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Multi-modality Imaging of a Subclavian Artery Pseudoaneurysm

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SINGH AND KUMAR: ***Multi-modality Imaging of a Subclavian Artery Pseudoaneurysm*.** Accurate diagnosis and anatomical delineation as well as extent of pseudoaneurysm is important for the precise management of the patient. A number of techniques like ultrasonography, doppler imaging, computed tomography angiography, magnetic resonance angiography as well as conventional angiography are currently available. The image submitted shows the delineation of a subclavian artery pseudoaneurysm by different imaging modalities. *(J HK Coll Cardiol 2014;22: 9-11)*

Angiography , Computed Tomography, Imaging, Pseudoaneurysm

摘要

精確的診斷和解剖形態描述以及病變範圍的判斷是假性動脈瘤患者準確處理的關鍵。目前多種技術可以運用於此，例如超聲成像、多普勒成像、電腦斷層掃描血管造影術、核磁共振血管造影術及傳統的血管造影術等。該圖像通過不同的立體成像方式展現了鎖骨下動脈假性動脈瘤的形態。

關鍵詞：血管造影術，電腦斷層掃描，成像，假性動脈瘤

Introduction

Pseudoaneurysms are encapsulated hematomas that communicate with an artery because of an incomplete seal by the media. Femoral artery pseudoaneurysms are often seen by cardiologists[1-3] particularly post-intervention; however subclavian artery pseudoaneurysm is rarely encountered. Due to their non-compressibility, relative proximity to vital structures, likelihood of distal thromboembolism and the unpredictable risk of rupture, they pose unique challenges in the management. Accurate delineation of the aneurysm is very important for efficient management whether planned percutaneously or by open technique. A number of techniques are available.

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The pseudoaneurysm can be depicted by different imaging modalities, each with its own pros and cons. Pseudoaneurysm lacks the layers of arterial wall compared to a true aneurysm.[4] Moreover, the neck of the pseudoaneurysm is wider compared to true aneurysm. Ultrasonography[5] can demonstrate a sac communicating with the main cavity; however it has its limitation in differentiating a true from a pseudoaneurysm. Doppler can show the flow of blood and thus the communication of the cavity with the main sac. Computed tomography (CT) scan[6] and magnetic resonance angiography have the advantage of identifying the walls of the aneurysm, and thus labeling it as either true- or pseudoaneurysm. CT has the obvious disadvantage in terms of radiation and the potential for nephrotoxicity if dye is required.[6] Magnetic resonance imaging has the limitation of use in patients with pacemakers and metallic prosthetic heart valves.

Surgery has been the traditional treatment of choice for most of the cases.[7] However, endovascular stent graft placement is gaining popularity as an alternative modality to open surgery.[8,9] A glimpse of

