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Carotid free-floating thrombus causing stroke in a young woman with lupus anticoagulant: A case report and review of the literature



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ABSTRACT

INTRODUCTION: In young adults Stroke is a challenging condition and various tests are needed to diagnose and manage its underlying problems. Free floating thrombosis of internal carotid artery (FFT-ICA) is one of the rare problems among carotid artery diseases which can lead to stroke in adults. Owing to limited cases of FFT-ICA there is not a worldwide accepted consensus on management of FFT-ICA, but some recurrences after medical management have been reported in the literature.

PRESENTATION OF CASE: A-25-year old woman was referred to hospital with sudden onset aphasia and right sided hemiparesis. Carotid duplex ultrasonography showed an iso-echogenic thrombus ranged about 5 × 10 mm partially attached to arterial wall of the right internal carotid artery. It was floating in accordance with the heartbeat. Anticoagulation therapy was initiated and subsequently she underwent an urgent operation. To explore the etiology of her problem, various lab tests were carried out; the results showed markedly elevated levels of lupus anticoagulant. She was discharged from hospital after an uneventful recovery showing gradual improvement of symptoms in follow-up visits.

DISCUSSION: FFT-ICA is one of the scarce disorders of carotid artery. Less than 150 cases have been reported in the literature indicating its common occurrence in old men. Hence the etiology of this case (FFT in a young patient with high levels of lupus anticoagulant antibody) may be the first of its type.

CONCLUSION: In this case we chose surgical treatment resulting in complete resolution of symptoms and non-recurrence within 6 month follow-up.

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1. Introduction

Recently stroke in young adults has become a wide spread problem and its management is partly different from management of stroke in older population. First of all its underlying problem should be diagnosed and the treatment should be adjusted according to its accompanying problem. Carotid artery disorders is one of the diseases which can cause stroke in adults. Free floating thrombosis of internal carotid artery (FFT-ICA) is one of the rare problems among carotid artery diseases leading to stroke in adults. With this regard, Less than 150 cases have been reported in the literature [1,2].

This condition is characterized by an elongated thrombotic material attached partially to arterial wall which can move according to blood flow caused by the heartbeat [3].

The most common underlying disorder is atherosclerotic or ulcerated plaque which commonly occurs in old men [2] but other medical and multifactorial disorders such as hyper coagulopathy state which can lead to thrombosis formation in carotid artery and stroke [4]. For young adults in whom atherosclerosis is especially uncommon, it is important to do 'global' coagulation testing to identify underlying plasma hypercoagulability disorders which may lead to spontaneous thrombosis [5].

Owing to limited cases of FFT-ICA there is not a worldwide accepted consensus on management of FFT-ICA; therefore their managements is done based on case reports. Although both medical and surgical approaches have proved successful in literature, neither is clearly superior to the other [2,6,7].

In this report, we present a rare case of FFT-ICA causing stroke in a young woman with high levels of lupus anticoagulant antibody which was managed successfully by surgical therapy. This work has been reported in line with the SCARE criteria [8].

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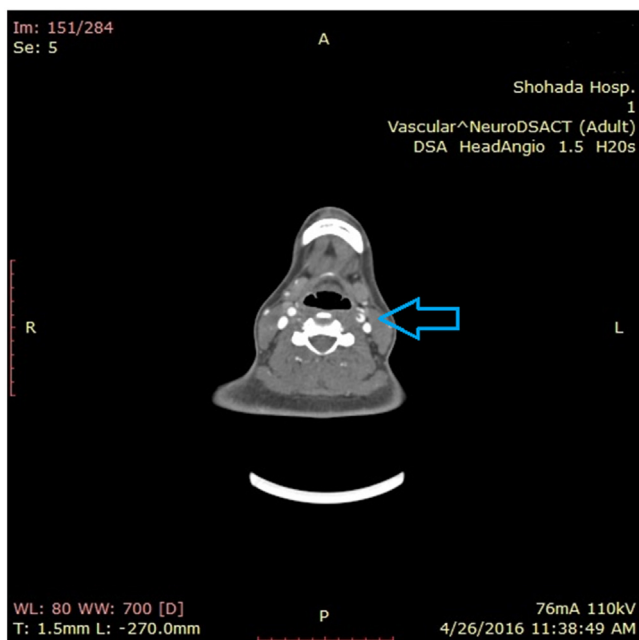


Fig. 1. Multidetector CT angiogram (16 slice) of carotid arteries, showing thrombus of left internal carotid artery.

