

## Isolated Giant True Aneurysm of Superficial Femoral Artery in a Middle Aged Woman: A Case Report

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### Article History

Received: 16.12.2018

Accepted: 25.12.2018

Published: 30.12.2018

### DOI:

10.36347/sjmcr.2018.v06i12.017



**Abstract:** True atherosclerotic aneurysm of the superficial femoral artery is an uncommon entity and frequently associated with aortic and other peripheral aneurysms. It is commonly seen in elderly men and usually presents late with complications, especially rupture of aneurysm when grossly enlarged, due to its anatomical location. Herein our case, we presented a 52-year-old woman who complained of 8-month progressive swelling of the left thigh, associated with calf pain and intermittent claudication. Colour duplex scan and MRI were used to diagnose a 12 cm segment of isolated giant atherosclerotic aneurysm of about 8 cm in its transverse diameter of the superficial femoral artery with mural thrombus. She had excision and interposition graft repair, which was uneventful. Imaging plays a vital role in making prompt diagnosis, ruling out other frequent associations such as aortic, iliac and popliteal aneurysms and also for follow up of the patients.

**Keywords:** Isolated, Giant, True Aneurysm, Superficial Femoral Artery, Middle Aged Woman.

### INTRODUCTION

Femoral artery aneurysm is a focal abnormal dilatation of the artery greater than twice of its normal diameter (normal is 0.72-1.12cm in males and 0.62-0.80cm in females) [1, 2]. The true aneurysms have all three layers involved.

True aneurysms of the superficial femoral artery (SFA) are relatively rare clinical pathology due to their arterial wall characteristics and the anatomical location, which is covered by several deep muscles [1]. The most common sites of true aneurysms in the descending order of frequency are the following: abdominal aorta, thoracic aorta, cerebral arteries, and iliac, popliteal, common femoral and superficial femoral arteries. Femoral artery aneurysms are frequently associated with aneurysms of other sites such as abdominal aortic and other peripheral aneurysms [3-8]. They are usually bilateral and rarely present as a solitary lesion [1].

True aneurysms are associated with some aetiological factors like atherosclerosis, which is the major one and cause weakening of the arterial wall, others are; syphilis, immunological and inflammatory arteritis, HIV and connective tissue disorders such as Ehlers Danlos and Marfan syndrome [2-4, 7]. The major risk factors are; male gender, elderly population, history of smoking, hypertension and diabetes [1, 2, 5, 6].

Duplex (B-mode and colour Doppler) US scan, Magnetic resonance (MR) imaging/ MR angiography (MRA), CT angiography (CTA), and Conventional angiography (CA) are the various imaging modalities employed to establish the diagnosis. These are also used for follow up of patients with aneurysms [1, 2, 9]. However, colour duplex US scan is the most preferred and first line imaging [6], because it is readily available, affordable, and non-invasive and does not use ionising radiation or contrast medium. While, CTA and CA use ionising radiation and contrast media and also CA is invasive procedure. We presented a rare case of an isolated giant true atherosclerotic aneurysm of the SFA in a middle aged woman.

### CASE REPORT

She is a 52-year-old woman presented to surgical/vascular clinic of University of Maiduguri Teaching Hospital, Maiduguri, Nigeria with 8-month history of progressive swelling of the left thigh. There was associated history of ipsilateral leg pain, numbness and intermittent claudication which worsened by walk but relieved by rest. No history of swelling in other parts of her body or previous similar complain noted. She is a known hypertensive and hyperlipidaemic

patient not regular with medications. She was managed for hypertensive heart disease. No history of smoking cigarette or diabetes. On examination, she was not pale, and not in distress. A huge focal swelling was seen at antero-medial aspect of the mid-portion of the left thigh. It measured 15 cm and 10 cm in its widest dimensions and was pulsatile and warm to touch but not tender (Figure-1). Peripheral pulses on ipsilateral popliteal and dorsalis pedis arteries were faintly palpable while others were within normal limits. The other systems were normal.

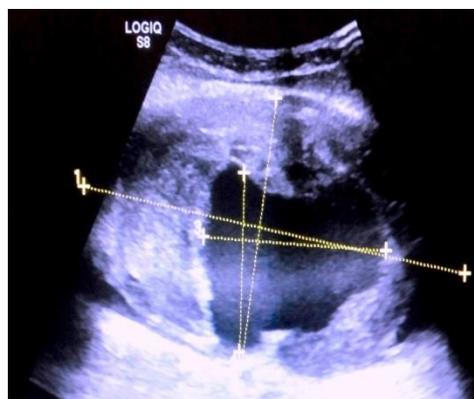
Grey scale USS showed huge focal dilatation of the middle third of the left SFA measuring about 12 cm and 8 cm with associated thick mural thrombus (Figure-2). Colour Doppler evaluation revealed mixed coloured pattern which represent turbulence flow within it (Figure-3). It compressed adjacent vein with associated reduced blood flow distally but no thrombus seen within it. Reduced blood flow was also noted in the ipsilateral popliteal and dorsalis pedis artery. The remaining arteries like abdominal aorta, iliac and popliteal arteries were normal in calibre but

demonstrated mural thickening and calcification suggestive of atherosclerosis. Sagittal T1W and coronal T2W MR Images of the left thigh (Figure-4) showed a huge oval shaped mixed signal intensity lesion with a thick thrombus in its wall involving the mid SFA. Its widest transverse diameter was 8 cm. Chest radiograph revealed features of hypertensive heart disease.

