Case report

Coexistence of Takayasu’s arteritis and inflammatory colitis detected by fluorodeoxyglucose positron emission tomography

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Summary

A woman in her thirties was diagnosed as Takayasu’s arteritis (TAK) by dilatation, wall thickness of her abdominal aorta in contrast-enhanced computed tomography. Although she didn’t have any subjective bowel symptoms, fluorodeoxyglucose (FDG)-positron emission tomography (PET) also revealed uptake of FDG in descending colon, and colonoscopy revealed aphthous colitis. After the start of steroid therapy, both arteritis and colitis were improved. FDG-PET can detect TAK and inflammatory bowel diseases at an early stage. FDG-PET is a less invasive module with a high sensitivity for detecting colitis, therefore should be considered for TAK even without physical colon symptoms.

Key words—— Positron emission tomography; inflammatory colitis; Takayasu’s arteritis

Introduction

Takayasu’s arteritis (TAK) is a rare large-vessel vasculitis affecting the aorta and its first branches with unknown etiology, which is relatively common in Asia and among young female people\(^1\). Characteristic symptoms at an early stage of TAK are pyrexia and pain in the neck and back due to inflammation of aorta, which are followed by bruit, decreased and asymmetric blood pressure as a result of narrowing of aorta. Other than these typical symptoms, inflammatory bowel diseases (IBD), such as ulcerative colitis (UC) and Crohn’s disease (CD) are assumed to be an important complication of TAK\(^2,3\).

In this report, we describe a case of inflammatory colitis detected by fluorodeoxyglucose (FDG)-positron emission tomography (PET) in TAK.

Case report

A woman in her thirties with a family history of colectomy due to UC developed persistent epigastralgia and back pain. She had been diagnosed with liver hemangioma and reflux esophagitis. She visited a neighboring hospital after two months, and an elevated C-reactive protein (CRP) level was found. Computed tomography (CT) showed thickness of abdominal aorta, then she was referred to our hospital for further examinations.

On admission to our department, she had persistent back pain. Blood stool was found but didn’t have any subjective bowel symptoms. Her blood pressure showed 108/64 mmHg in the right arm and 113/78 mmHg in the left arm with no significant difference in systolic blood pressure between both arms. Neither claudication of extremities and decreased branchial artery pulse were observed. Bruits were audible neither in the neck nor on the abdomen. No neurological abnormalities were noted. Laboratory tests revealed elevated inflammation levels (CRP, 3.58 mg/dl; erythrocyte sedimentation rate, 90 mm/hr). Human leukocyte antigen (HLA)-A24 and B52 were positive. We performed FDG-PET to investigate inflammation in her whole body, and found uptake in abdominal aorta and descending colon (Fig. 1). Contrast-enhanced CT revealed dilatation, wall thickness of her abdominal aorta (Fig. 2). Colonoscopy revealed aphthous colitis on descending colon (Fig. 3A), in spite that a stool culture showed only normal flora.

She was diagnosed as TAK based on CT images and elevated CRP and ESR levels, which were compatible with the criteria developed by the Japanese Ministry of Health and Welfare, 1992, although she did not meet the American College of Rheumatology (ACR) classification.
Fig. 1 Fluorodeoxy glucose-positron emission tomography
Uptake in abdominal aorta (arrow) and descending colon (dotted oval) were found.

Fig. 2 Contrast-enhanced computed tomography
Dilatation, wall thickness of her abdominal aorta (arrow) were observed.

Fig. 3 Colonoscopy before the start of steroids
A. Aphthous lesion on colonic mucosa was found.
B. Aphthous lesion was improved after the start of steroids.
criteria of TAK 1990 which require three or more items below: age under 40 at disease onset, claudication of extremities, decreased branchial artery pulse, blood pressure difference >10 mmHg between arms, bruit over subclavian arteries or aorta or arteriogram abnormality, and we assumed her colitis would be an early form of IBD. Administration of 30 mg/day of prednisolone (PSL), 100 mg/day of aspirin and lansoprazole was started and the patient’s back pain and elevated CRP levels improved significantly. The dose of PSL was decreased gradually without a re-elevation of inflammation. After four weeks of the start of PSL, she felt abdominal pain and developed blood stool again. We repeated colonoscopy, which showed improvement of aphthae on colonic mucosa (Fig. 3B).

Discussion

TAK is an important cause of fever of unknown origin (FUO) especially in young female. Although early diagnosis and treatment of TAK is important to prevent subsequent complications including aortic regurgitation, TAK is often difficult to diagnose in its early stage since typical clinical manifestations of TAK included in 1990 ACR criteria such as bruit, more than 10 mmHg difference in blood pressures between the two arms and decreased brachial artery pulses, become apparent only in the late phase of the disease. In the diagnostic criteria for TAK developed by the Japanese Ministry of Health and Welfare, diagnostic radiography, such as digital subtraction angiography, CT, magnetic resonance imaging, is required for the diagnosis of TAK. While even these measures may be normal in the very early phase of TAK, FDG-PET is reported to be able to detect arterial wall inflammation even in the very early phase. FDG-PET is reported to be useful for not only inflammation of aorta or bowel, but also heart inflammation which emerged as a subsequent symptom of TAK after the remission of inflammation of aorta.

IBD, as well as TAK, is a possible cause of FUO and it is reported that TAK often complicates IBD. Watanabe et al estimated 6.1% of TAK complicated UC, while Reny et al reported 4 of 44 patients with TAK complicated CD. In addition, UC has common genetic factors with TAK: HLA-B52 is found at a high rate in patients that developed TAK and UC concomitantly. Therefore IBD should be considered as an important extravascular manifestation in TAK. The usefulness of FDG-PET is not limited to TAK: it also has good sensitivity for IBD. FDG-PET can detect inflammatory bowel diseases at an early stage, even PET uptake was positive in the absence of colonoscopic findings 3 years before UC became apparent in colonoscopy. In another report, FDG-PET detected pediatric CD during a workup for FUO. Although we did not undergo colonic mucosal biopsy evaluation since the patient had been receiving antiplatelet drugs, other diseases which causes aphthous colitis, such as bacterial colitis, were unlikely according to stool tests. Based on the site of aphthae in her colon, negation of bacterial infection and HLA-B52 positivity, we assumed her colitis would be an early form of IBD, which was found to be improved steroid therapy.

In this study, we have reported a case of TAK complicating inflammatory colitis which was detected by FDG-PET. Since IBD is not a rare complication of TAK, clinicians should be careful for the detection of IBD in patients with TAK. This case suggests FDG-PET is a non-invasive and useful tool for an early detection of bowel inflammation in TAK, therefore should be considered for TAK patients, especially in HLA-B52 positive cases even without physical colon symptoms.

The authors state that they have no Conflict of Interest (COI).

References


