

# Toe necrosis due to an arterial embolism revealing a Takayasu's arteritis

Rémy Hamdan <sup>1</sup>, Bernard Bonnotte,<sup>2</sup> Eric Steinmetz,<sup>3</sup> Ilham Abejiou<sup>1</sup>

<sup>1</sup>Angiology, CHU Dijon Bourgogne, Dijon, France

<sup>2</sup>Internal Medicine and Clinical Immunology, CHU Dijon Bourgogne, Dijon, France

<sup>3</sup>Cardiovascular and Thoracic Surgery, CHU Dijon Bourgogne, Dijon, France

## Correspondence to

Dr Rémy Hamdan;  
remy.hamdan@gmail.com

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## DESCRIPTION

A woman in her 30s with a 15-pack-year smoking history and psoriatic arthritis for 13 years suddenly developed right fifth-toe necrosis ([figure 1](#)). She had suffered from sacroiliac joint and calf pain for several years, but 1 month ago the pain suddenly increased. The systolic blood pressure was 146 mm Hg, the temperature was 37.4°C, and the heart rate was 77 beats per minute at the time of the consultation. She had palpable radial pulses, a clear chest auscultation, but no pedal pulses. The ECG was normal with regular sinus rhythm. The C reactive protein level was 11 mg/L, with hyperleucocytosis of 12.3 g/L (neutrophilia of 7.95 g/L) and hypercholesterolaemia of 7.40 mmol/L (low-density lipoprotein cholesterol was 5.47 mmol/L and high-density lipoprotein cholesterol was 1.23 mmol/L). The right leg's ankle brachial index (ABI) was 0.67, while the left leg's was 0.59. A CT scan revealed thickening of the left subclavian and common carotid artery origins ([figure 2](#)), as well as high-grade stenosis of the aortoiliac bifurcation with concentric wall thickening ([figure 3](#), [video 1](#)). The Doppler ultrasound confirmed the severity of the lesion ([figure 4](#)). The downstream arteries were patent, of regular calibre, and atheroma free. A comprehensive metabolic panel, autoimmune tests and thrombophilia testing were normal, as were long-term Holter ECG monitoring and echocardiography. Fluorodeoxyglucose-positron emission tomography (PET) did not identify vascular hypermetabolism. Takayasu's arteritis (TA) in its chronic phase was diagnosed based on the patient's gender, age, clinical presentation, typical radiological involvement and negative PET findings. The fifth toe's isolated involvement was consistent with an embolic event. Along with infliximab (induction regimen at 0, 2 and 6 weeks, followed by a maintenance regimen of 5 mg/kg every 8 weeks) and smoking



**Figure 1** Necrotic lesion of the right fifth toe at the time of admission.



**Figure 2** Axial section of a CT scan of the supra-aortic trunks demonstrating thickening of the left common carotid artery and left subclavian artery at their origins (arrows).

cessation, daily treatments of prednisolone 60 mg, aspirin 100 mg, enoxaparin 60 mg and atorvastatin 80 mg were started. The toe lesions recovered, and a CT scan 5 days later showed a stable aortoiliac lesion. At the follow-up visits, the patient still complained of lower-limb pain, so a covered endovascular reconstruction of the aortic bifurcation was performed, which allowed normalisation of the ABI and pain relief. The patient was still asymptomatic 2 years later.

TA is a chronic granulomatous inflammatory vasculitis that primarily affects women under the age of 40 in the medium and large arteries.<sup>1</sup> Following an inflammatory phase characterised by transmural fibrous thickening of the artery



**Figure 3** Three-dimensional reconstruction of the CT scan of the thoracoabdominal aorta and its branches showing the significant stenosis of the aorto-iliac bifurcation as a filling defect of the abdominal aortic termination and the origin of the common iliac arteries (arrow).

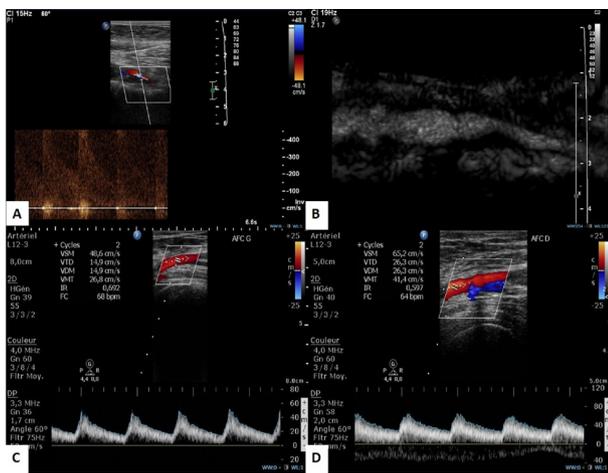


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**Video 1** Axial CT scan of the aortoiliac bifurcation disclosing long concentric mural thickening with low-attenuation wall of the abdominal aortic termination and the origin of the common iliac arteries.



**Figure 4** (A) Spectral Doppler analysis of the abdominal aortic termination, highlighting an elevated peak systolic velocity above 400 cm/s, which is suggestive of high-grade stenosis. (B) Contrast-enhanced ultrasound of the aortoiliac bifurcation showing a hypoechoic concentric mural thickening of the abdominal aortic termination and the origin of the common iliac arteries. Note the absence of microbubbles in the wall thickness. (C) Spectral Doppler study of the left common femoral artery showing a monophasic waveform with prolonged systolic upstroke time and markedly reduced velocities, suggestive of upstream obstruction. (D) Spectral Doppler study of the right common femoral artery again displaying a monophasic waveform with prolonged systolic upstroke time and diminished velocities, also suggestive of upstream obstruction.

walls, an arterial lesion-driven chronic phase takes place.<sup>2</sup> The acute phase often goes unnoticed, and, as in our case, the chronic phase's ischaemia symptoms allow for the diagnosis.<sup>2,3</sup> Few cases of lower limb ischaemia caused by emboli have been documented in TA because of the lower limb stenosis's limited embolic potential due to its fibrous nature.<sup>4,5</sup> However, during TA, platelet and coagulation activities are markedly elevated, permitting the formation of unstable thrombi and the subsequent occurrence of an embolic phenomenon.<sup>6</sup>

Retrospectively, we realised that our patient's years of lower limb pain probably corresponded to the acute phase of TA. The signs of the acute phase are not specific, but if clinicians could recognise them early and initiate anti-inflammatory treatment, the disease's progression to ischaemic manifestations, particularly embolic manifestations, could be avoided.

**Learning points**

- ▶ Physicians should be able to detect Takayasu's arteritis (TA) early in order to avoid progression to a chronic fibrotic phase and subsequent ischaemic manifestations.
- ▶ The limb or organ ischaemia in the chronic phase of TA is thought to be haemodynamic, given the fibrous nature of the arterial lesion. However, concurrent inflammation may lead to thrombus formation and then an embolic event.
- ▶ When toe necrosis occurs in a woman under 40 and an embolic mechanism is suggested, evidence of TA must also be sought both clinically and on imaging.

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Case reports provide a valuable learning resource for the scientific community and can indicate areas of interest for future research. They should not be used in isolation to guide treatment choices or public health policy.

**ORCID iD**

Rémy Hamdan <http://orcid.org/0000-0002-5207-9393>

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