



# Magnetic resonance angiography and high resolution MRI of giant cell arteritis: A case report

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## Abstract

It is a case of giant cell arteritis diagnosed firstly by Combined MRA and High Resolution MRI (HRMRI), the lesion site and inflammatory degree can be easily evaluated by MRA and HRMRI. It can be predicted that temporal artery biopsy may be avoided in patients with typical features accompanied by characteristic HRMRI findings for GCA.

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## Case Presentation

A 76-year-old man presented with one-month history of fever (37.5-38.5°C) and bilateral superficial temporal arteries pulsing rapidly. He described no headache, general malaise, exhaustion, weight loss, jaw claudication, visual changes or arthralgia. Past medical history included hypertension, retinal hemorrhage, dyslipidemia and benign prostatic hyperplasia. Family history revealed that the patient's mother died from cervical cancer

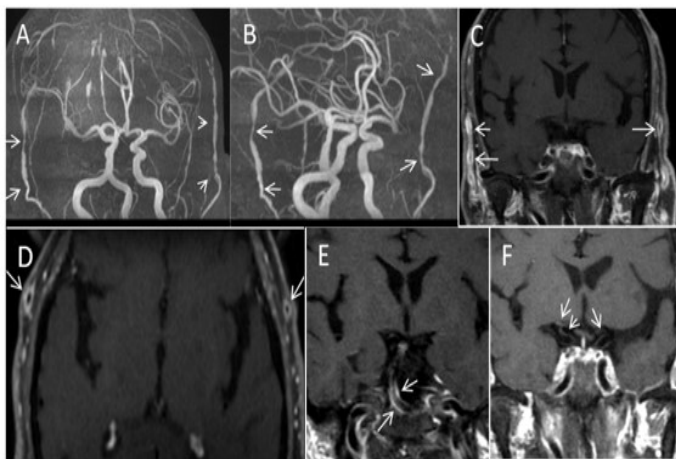
and his father died from gastric carcinoma. The physical examination showed that both superficial temporal arteries were enlarged and pulsing rapidly. And he was febrile with temperature of 37.8 °C. The rest of the physical examination was unremarkable. The laboratory findings were as follows: Erythrocyte Sedimentation Rate (ESR) level, 92mm/h (normal 0-15mm/h); C-Reactive Protein (CRP) level, 60mg/L (normal <3mg/L); red blood



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cell count,  $3.72 \times 10^{12}/L$  (normal  $4.00 \times 10^{12}/L - 5.50 \times 10^{12}/L$ ); hemoglobin level, 12g/dL (normal 12-16 g/dL). Multiple blood and urine cultures were negative. Other biochemical findings were within the reference ranges. Computed Tomography (CT) of his thorax, abdomen and pelvis were negative beyond hepatic cysts and a few benign pulmonary nodules, and abdominal ultrasound showed normal. The patient underwent a Color Doppler sonography of the bilateral superficial temporal arteries, which revealed normal. Then a Three Dimensional (3D) Time Of Flight (TOF) Magnetic Resonance Angiography (MRA) and a 3D High-Resolution Magnetic Resonance Imaging (HRMRI) with gadolinium were performed on a 3T MR scanner, which showed significant multifocal stenosis of bilateral Temporal arteries and vessel wall thickening with prominent contrast enhancement, suggesting the presence of vasculitis (Figure 1). The following day the biopsies of bilateral temporal arteries were carried out by a vascular surgeon and histological examination confirmed the diagnosis of GCA. The patient met three out of five criteria proposed by the American College of Rheumatology: he was more than 50 years old; had an elevated erythrocyte sedimentation rate and positive temporal artery biopsy. Then he started oral prednisone (60mg/d) and methotrexate (10mg, weekly). After 5 days of treatment, the inflammation marker showed marked recovery and the temperature fell to normal.

MRI imaging is helpful in the diagnosis of giant cell arteritis [1]. Resent study showed Temporal artery biopsy may not be required in patients with typical disease features accompanied by characteristic ultrasound or MRI findings for GCA [2]. Combined MRA and High-resolution MRI, the lesion site and inflammatory degree can be easily evaluated [3]. The effect of corticosteroid therapy also can be monitored using Contrast enhancement HRMRI [4].



**Figure 1:** MRA and contrast- enhancement HRMRI of the patient. A and B, MIP of 3D TOF MRA shows multi-focal stenosis of the bilateral superficial temporal arteries (STA) (arrow). C-F, T1-weighted contrast-enhancement high-resolution MRI. Prominent wall thickening and enhancement of bilateral STA were showed on C and D, and typical “string of beads” appearance was showed in the right STA (arrow). Basilar artery and bilateral terminal ICA involvement also showed on E and F (arrow).

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