4) patients in whom the abdominal imaging showed a varying degree of edema and thickening of the intestinal wall. Patients with the following factors were excluded: (1) pregnant, lactating women or children; (2) patients lacking colonoscopy results; and (3) patients that consumed other non-steroidal anti-inflammatory drugs recently.

This study was approved by the Ethics Committee of Affiliated Hospital of xx University, and all patients signed informed consents.

Methods

Patients were divided into aspirin and non-aspirin groups based on the low-dose aspirin (50-150 mg/d) used or not used before the onset of IC. Basic data, including patient gender, age, body mass index (BMI), basic medical history, and underlying disease were collected. In addition, the clinical manifestations, endoscopic features, intestinal lesions, and biochemical indicators were reviewed to assess the severity of intestinal injury.

Statistical Analysis

Statistical analysis was performed using the Statistical Package for the Social Sciences (SPSS) version 20.0 (IBM Corp.; Armonk, NY, USA) software. Tests such as the t-test and chi-square test were performed among the counts and measurement data, and normal distribution and variance homogeneity have be completed before t-test. P≤0.05 was considered significant.

MAIN POINTS

- *We set the patients into aspirin and non-aspirin groups based on the low-dose aspirin (50-150 mg/d) used or not used before the onset of IC.*
- *The two groups were compared in basic data, clinical manifestations, endoscopic features, intestinal lesions, and biochemical indicators.*
- *Low-dose aspirin may aggravate the severity and mask the symptoms of abdominal pain in ischemic colitis.*

RESULTS

Basic Characteristics of the Study Population

This study reviewed 244 IC patients who were diagnosed and hospitalized between 2013 and 2018 at the Affiliated Hospital of xx University. There were 68 men and 176 women with an average age of 63.2 ± 11.9 years and an average BMI of 23.2 kg/m^2. When categorized basis underlying health conditions, there were a total of 106 patients with hypertension, 31 with diabetes, and 47 with hyperlipidemia (Table 1).

Clinical Manifestations

The main manifestations of IC are abdominal pain, diarrhea, and blood in the stool. In this study, we found that

Table 1. Comparison of clinical characteristics, past medical history, and life history between aspirin group and non-aspirin group.

Aspirin taking history	Non-aspirin group	Aspirin group	Total	p
	N=194	N=50	N=244	
Male, N (%)	57 (29.7)	11 (21.6)	68 (27.9)	0.299
Age(mean±sd)	61.2±11.7	70.6±9.3	63.2±11.9	<0.0001
BMI (mean±sd)	23.3±3.6	22.5±4.2	23.2±3.7	0.161
Smoking history, N (%)	19 (9.8)	2 (4.0)	21 (8.6)	0.308
Drinking history, N (%)	11 (5.7)	1 (2.0)	12 (4.9)	0.482
Basic diseases, N (%)				
Hypertension	71 (36.6)	35 (70.0)	106 (43.4)	0.000*
Diabetes	21 (10.8)	10 (20.0)	31 (12.7)	0.082
Hyperlipidemia	38 (19.6)	9 (18.0)	47 (19.3)	0.800
Fatty liver	16 (8.2)	1 (2.0)	17 (7.0)	0.217
Coronary heart disease	2 (1.0)	18 (36.0)	20 (8.2)	0.000*
Cerebral infarction	4 (2.1)	22 (44.0)	26 (10.7)	0.000*

N: Number.

Table 2. Comparison of clinical manifestations between aspirin group and non-aspirin group.

Aspirin taking history	Non-aspirin group N=194	Aspirin group N=50	Total N=244	p
Stomachache (%)	178 (91.8)	40 (80.0)	228(93.4)	0.016*
Blood in the stool (%)	171(88.1)	47(94.0)	218(89.3)	0.231
Diarrhea (%)	17(8.8)	10(20.0)	27(11.1)	0.024*

N: Number.

Table 3. Comparison of the endoscopy severity between aspirin group and non-aspirin group.

Aspirin taking history	Non-aspirin group N=194	Aspirin group N=50	Total N=244	p
Ulcer (%)	33 (17.0)	15 (30.0)	48 (19.5)	0.039*
≥Two segments of colon (%)	71 (36.6)	26 (52.0)	97 (39.4)	0.047*

N: Number.

Table 4. Comparison of intestinal segments in ischemic colitis between aspirin group and non-aspirin group.

Aspirin taking history	Non-aspirin group	Aspirin group	p
Ascending colon	6	1	0.544
Transverse colon	24	5	
Descending colon	108	35	
Sigmoid colon	127	30	
Rectum	15	7	

the main symptoms in IC patients are abdominal pain (93.4%), blood in the stool (89.3%), and diarrhea (11.1%). Compared with the non-aspirin group, the aspirin group patients often had a significantly lower proportion of abdominal pain, but the proportion of diarrhea was significantly higher. There was no difference in the incidence of blood in the stool between these two groups (Table 2).