2. Case report

It was April 25, 2016 when a 25-year old woman was brought to emergency room in Shohada Tajrish hospital with sudden onset aphasia and right sided hemiparesis. She was a Persian teacher from Kashan. She has had these symptoms from 2 days ago. She had no significant past medical history or family history of cerebrovascular disease or risk factors for atherosclerotic stroke or history of blunt cervical trauma. She had no significant drug history such as anti-conception drugs.

On physical examination, right sided reduction in muscle tone and force as well as aphasia was observed but she was conscious and oriented to time and place.

Upon admission, Standard work-up for stroke in young patients was performed. Admission examination showed resting blood pressure 115/75 mmHg, heart rate 80 pulses/min, SpO₂ 97%, respiratory rate 15 breaths/min, body temperature 37 °C. A 12-lead electrocardiogram showed no obvious abnormalities. Initial Brain CT examination was not significant. Brain magnetic resonance imaging (MRI) revealed infarct in left temporal and periventricular areas as well as hemorrhage in the left basal ganglia in the left middle cerebellar artery (MCA) territory. Brain magnetic resonance angiography (MRA) showed obstruction on terminal branches of MCA. Transthoracic echocardiography showed no obvious intracardiac thrombus or atrial or ventricular shunts.

Carotid duplex ultrasonography showed an iso-echogenic thrombus ranged about 5 mm × 10 mm partially attached to arterial wall of the right internal carotid artery which had been floating in accordance with the heartbeat.

Thereafter, she then had a CT angiogram (CTA, multidetector, 16 slices) which confirmed the presence of intraluminal thrombus within the right internal carotid artery. (Figs. 1 and 2)

Anticoagulation therapy (intravenous heparin) was administered at his initial review. Based on the recommendation of our Multidisciplinary team (MDT) she underwent an urgent operation.

After general anesthesia, through classic endarterectomy incision right common carotid artery as well as its bifurcation was exposed. After exposure, common carotid as well as external and internal carotid arteries were controlled using a vessel loop with

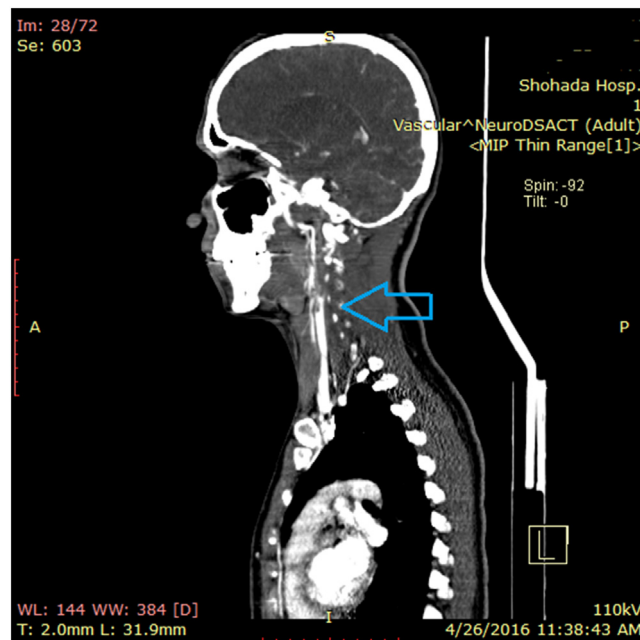


Fig. 2. Multidetector CT angiogram (16 slice), confirming presence of left internal carotid thrombus.

extreme care about 1 cm away from the site of thrombus. Intravenous heparin 80 u/kg was administered 3 min before clamping. First, the internal carotid artery was clamped to avoid thrombus embolization. Next, the common carotid artery and the external carotid artery were clamped and vertical arteriotomy was done respectively. Through arteriotomy we let the thrombus to get out and to be suctioned. Then the vascular shunt was replaced through common carotid to internal carotid artery. The clamping time was only about 120 s. The remaining thrombus was detached from the intima and sent to histopathologic examination. Thereafter, artery was irrigated by heparinized saline and arteriorrhaphy was done at the end. the surgery was done by Dr. A.Afsharfard, Professor of General and Vascular Surgery in Shohada hospital.

