

Stroke as the first manifestation of Takayasu arteritis

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Abstract

Takayasu arteritis (TA) is an uncommon disease of young women, characterized by granulomatous vasculitis of medium and large arteries. In addition to constitutional symptoms, it causes various clinical morbidities, such as arm claudication, decreased arterial pulses, carotidynia and hypertension. The incidence rate of TA has wide variation in different geographical areas. It was calculated to be 0.12 cases/100,000/ year in Sweden, 0.22 in Kuwait, 0.26 in USA, and probably higher in Japan. Neurological involvement is reported in only a minority of patients and occurrence of neurological syndromes as the first manifestation of disease has been rarely reported. We present clinical, laboratory and imaging findings of a 50 years old lady with TA, who was initially presented by clinical manifestations mimicking a stroke. Of particular importance is the occurrence of intracranial arterial stenosis in the patient, which is a relatively rare condition. The rarity of the disease and especially such a presentation can cause considerable delay in the diagnosis and treatment.

Key words : Takayasu ; Arteritis ; stroke ; intracranial arterial stenosis.

Introduction

Takayasu Arteritis (TA) is a chronic inflammatory disease of unknown etiology, characterized by granulomatous vasculitis of large- and medium-sized arteries, especially aorta and its branches (1). The overall 15-year survival rate is 83%. Even in the absence of life-threatening disease, TA can be associated with substantial morbidity. In one series, 74% of patients were found to have some compromise in daily activities, and 47% were permanently disabled (2). The disease is more common in women and occurs most commonly in the 2nd and 3rd decades of life (3), but older age at onset (up to 66 years) has also been reported occasionally (4). During the course of the disease, neurological involvement [such as TIA (transient ischemic attack), stroke, and cranial nerve palsies] is seen in 10 to 20% of cases (5). However, occurrence of neurological syndromes as the first manifestation of the disease has been rarely reported (5).

Since there is no specific laboratory test for the disease, diagnosis depends predominantly on clinical findings, which should be subsequently confirmed by angiography (6, 7). Transcranial Doppler (TCD) is also a valuable noninvasive tool for follow-up of these patients (8). Corticosteroids are the mainstay of treatment, but immunosuppressive drugs are also used in some cases (9). Surgical correction of arterial stenoses is indicated in special situations (9).

Case presentation

Our patient was a 50 years old housewife, who had a history of sudden onset left side hemiparesis, three years ago. Two weeks after, a sudden onset right side hemiparesis was also developed. She recovered gradually from both of these strokes. Two months later, patient developed lateral deviation of the right eye associated with a right sided ptosis, headache, and dizziness. She was admitted to a hospital and investigated, and because of relatively high frequency of tuberculosis in our country, and as a suspicious treatable cause of patient's illness, she was treated empirically by anti-tuberculosis drugs for 18 months. Patient showed partial recovery of symptoms, most probably due to natural course of the disease, and concomitant use of steroids beside anti-tuberculosis drugs for a short period.

One year after, she experienced aggravation of the left side hemiparesis, associated with mental decline, mostly as memory loss. In addition she had early fatigability of the upper limbs, especially while working above the shoulders. Seven months after (nearly three years after beginning of her illness), the patient experienced another episode of left hemiparesis and memory loss and was admitted to our hospital.

Examination revealed an obese, middle aged lady, in no particular distress, and with fluent speech. She was afebrile and her neck was supple. Optic fundi and pupil reflexes were normal, bilaterally. She had extremely weak radial, as well as other upper limb arterial pulses, bilaterally, while lower limb pulses were felt normally. Blood pressure measurements were made with extreme difficulty in

