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CASE REPORT

Mesenteric phlebosclerosis with amyloidosis in association with the long-term use of medicinal liquor: A case report

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Author contributions: Hu YB and Wang QY designed the study; Hu YB and Hu ML drafted and wrote the manuscript; Yang XY and Ding J revised the manuscript critically for intellectual content; All authors gave intellectual input to the study and approved the final version of the manuscript.

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Abstract

BACKGROUND

Mesenteric phlebosclerosis (MP) is a rare disease of the colon. The clinical manifestations of this disease are nonspecific and it may easily be misdiagnosed. We report a case of MP with amyloidosis in the colonic vessel walls in a patient with hypertension who had been consuming Chinese medicinal liquor for 10 years. We also review the relevant literature and summarize the characteristics of MP in patients in mainland China.

CASE SUMMARY

A 64-year-old man was referred to our department from his primary hospital because of abdominal pain, diarrhea, and fever for almost 10 d. Computed tomography showed colon wall thickening, with threadlike calcifications in the mesenteric vein in the transverse colon. Colonoscopy revealed purple-blue mucosa with multiple ulcers in the ascending and transverse colon. Biopsy showed thickening and calcification of the vein walls, perivascular and mucosal collagen degeneration, and amyloidosis. The patient had been consuming Chinese medicinal liquor, mainly that made from gardenia fruit, for 10 years. Based on these results, a diagnosis of MP with amyloidosis was made. After conservative treatment, the patient's discomfort subsided and he was followed closely. The use of Chinese herbal medicine was suspected to play a role in the pathogenesis of MP.

CONCLUSION

The clinical manifestations of MP are nonspecific. Recognition of its typical imaging findings, including multiple calcifications on computed tomography and purple-blue mucosal discoloration on colonoscopy, is vital.

Key words: Mesenteric phlebosclerosis; Amyloidosis; Medicinal liquor; Case report

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Core tip: Mesenteric phlebosclerosis is a rare disease of the colon, characterized by calcification of the mesenteric vein and thickening of the right hemicolon wall, with fibrosis and hyalinization. Mesenteric phlebosclerosis is difficult to diagnose because its etiology and pathophysiology are unclear, and many patients are asymptomatic or present with atypical symptoms. Herein, we report a case of mesenteric phlebosclerosis with amyloidosis in the colonic vessel walls in a 64-year-old man with hypertension who had been consuming Chinese medicinal liquor for 10 years.

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INTRODUCTION

Mesenteric phlebosclerosis (MP) is a rare disease of the colon, characterized by calcification of the mesenteric vein and thickening of the right hemicolon wall, with fibrosis and hyalinization[1,2]. It is considered to be a form of ischemic colitis, characterized by noninflammatory, nonthrombotic stenosis or occlusion of the mesenteric veins[3]. MP is difficult to diagnose because its etiology and pathophysiology are unclear, and many patients are asymptomatic or present with atypical symptoms. Previous studies have suggested that the disease is related to diabetes mellitus, hemodialysis, toxins, or portal hypertension, and likely associated with the use of Chinese herbal medicine[4,5]. Herein, we report a case of MP with amyloidosis in the colonic vessel walls in a 64-year-old man with hypertension who had been consuming Chinese medicinal liquor for 10 years.

CASE PRESENTATION

Chief complaints

In August 2016, a 64-year-old male patient presented to our department with the chief complaints of persistent, mild lower abdominal pain, diarrhea, and fever for more than 10 d.

History of present illness

The patient's maximum body temperature was 39.8 °C. He was diagnosed with infective diarrhea by a local doctor and transferred to our hospital department.

History of past illness

The patient denied any notable medical history, except hypertension.

Personal and family history

The patient stated that he had a history of drinking and smoking for 10 years.

Physical examination

At presentation, the patient's body temperature was 37.1 °C. His heart rate was 72 beats/min. His respiratory rate was 20 breaths/min, and his blood pressure was 121/74 mmHg. His abdomen was soft and flat, with no tenderness.