Histopathology results confirmed thrombotic material. To explore the etiology of her problem various lab tests were done. Results of evaluations of protein C, protein S, antithrombin III, C-reactive protein, anticardiolipin antibody were normal, but the level of lupus anticoagulant antibody was markedly elevated at 87.5 units (normal range, 20–39 units).

She was discharged from hospital after an uneventful recovery showing gradual improvement and complete resolution of symptoms in follow-up post-operative visits.

3. Discussion

Ischemic stroke accounts for the majority (approximately 80%) of stroke cases [9], whose patients are mostly old men with atherosclerotic underlying disorder [2].

FFT in the carotid artery is one of the rare disorders of carotid artery and less than 150 cases have been reported in the literature [1,2]. Many literature reports have stated that the most common etiology of FFT-ICA is atherosclerosis in approximately 75% of patients [2].

In young adults, cause of ischemic stroke includes diverse pathologies and the underlying disease should be identified in order to treat the problem and recurrence prevention [10]. Therefore, it is important to do 'global' coagulation testing to identify underlying plasma hypercoagulability disorders which may lead to

spontaneous thrombosis [5]. Our laboratory evaluation showed markedly elevated levels of lupus anticoagulant.

Most of cases of vascular thrombosis and lupus anticoagulant antibody written in the literature, have been patients with intrauterine death and abortion [11]. Moreover, only 1 case of combination of carotid artery thrombosis (not FFT-ICA) and high levels of lupus anticoagulant antibody has been reported [12]; therefore, the etiology of this case (FFT in a young patient with high levels of lupus anticoagulant antibody) may be the first of its type.

The association between vascular thrombosis and high levels of lupus anticoagulant antibody is well known and so many mechanisms have been postulated such as interference in prostacyclin formation and/or the enhancement of the effect of phospholipid on purified endothelial thrombomodulin activity [13].

Early diagnosis and treatment of carotid artery thrombosis are greatly important in stroke's outcome. There is not a clear consensus about the management of FFT-ICA. Some reports prefer medical option using anticoagulants and close follow up while others recommends surgical options such as angioplasty, endarterectomy, or carotid artery stenting [1,14–16]. Bhatti et al. compared medical and surgical managements done on these patients and come the conclusion that none of the medical and surgical management is superior to the other [2].

Sallustio et al. along with many articles questioned the use of heparin in a patient with acute ischemic stroke [17,18]. Conversely early revascularization showed excellent outcome in the improvement of symptoms in these patients [9,19]. Pelz et al. treated 14 patients with cerebral vessel thrombosis with anticoagulant and anti-platelet agents and followed them with angiograms looking for resolution of thrombosis. Results showed resolution of thrombosis in only 7 cases (50%) and 6 patients underwent CEA to remove the thrombosis [20].

Urbano et al. in 2003 presented an interesting case of carotid FFT supporting the superiority of surgical management. A 64-year old man afflicted with ischemic stroke was treated by anticoagulant and was discharged on anticoagulant, but was readmitted with transient ischemic attack (TIA) 3 weeks later. Additional work-ups confirmed FFT-ICA on Carotid duplex ultrasonography. Finally, he was treated by a surgical option (carotid endarterectomy) [21].

In this case we choose surgical treatment and outcome of surgery were excellent with complete resolution of symptoms and non-recurrence after 6 month close follow up.

Conflicts of interest

All authors declare no conflict of interest.

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Ethical approval

This paper is a case report, consent was obtained from patient.

Consent

Written and signed informed consent from the patient has been obtained.

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Author contribution

Abolfazl Afsharfard: Operating surgeon, supervision of project.
Barmak Gholizadeh: Primary author.
Younes Abdolalian: Editing of paper.
Seyed Masoud Hosseini: Editing of paper

Guarantor

Abolfazl Afsharfard, MD, Barmak Gholizadeh, MD.

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