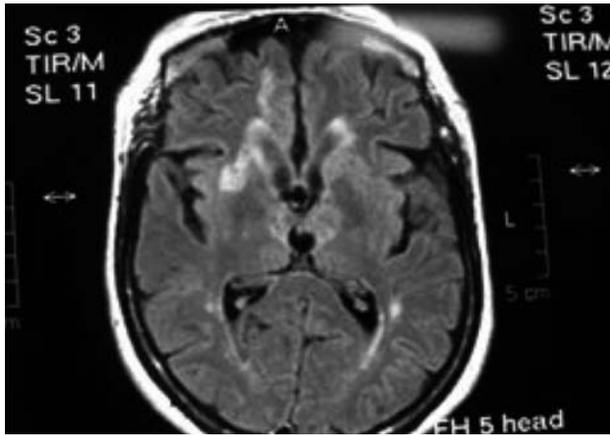


FIG. 1. — Brain MRI without gadolinium injection

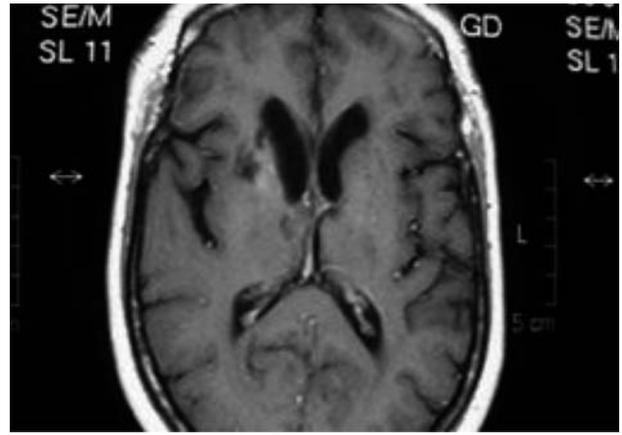


FIG. 2. — Brain MRI after gadolinium injection

the upper limbs (systolic blood pressures were 100 & 85 mmHg in the right and left arms, respectively); but lower limbs' blood pressures were 150/90 mmHg, bilaterally. Examination of the mental status revealed problems in registration, recall, and orientation (to time, place, and persons). Cranial nerve examination disclosed a right sided ptosis with limitation of the right eye movements, especially vertically. She had a mild left hemiparesis (muscular force was 4/5), with increased tendon reflexes, and a left sided up going toe.

Brain CT scan showed low density areas in white matter, mainly in the left frontal, left internal capsule, right basal ganglia, and bilateral parietal lobes. Brain MRI showed multiple hypointense signal areas of white matter, scattered in right corona radiata, right caudate, and bilateral thalamic and centrum semiovale areas in T1 weighted images. T2 weighted (as well as FLAIR) images, showed multiple hyperintense signal areas in white matter, thalamus, putamen, caudate, midbrain, and a few in subcortical areas. Corpus callosum had normal appearance (Fig. 1). No enhancement of the lesions was seen after gadolinium injection (Fig. 2).

VEP (visual evoked potential) was normal in both eyes. All blood and urine tests including tests for vasculitis, VDRL, Wright, liver function tests, HIV antibodies, HCV antibodies, and Hbs Ag were also negative.

CSF examination revealed clear and colorless fluid, under normal pressure (opening pressure = 120 mm H₂O), with normal protein and glucose contents and no cells. CSF cytology, smears and cultures as well as VDRL and Wright tests in CSF were also negative. Chest X ray, Electrocardiography and CT scan of the thorax were normal. Echocardiography revealed a mild aortic insufficiency, and a left ventricular ejection fraction of 50%. Duplex ultrasonography of cervical arteries showed a low resistance pattern and a low flow state, indirectly suggesting stenosis or cut off at the origin.

TCD showed mild to moderate stenosis of the left MCA (middle cerebral artery), and probable stenosis of vertebral and basilar arteries. Significant stenosis of terminal extra-cranial ICA (internal carotid artery) was also suggested, bilaterally. DSA (digital subtraction angiography) of brain vessels showed stenosis of MCA (M1 segment) in both right and left sides. No lesion was reported in distal branches (Fig. 3). DSA of the aortic arch showed complete obstruction of the left subclavian artery at the origin, and complete obstruction of the right subclavian artery after origin of the right common carotid artery. There was no sign of dissection of the aorta or carotid arteries (Fig. 4).

