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CASE REPORT

# Abdominal pain as the initial presentation of Takayasu arteritis

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**Abstract** Abdominal pain is rarely described as a clinical manifestation of Takayasu arteritis, although abdominal vascular involvement is common in this disease. We report the case of a 20-year-old female with Takayasu arteritis who complained of chronic and intermittent abdominal pain. Computed tomographic angiography and ultrasonography were useful in evaluating the abdominal arterial involvement. Takayasu arteritis must be considered one of the underlying diseases that may cause chronic abdominal pain in young females.

**Keywords** Abdominal pain · Computed tomographic angiography · Takayasu arteritis · Ultrasonography · Vasculitis

## Introduction

Takayasu arteritis is a chronic idiopathic vasculitis that predominantly affects young women. It mainly involves the aorta and its main branches, such as the brachiocephalic, carotid, subclavian, vertebral and renal arteries, as well as the coronary and pulmonary arteries [1, 2]. Systemic symptoms are common in the early stages of Takayasu arteritis, and include malaise, weight loss and fever. Cardiac and vascular symptoms are also commonly present at disease onset. The manifestations include absence or asymmetry of pulses, blood pressure inequality between upper or lower limbs, vascular bruits, claudication, and hypertension. Although the abdominal aorta and its primary branches are often involved pathologically, it seems that abdominal symptoms have received little attention in the US and European literature [3–5]. Here, we report a case of a young female who complained of chronic and intermittent abdominal pain and low-grade fever, and was finally diagnosed with Takayasu arteritis.

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## Case report

A 20-year-old Japanese female patient presented at our clinic in November 2007 with a more than three-month history of general fatigue, low-grade fever and intermittent periumbilical pain. The abdominal pain was worse when she was febrile. At presentation, body temperature was 37.2 °C and pulse was well palpated at regular rhythm (80/min) in both arms. Blood pressure was 120/76 mmHg in the left arm and 110/70 mmHg in the right arm. Physical examination of the chest and abdomen was unremarkable. No bruit was audible on the neck, chest or abdomen. The skin and eye were noted to be normal.

Laboratory tests showed a leukocyte count of 9,730/μl, hemoglobin 11.8 g/dl, hematocrit 36.1%, platelet count $42.6 \times 10^4$/μl, erythrocyte sedimentation rate of 119 mm/h, and serum C-reactive protein (CRP) of 9.09 mg/dl (normal $< 0.30$). Liver function tests showed an aspartate aminotransferase level of 61 IU/l, alanine aminotransferase of 38 IU/l, alkaline phosphatase of 410 IU/l, and total bilirubin of 0.3 mg/dl. Renal function tests were normal. Serological test was negative for antinuclear antibody. Resting plasma renin activity was slightly increased to 2.9 ng/ml per hour (normal range 0.2–2.7). Urine examinations were normal, and stool was negative for occult blood.

The findings on plain X-ray films of the chest and abdomen were unremarkable. Ultrasound cardiac echogram did not show any evidence of valvular disease or endocarditis.

Abdominal ultrasonography showed increased intima-media thickness (IMT) of the superior mesenteric artery (Fig. 1). Enhanced computed tomography showed significant wall thickness in the abdominal aorta, celiac artery, superior mesenteric artery and bilateral renal arteries (Fig. 2). Computed tomographic angiography (CTA) demonstrated significant stenosis of the celiac artery (Fig. 3a), superior mesenteric artery (Fig. 3b), and both renal arteries (Fig. 3c). Wall thickness was also observed in the thoracic aorta and its branches, including the brachiocephalic, carotid, and left subclavian arteries. Furthermore, increased IMT of the bilateral common carotid arteries was also detected by ultrasonography of the neck.

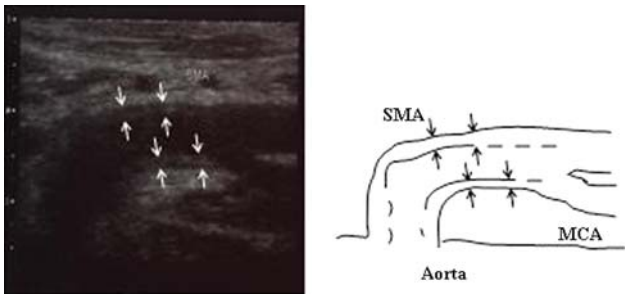


**Fig. 1** Abdominal ultrasonography showed increased intima-media thickness of the superior mesenteric artery (*arrows*). *SMA* superior mesenteric artery; *MCA* middle colic artery

**Fig. 2** Enhanced computed tomography of the abdomen showed wall thickness of the abdominal aorta (*arrows*) and the superior mesenteric artery (*arrowheads*)

Based on these findings, she was diagnosed with Takayasu arteritis. Treatment with prednisolone at a dose of 30 mg/day was initiated. This treatment resulted in the disappearance of the abdominal pain and fever within a few days and the improvement of the inflammatory laboratory data. Increased IMT of the superior mesenteric artery was not detected by follow-up abdominal ultrasonography performed in March 2008. She was clinically well and taking prednisolone 15 mg/day at the time of the examination.