Endoscopic Characteristics

The microscopic appearance of IC often includes intestinal mucosal hyperemia, edema, ecchymosis, submucosal hemorrhage, dark red mucosa, absence of vascular network, and mucosal necrosis followed by mucosal shedding and ulceration. The results showed that endoscopic manifestations mainly included erosive ulcers, which were present in 68.4% of the patients, with 67% of the non-aspirin group and 74% of the aspirin group having erosive ulcers.

In the aspirin group, 30% of the patients had endoscopic ulcers, and 17% of the non-aspirin patients had endoscopic ulcers. There was a statistically significant difference between these two groups. In terms of the extent of involvement, IC generally involved a single segment of the colon in studied patients (60.6%). The aspirin group had more extensive involvement than the non-aspirin group (Table 3). Furthermore, the locations of IC colonic lesions were ranked as follows: sigmoid colon > descending colon > transverse colon > rectum > ascending colon. In the aspirin group, descending colon IC was more common than sigmoid colon IC, and the remaining ranking was the same as that in the non-aspirin group (Table 4), whereas the location of IC showed no significant difference between these two groups.

DISCUSSION

IC is a group of syndromes characterized by colonic vascular occlusive or non-occlusive disease (15) and mainly characterized by insufficient colonic blood supply (16). The incidence of IC in the United States is 15.6 per 100,000 per year, which is a total of 1% to 3% of inpatients. Although the incidence of IC in China is significantly lower than that in European and American countries, the incidence rate is increasing every year.

The onset age of IC is generally over 50 years, and half of patients have underlying health conditions such as hypertension, arteriosclerosis, coronary heart disease, diabetes, and dyslipidemia (17, 18). Obviously, the susceptible population of IC is consistent with the regular aspirin users. Until now, the effect of aspirin on IC, including the incidence and severity, has not yet been reported. We conducted this single-center retrospective clinical study to assess the impact of regular aspirin use on IC patients.

Proper diagnosis of IC requires a series of diagnostic procedures, such as endoscopy, computed tomography, or biopsy confirmation. The diagnostic value of various imaging examinations in IC is not the same (19-23). Colonoscopy is very important for the diagnosis of IC, especially for emergency endoscopy in case of bloody stool, which is the key to early diagnosis. It can determine the

extent, the stage of the lesion, and can also obtain histological examination, which is helpful in differential diagnosis of other conditions such as the inflammatory bowel disease and colon cancer (24-26). Therefore, to screen patients with a more definitively diagnosed IC, we included only patients who underwent colonoscopy to identify typical intestinal mucosa lesions.

The results of this study showed that IC is prevalent in elderly women over 60 years of age, and the most common concomitant disease is high blood pressure, which was found in nearly half of them, with single-stage colonic involvement. The highest incidence of IC is in the descending colon and sigmoid colon. The common clinical manifestations found in this study were abdominal pain and bloody stools, which is similar to past research observations in china.

In addition to its well-known platelet anti-aggregation effect, aspirin inhibits the synthesis of prostaglandins and other inflammatory mediators (such as bradykinin and histamine) to exert an analgesic effect, that is why several patients with peptic ulcer with bleeding induced by aspirin do not have symptoms of abdominal pain (27-29). In this study, our results showed that the use of aspirin could significantly relieve symptoms of abdominal pain in patients, but with no significant improvement in blood in the stool, which is in line with the aspirin pharmacodynamics. In view of the pain relief effect, recent use of aspirin in patients with IC may delay treatment due to symptom tolerance.

There are still some limitations of this study. First, cases were collected only from 2013 to 2018 in the affiliated hospitals of xx University, which resulted in a small number of cases and limited the scope of this study. There was a huge difference between the statistics and the overall sample. As older patients have more difficulty tolerating a colonoscopy or colonoscopy within 48 hours after admission, several cases could not be included in this study. Second, IC lacks clear diagnostic criteria and measures of inflammation. Using only clinical manifestations, endoscopic findings, and biochemical indicators to assess disease status is less reliable.

In summary, our study demonstrated for the first time that low-dose aspirin significantly increased the incidence of colonic mucosal ulcers and diarrhea in patients with IC, and the incidence of abdominal pain was significantly reduced due to the analgesic effect of aspirin.

Ethics Committee Approval: Ethics committee approval was received for this study from the Institution Affiliated Hospital of Yangzhou University (Decision date: 08/03/2019).

Informed Consent: Written informed consent was obtained from the patients who participated in this study.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept – X.W.M., Z.S.Y.; Design - X.W.M., Z.S.Y.; Supervision - X.W.M., Z.S.Y.; Resource - X.W.M., Z.S.Y.; Materials - X.W.M., Z.S.Y.; Data Collection and/or Processing - X.W.M., Z.S.Y.; Analysis and/or Interpretation - X.W.M., Z.S.Y.; Literature Search - X.W.M., Z.S.Y.; Writing - Z.S.Y.; Critical Reviews - X.W.M., L.G.T.;

Acknowledgements: Thanks to Prof. Lu for contribution in statistical analysis.

Conflict of Interest: The authors have no conflict of interest to declare.

Financial Disclosure: The authors declared that this study has received no financial support.

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