Laboratory examinations

Laboratory tests yielded the following results: Hemoglobin, 116 g/L; C-reactive protein, 99.3 mg/L; erythrocyte sedimentation rate, 73 mm/h; 24-h urinary protein, 0.21 g; and normal levels of blood urea nitrogen (1.98 mmol/L) and creatinine (70 μmol/L). The serum and urinary β2-microglobulin concentrations were 0.62 mg/dL and 2.31 mg/dL, respectively. The urinary kappa and lambda light chain concentrations were 10 mg/dL and 5.21 mg/dL, respectively. A fecal occult blood test was positive. All other laboratory parameters were within normal limits.

Imaging examinations

Abdominal computed tomography (CT) showed thickening of the colonic wall, with

threadlike calcifications of the mesenteric vein in the transverse colon (Figure 1). No obvious obstruction point was observed. A subsequent colonoscopy revealed purple-blue mucosa extending from the ascending colon to the transverse colon. Multiple circumferential and deep ulcers were observed along the colonic wall, with sparing of the rectum (Figure 2).

Pathological findings

Histological examination with hematoxylin and eosin staining showed obvious thickening and calcification of the vein walls. Eosinophil infiltration of the lamina propria was also seen (Figure 3A and B). Masson trichrome staining of the biopsy material revealed dense perivascular and mucosal collagen degeneration (Figure 3C). Congo red staining highlighted amyloidosis in the venous walls (Figure 4).

FINAL DIAGNOSIS

Extensive anamnesis revealed that the patient had consumed Chinese medicinal liquor (nearly 100 g/d), mainly that made from gardenia fruit and containing geniposide, for 10 years. This information, combined with the clinical, radiological, endoscopic, and histological features of this case, suggested the diagnosis of MP.

TREATMENT

We prescribed oral mesalazine (4 g/d).

OUTCOME AND FOLLOW-UP

The patient's presenting symptoms were relieved 1 wk later, and he was discharged on a soft diet. He was advised to discontinue use of the Chinese medicinal liquor.

At a follow-up visit 1 mo later, routine analyses of blood parameters, liver function, renal function, and urine yielded normal findings. A follow-up colonoscopy conducted 3 mo later revealed that the ulcers had healed, but the purple-blue discoloration of the colonic mucosa persisted (Figure 5A). One year later, the colonoscopy findings remained unchanged and abdominal CT showed that the mesenteric vein calcifications had disappeared (Figure 5B and C). The patient continues to be followed in the outpatient department and has shown no symptom of recurrence to date.

DISCUSSION

Koyama *et al*[6] first described phlebosclerotic colitis as a form of ischemic colitis in 1991, and Iwashita *et al*[7] proposed it as a new disease entity in 1993. In 2000, Yao *et al*[8] proposed the term "phlebosclerotic colitis" to distinguish this condition from ischemic colitis caused by arterial diseases. As it is not characterized by pathological inflammation, Iwashita *et al*[9] proposed referring to this rare entity as idiopathic MP. Patients with MP may have no complaint, with fecal occult blood found incidentally, or they may have nonspecific signs and symptoms, such as abdominal pain, nausea, bloating, diarrhea, and obstruction[5,10]. The majority of patients are Asians, and most reported cases are from Japan[11-13]. The reported prevalence of this condition is 0.01/100000 people. The age of patients ranges from 21 to 88 years, with a male-to-female ratio of nearly 2:3[14].

To our knowledge, six cases of MP have been reported in mainland China[15-17]; the characteristics of the patients are summarized in Table 1. Two patients were female and four were male, with ages ranging from 48 to 75 years. Most of the patients reported discomfort, although their symptoms were nonspecific. Three of the six patients had histories of Chinese herbal use; data on such use were not reported for the other three patients. All cases involved the ascending and transverse colon, and the lesions progressed in the caudal direction in five cases. Calcification of the colic veins was observed in all patients. Five patients showed mucosal discoloration, primarily purple, on colonoscopy. One patient underwent surgical intervention, and three patients received conservative treatment.