## Discussion

Since Takayasu arteritis is a vasculitis involving the whole aorta and its branches, abdominal pain may be present in patients with this disease. A few reported cases of patients with Takayasu arteritis complained of chronic abdominal pain [6–8]. Abdominal pain may be associated with the involvement of mesenteric artery, which was observed in our patient. Indeed, the involvement of this artery does not seem to be uncommon. US and Italian cohort studies have documented the involvement of mesenteric arteries in 18–40% of patients with Takayasu arteritis [3–5]. However, it was not stated whether the patients had abdominal symptoms in these studies. Mild abdominal symptoms might be unrecognized or overlooked in many patients with this disease. A Japanese study published in 1967 reported the involvement of mesenteric arteries in 9.3% of patients with Takayasu arteritis [9]. In this report, the presence of abdominal pain was documented in 6 of 84 the patients, although the symptoms and the clinical courses were not described in detail [9].

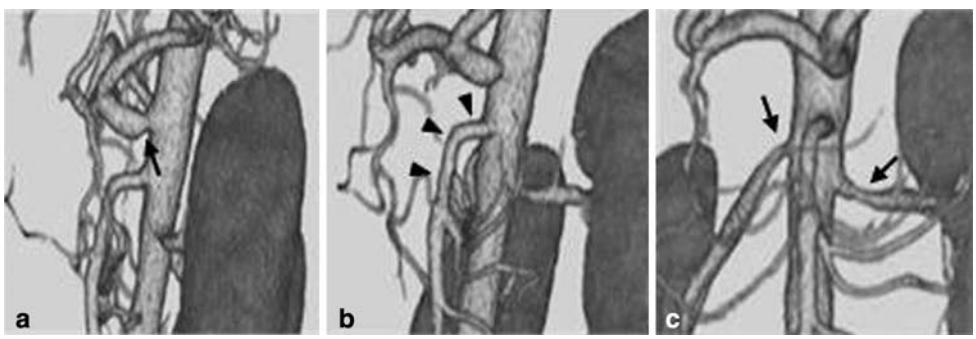


**Fig. 3** Three-dimensional computed tomographic angiography showed stenosis of the celiac trunk (**a** *arrow*), superior mesenteric artery (**b** *arrowheads*), and bilateral renal arteries (**c** *arrows*)

Abdominal pain in Takayasu arteritis may result from ischemia of the mesenteric artery or vascular pain due to the local inflammation. The abdominal pain in our patient was not affected by dietary intake, but it was worse when she was febrile. Our patient did not have diarrhea. No abnormalities were detected on stool examination. Thickened bowel wall suggestive of intestinal ischemia was not detected by abdominal ultrasonography. Therefore, we speculate that the abdominal pain observed in our patient is probably due to vascular pain.

When physicians encounter young patients with chronic abdominal pain accompanied by elevated serum levels of CRP, inflammatory bowel disease must be considered as a differential diagnosis. Ultrasonographic examination shows no abnormal transmural change of the intestine suggestive of inflammatory bowel disease [10]. Furthermore, abdominal pain disappears relatively soon after starting steroid therapy. Therefore, it is conceivable that abdominal vasculitis, detected by CTA and ultrasonography, is responsible for the abdominal pain. Although an endoscopic examination was not performed in our patient, patients with Takayasu arteritis should be monitored continuously for abdominal symptoms. There are several case reports that document the association of Takayasu arteritis with inflammatory bowel disease, such as ulcerative colitis and Crohn's disease [11, 12].

Progress in medical technology has made it easier to diagnose Takayasu arteritis and evaluate the locations of pathologic changes. The usefulness of several noninvasive procedures has been reported [13–16]. Ultrasonography and magnetic resonance imaging (MRI) are helpful for detecting vascular wall thickening of large- and medium-sized arteries [13, 14]. CTA is more sensitive than conventional angiography in detecting mural vessel changes [15]. In our case, both computed tomography and ultrasonography were useful in evaluating the abdominal arterial involvement in this disease. To diagnose Takayasu arteritis as soon as possible and accurately, and to evaluate the disease appropriately, the combined use of various imaging examinations, such as ultrasonography, MRI, CTA, and positron emission tomography, if applicable [16], would be necessary.

Takayasu arteritis may present a wide variety of clinical symptoms and signs depending on the affected vessel(s). Abdominal pain has not been well described as a clinical manifestation of Takayasu arteritis, although abdominal vascular involvement is common in this disease. Takayasu arteritis must be considered one of the underlying diseases that may cause chronic abdominal pain in young females.

**Conflict of interest statement** The authors have no conflicts of interest to disclose.

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