Retrospective evaluation of laboratory findings present in patient's previous hospital records showed both anemia (Hb = 10.6 gr/100 ml), and an increased ESR (erythrocyte sedimentation rate = 92 mm in the first hour); In addition, upper limb blood pressure measurements at the time of the first stroke had been reported to be 150/90 mmHg.

The patient was treated with intravenous steroid (pulsed methyl prednisolone, 1000 mg/day, for 5 days), and cyclophosphamide (1000 mg as pulse), followed by gradually reducing doses of oral prednisolon, starting from 50 mg/day. Treatment resulted in considerable recovery of her neurological problems, especially her memory and gait disorder, although ocular palsies did not improve.

At the end of hospitalization, the patient was able to walk unaided and was near normal mentally, although she appeared to be depressed in last follow-up visits, and complained of double vision, and ptosis of the right eye. Arterial pulses of the upper limbs were extremely weak as previous, and ESR was no more elevated.

Discussion

Neurological involvement is not common in Takayasu disease (10), and neurological syndromes

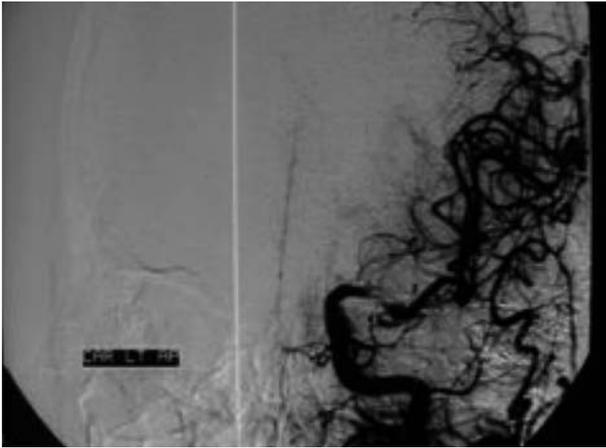


FIG. 3. — Digital subtraction angiography of brain vessels



FIG. 4. — Digital subtraction angiography of the Aortic arch

as the first manifestation of the disease are relatively rare (11), but involvement of intracranial arteries and also of cranial nerves, as the sole, or as the first manifestation of the disease, as occurred in our case, has been reported in a few case report articles (5, 12, 13, 14); For example, in the paper of Ringleb et al, two patients had suffered from stroke before the diagnosis of Takayasu arteritis was made (12).

Although Hoffmann *et al.* (13) and also Cantu *et al.* (14), showed cerebrovascular manifestations in 20-24% of patients, however, rarity of the disease, and especially of its initial presentation with a neurological syndrome like stroke, can cause considerable delay in diagnosis. In our case, the time interval between first stroke of the patient and diagnosis was about three years! Our patient also developed right sided third nerve palsy after about three years of beginning of her illness. Involvement of carotid or vertebro-basilar arteries, causing vision problem or postural dizziness, occurs more commonly. Systemic symptoms such as dizziness, headache, and listlessness are usually present, and the most frequent laboratory finding indicating disease activity is elevated ESR (10). Both systemic symptoms and an elevated ESR were present at the beginning of our patient's illness, in addition to progressive decline of blood pressure and claudication of the upper limbs during its course (two interesting points in our patient's history), which have actually been neglected.

When confronted with patients with neurological problems, we should be aware of rare but possible causes, which may be treatable or at least positively modifiable with correct and timely diagnosis. Presence of systemic symptoms, elevated ESR, progressive decline of blood pressure, and claudication of the upper limbs, are the key signs and symptoms which point to a diagnosis of Takayasu arteritis, as the cause of cerebrovascular accidents, mental decline, and cranial nerve palsies.

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