The correct diagnosis of MP requires the observation of characteristic radiological features. Abdominal x-rays may show multiple fine, linear or threadlike calcifications, mainly in the right colon and potentially showing a gradual increase to the distal

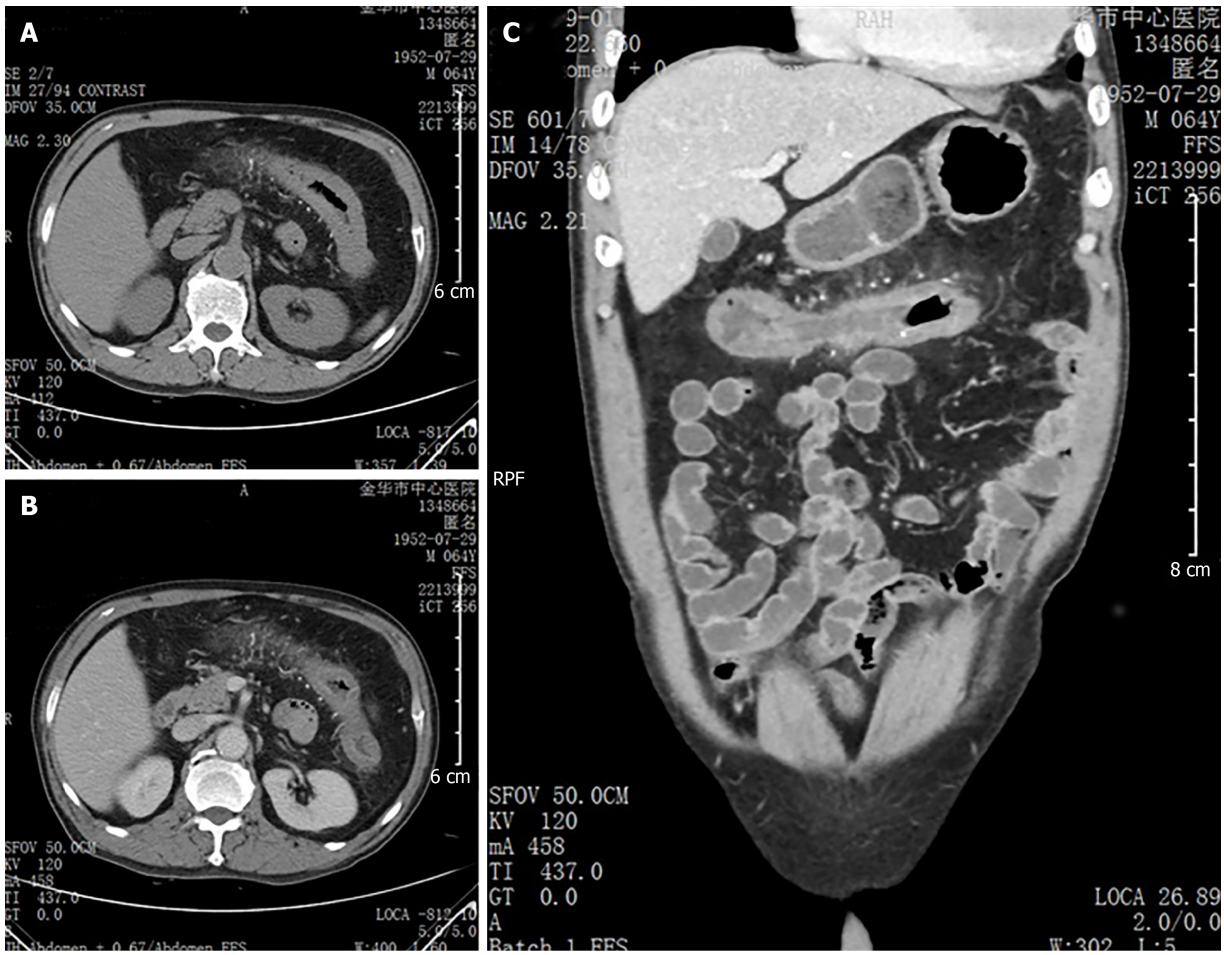

Figure 1 Contrast-enhanced abdominal computed tomography images showing colonic wall thickening and threadlike calcification of the mesenteric vein along the transverse colon. A, B: Coronal; C: Axial.