She was admitted to the ward and the hypertension was optimally controlled. Considering the size of the aneurysm, she had surgery; excision and repair with interposition Gore-tex vascular graft. The operative findings were; huge fusiform aneurysmal sac with mural thrombus and blood clots involving the left mid SFA and obstruction of the ipsilateral popliteal vessels. Histology confirmed the diagnosis of true atherosclerotic aneurysm with mural thrombus. Postoperative period was uneventful; her presenting complains had significantly subsided. Follow up with colour duplex scan at 1 and 6 months showed normal vascularization of the lower limb and absence of any aneurysm.



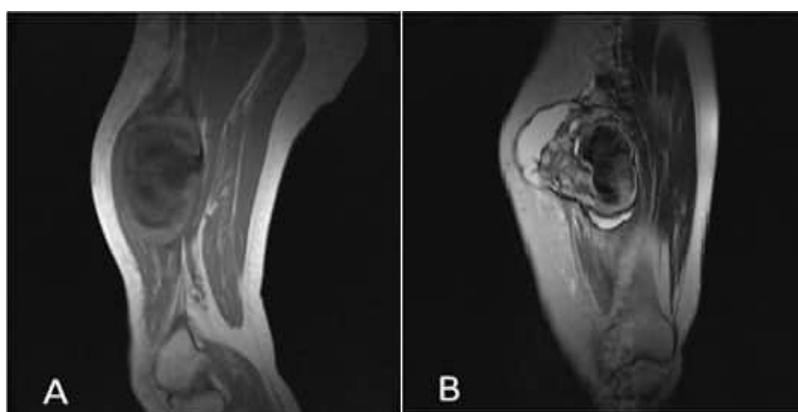
**Fig-1: Image showing huge focal swelling of the antero-medial aspect of the left Thigh**



**Fig-2: Transverse B-mode US image of the midportion of the left thigh showing aneurysm of SFA with mural thrombus**



**Fig-3: Longitudinal duplex US image of the midportion of the left thigh showing cystic dilatation with mixed colour appearance within it which represents turbulence flow of the SFA**



**Fig-4: Sagittal T1W and Coronal T2W MR Images of the left Thigh showing a huge aneurysm of the midportion of SFA with mural thrombus.**

## DISCUSSION

True aneurysm of the SFA is an uncommon pathology and usually associated with aneurysms of other arteries. They usually affect the elderly men with history of smoking, hypertension and diabetes. However, in the index case, the patient was a middle aged woman. Even though, she was known hypertensive and hyperlipidaemic patient with poor control. True femoral artery aneurysms are usually associated with atherosclerosis and it is a rare condition primarily due to its anatomical characteristics and location [3-6, 8]. True atherosclerotic aneurysms of SFA were commonly seen in elderly men as reported by many authors [4-6, 8].

The aneurysms of SFA rarely present as solitary lesion but rather they are usually multiple involving specific arteries [2-4, 6-8, 10]. Isolated true aneurysms of the SFA account for about 0.5% of all peripheral aneurysms and 1% of all femoral artery aneurysms [10]. Lee *et al.*, and Depboylu *et al.*, reported cases of isolated true aneurysms of SFA in elderly man and young woman respectively but they were smaller in size than the index case [3, 9]. While, Megalopoulos *et al.*, presented case of bilateral isolated

atherosclerotic true aneurysms of SFA in an elderly man with the largest size of 6.2 cm in diameter [8]. Behaj *et al.*, and Varetto *et al.*, presented different cases of ruptured giant aneurysms of SFA with the diameter of 9 cm and 7.5 cm respectively but they were seen in elderly men and coexisted with other aneurysms [2, 5].

Aneurysms of SFA commonly present with progressive swelling, features of rupture, thrombosis, distal embolization with resultant ischaemia and compression of adjacent structures (femoral vessels and nerve) [1]. They are usually asymptomatic at early stage because of the anatomic location (surrounded by multiple deep muscles) of the SFA which lead to late presentation [1]. Rupture of the aneurysms is the most common complication encountered in clinical practice [1-8, 11]. Aneurysms of SFA have high rate of rupture compare to other peripheral arterial aneurysms which result to emergency surgical intervention [1, 2, 4, 6]. Almost all the cases of giant aneurysms of SFA reviewed have rupture on presentation [2, 5, 10, 11]. Arendz *et al.*, reported a case of rupture true aneurysm of SFA measuring 6 cm in diameter with coexisting aneurysm of other SFA [11]. Rupture of aneurysms is directly related to their sizes; the larger the size, the

higher chances of rupture. However in our case, the aneurysm was not ruptured despite its giant size which differed from most of the previously reported cases. Prompt diagnosis of aneurysms of SFA is very important to avoid complications such as rupture, allowing for planning of elective surgery and to lower morbidity and mortality.

Colour duplex scan, CTA, MRI/MRA and CA are helpful for diagnosis, for assessing anatomic relationships between the aneurysms and adjacent structures and for planning surgery [6, 10]. The diagnosis was confirmed with colour duplex scan and MRI in the current case. Conventional surgical treatment remains the gold standard for peripheral aneurysms with end-to-end anastomosis, venous grafting or prosthetic grafts. Others treatment options include: surgical ligation of aneurysm and endovascular stents [2, 3, 6, 10]. Trans-femoral endovascular stent procedure is reserved for patients with high surgical risks [10]. In aneurysms of the SFA greater than 2.5 cm, surgical repair is recommended [3, 4, 6].

To the best of our knowledge, we have not come across a case of isolated giant true atherosclerotic aneurysm of the SFA in a middle aged woman.

#### **CONCLUSION**

A giant isolated true atherosclerotic aneurysm of SFA is a rare pathology, especially in the middle age group, hence poses a diagnostic challenge. Colour duplex US scan is the first imaging modality that can be used for diagnosis, follow up for recurrence and post-operative period, and also to rule out aneurysms in other common sites. Early diagnosis of aneurysms is highly important to prevent complications and reduce morbidity and mortality.

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