colon. CT is believed to be more valuable than plain radiography for MP screening and the follow-up of patients diagnosed with the condition[8,18]. CT is useful for the detection of colon wall thickening involving mesenteric vein calcification[15]. Many patients with multiple venous calcifications require[8,9], but such calcification may be absent in the early stage of disease[19]. Ichimata *et al*[20] reported two cases of early-stage MP combined with adenocarcinoma of the ascending colon. The MP was difficult to diagnose, as it was in the early stage with unclear histopathological features, and the clinicians' attention was focused on the cancer. Hence, the authors suggested that careful observation was important for the diagnosis of early-stage MP. On colonoscopy, typical findings of MP are narrowing of the colon lumen, rigidity of the colon wall, and multiple ulcerations with purple-blue or edematous mucosa[8]. The purple-blue discoloration may be the result of chronic intestinal ischemia or the absorbance of toxins by venous return[21]. Histological features of MP include thickening and calcification of the venous walls and marked fibrous deposits in the colonic wall, without thrombus formation or hemorrhage of the mesenteric vein[18,22]. In 2019, Asayama *et al*[23] reported a case in which a polypoid lesion caused by MP resembled colorectal carcinoma; the diagnosis of MP should thus involve careful consideration of appearance. In the present case, CT showed threadlike calcification in the mesenteric vein and microscopic analysis revealed no thrombosis or hemorrhage.

Extensive staining analyses suggested the presence of amyloidosis of the venous walls in the present case. Amyloidosis is defined by extracellular deposition of nonbranching fibrils made up of various proteins[24]; it may be primary or secondary[25]. The former involves immunoglobulin light chains and is the more common form seen in the gastrointestinal tract[26]. The latter involves serum amyloid A protein and often affects the kidney, brain, and heart[27]. In our opinion, MP produces amyloid deposits secondarily. The role of amyloidosis in this context requires further study.

The etiology and pathogenesis of MP are not well understood. Hepatic dysfunction, diabetes, alcohol, collagen disease, and dialysis have been considered as possible

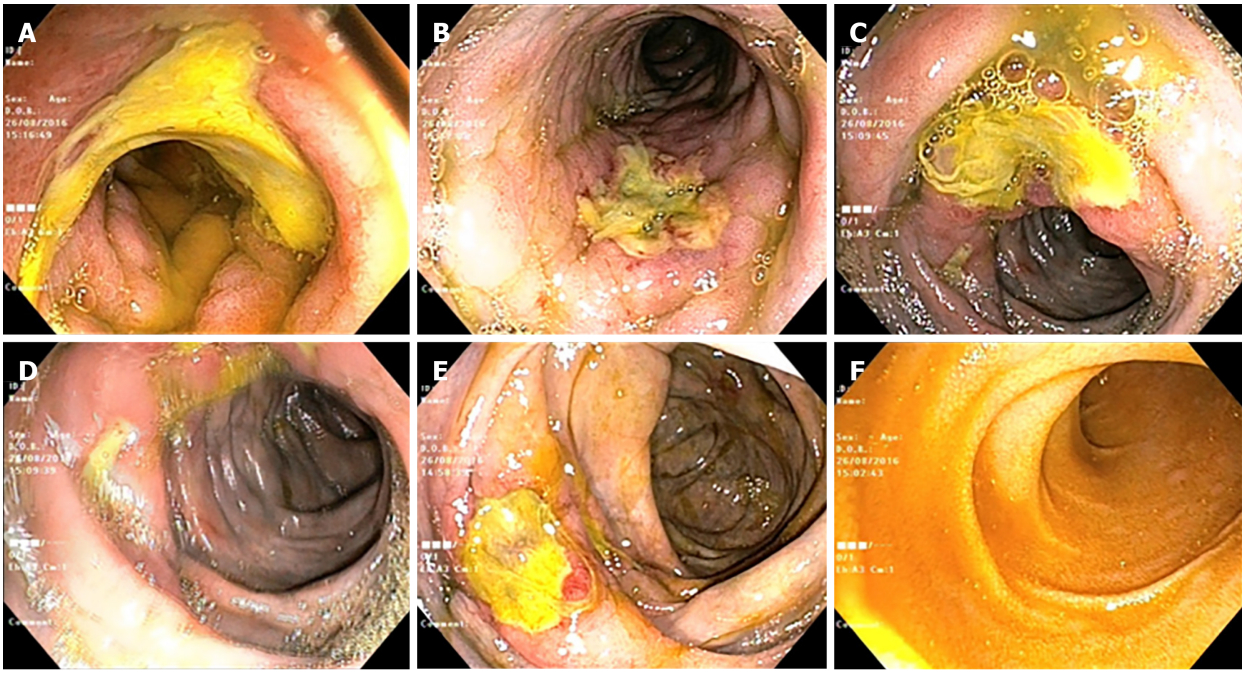

Figure 2 Colonoscopy findings. A: Rectum; B: Descending colon; C: Transverse colon; D: Ascending colon; E: Ileocecum; F: Terminal ileum. Deep and circumferential ulcerations were observed in the descending, transverse, and ascending colon. Purple-blue mucosa was discovered in the descending colon, transverse colon, ascending colon, and ileocecum.

causes[1,4,11]. As most cases are East Asian, a region-specific lifestyle factor may be a contributor to MP development; the use of Chinese herbal medicine was recently proposed[20,28]. The precise mechanisms underlying this association remain unclear. Hiramatsu *et al*[21] reported that patients with MP had histories of long-term sansis (*Gardenia jasminoides*) use. The main component of *Gardenia jasminoides*, which has been used for 3000 years, is geniposide, which may affect the colonic bacteria flora and be related to the mucosal discoloration seen in MP. Nagata *et al*[29] reported that patients with MP had greater intakes (total dosage > 5000 g) of gardenia fruit than did patients without MP, suggesting that the long-term intake of excessive amounts of this fruit increases the risk of MP. Hirasaki *et al*[30] found that the discontinuation of herbal medicines could relieve the symptoms of patients with MP. Our patient also had consumed Chinese medicinal liquor containing mainly gardenia fruit for years; he did not cease this practice but began to consume less at our recommendation.

The management of MP ranges from conservative treatment to surgery, depending on the severity of disease. Asymptomatic patients require only careful follow-up. Cases complicated by colonic obstruction, perforation, or hemorrhage may require surgical treatment. When there is no sign of bowel compromise, conservative management may be considered[7]. Several studies have indicated that the discontinuation of herbal medicines containing geniposide improves patients' symptoms, and is associated with a relatively good prognosis[16,31]. As the patient's condition was not severe in the present case, we provided supportive care and have followed him closely.

CONCLUSION

In conclusion, MP is a rare and potentially life-threatening disease that may easily be misdiagnosed. Because the clinical manifestations of this condition are nonspecific, the recognition of typical imaging findings, including multiple calcifications on CT and purple-blue mucosal discoloration on colonoscopy, is vital. We have presented here a case of MP with the patient's chief complaints being fever, abdominal pain, and diarrhea. CT revealed threadlike calcifications in the mesenteric vein, and endoscopy showed multiple ulcers and purple-blue mucosa. The pathological findings indicated the presence of amyloidosis. The patient, who had a history of hypertension, had been consuming Chinese medicinal liquor for a long time. Chinese herbal medicines may be involved in the etiology of MP, so their discontinuation should be recommended to patients with the condition. More prospective studies exploring the relationship between Chinese herbal medicines and the development of MP are needed.

Table 1 Characteristics of patients diagnosed with mesenteric phlebosclerosis in mainland China

Ref.	Gender/age in yr	Chinese herbal history	Symptom (duration)	Location of lesions	Computed tomography findings	Endoscopic findings	Treatment
Guo *et al*[16]	F/62	Yes	Abdominal pain, nausea, constipation (6 mo)	Ileocecal area, ascending colon, transverse colon	Mural thickening, calcifications of colic veins	Purple-blue mucosa	Conservative
Guo *et al*[16]	F/63	Yes	Abdominal pain, bloating and melena diarrhea (15 mo)	Cecum to sigmoid colon	Thickened colon wall, calcifications of right, middle and left colic veins	Purple-blue mucosa, multiple ulcers	A total of colectomy with ileostomy
Pan *et al*[17]	M/48	Yes	Stomachache, abdominal distension and constipation (mo)	Cecum to the transverse colon, sigmoid colon	Calcifications of small mesenteric veins, edematous thickening of colon wall	Dark purple edematous mucosa	NM
Hu *et al*[15]	M/57	NM	Abdominal pain (2 wk)	Ascending, transverse, and proximaldescend-ing colon	Mural thickening, calcifications of colic wall and mesenteric vessels	Dark purple, edematous mucosa, small round ulcers	Symptomatic treatment
Hu *et al*[15]	M/56	NM	Defecation (2 mo)	Ileocecal junction to descending colon	Calcifications of colic wall and mesenteric vein; Mural thickening	Purple mucosa, multiple ulcers	Conservative
Hu *et al*[15]	M/75	NM	For reexamination	Ascending to descending colon	Calcifications of colic wall and mesenteric vein	Mucosal hyperemia and edema	NM

NM: Not mentioned; M: Male; F: Female.

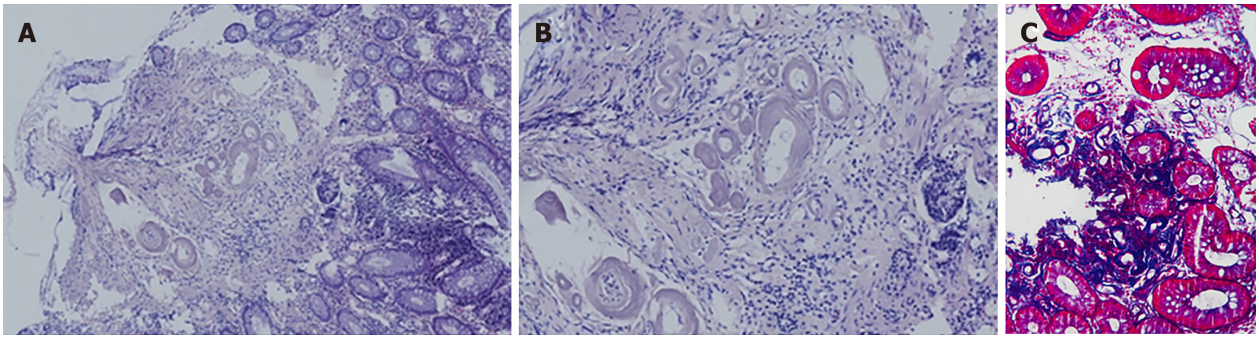

Figure 3 Pathological findings. A, B: Low-power (100 ×) (A) and high-power (B) views of hematoxylin-eosin staining, showing obvious thickening and calcification of the vein walls and mucosal infiltration of eosinophils (200 ×); C: High-power view of Masson trichrome staining showing dense perivascular and mucosal collagen degeneration (200 ×).

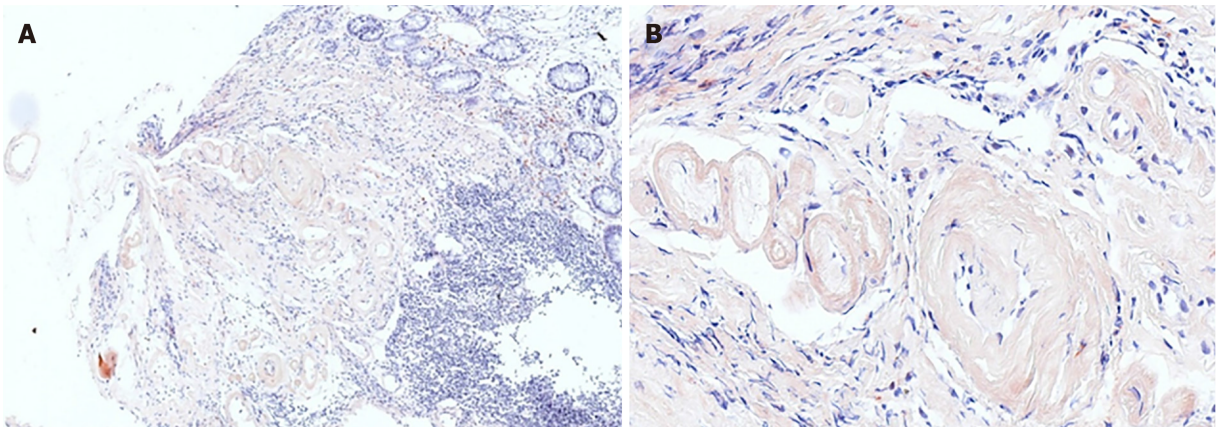

Figure 4 Pathological findings. A, B: Low-power (100 ×) (A) and high-power views of Congo red staining showing amyloidosis of the mucosa (200 ×).

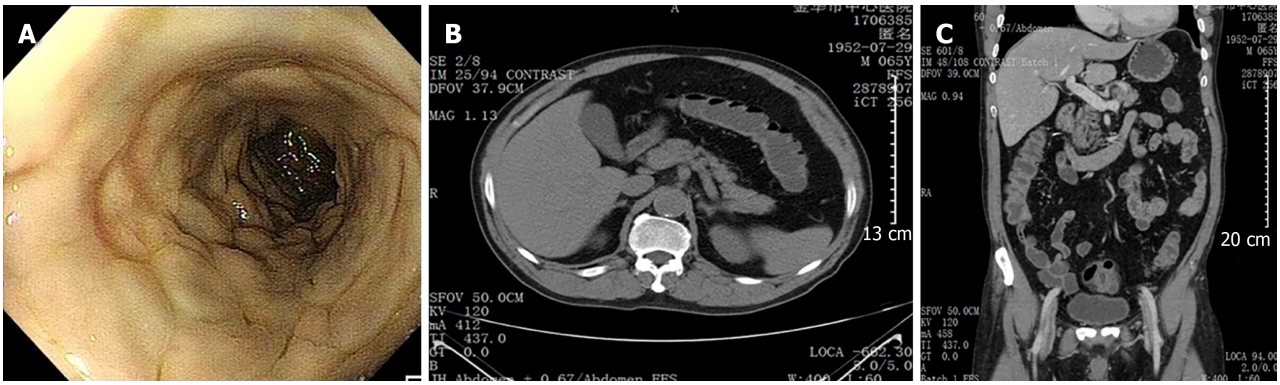

Figure 5 Disappearance of the threadlike calcification of the mesenteric vein. A: Follow-up colonoscopy (at 3 mo) showed the remittance of ulceration in the transverse colon but the persistence of purple-blue discoloration; B: Coronal; C: Axial. Follow-up computed tomography (at 1 year) indicated the disappearance of the threadlike calcification of the mesenteric vein.

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