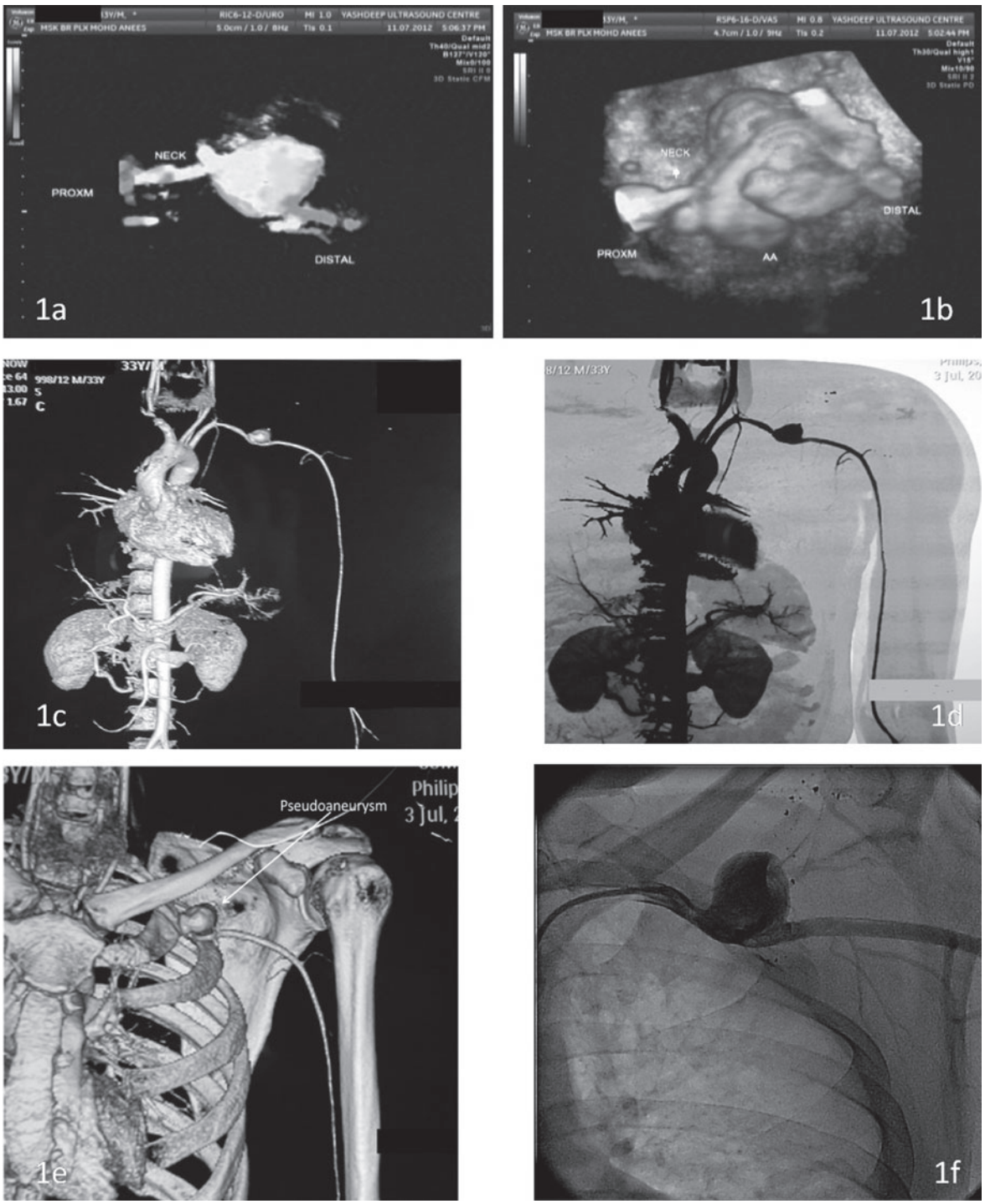

Figure 1. *(a) High-resolution sonography with colour flow imaging showing a well defined cystic mass in the mid part of the left subclavian artery. On colour flow imaging blood is seen flowing into it suggestive of aneurysm; (b) 3D reconstruction of the sonography of left subclavian artery, showing the aneurysm; (c&d) CT angiography of great vessels and left arterial system to the upper limb, showing a well defined aneurysmal dilatation in subclavian artery; (e) 3D reconstruction of the CT angiography images; (f) Peripheral angiography using iodinated contrast, showing a large aneurysm in the subclavian artery.*

the common techniques for demonstration are imaged in the picture presented in a 40-year-old male presenting with a post-gun shot subclavian artery pseudoaneurysm.

Case

This 40-year-old male had a history of gunshot injury over left shoulder region a month prior to presentation; and was being managed conservatively with intercostals tube drainage for left hemothorax when he started noticing weakness of left upper limb. Left brachial plexus injury was suspected. Ultrasonography of the neck was done for brachial plexus evaluation which showed that infraclavicular part of brachial plexus trunk was severed. In addition, there was a mass in distal part of subclavian artery. On colour flow imaging blood was seen flowing into it through a neck. CT-angiography was done which showed it to be a pseudo-aneurysm in distal part of left subclavian artery. Diagnostic peripheral angiography of left upper limb was done which showed a wide neck aneurysm, in the distal part of left subclavian artery directed posteriorly and superiorly.

Endovascular procedure was performed via access through the right femoral artery. The pseudoaneurysm was communicating with the main subclavian artery via a large neck. Using 8F multipurpose guiding catheter, pseudoaneurysm was crossed with a floppy wire and then 0.035" exchange wire was crossed. Endovascular exclusion of the pseudoaneurysm was achieved with the deployment of a 6x22 mm balloon expandable peripheral stent-graft (Adventa, ATRIUM MEDICAL CORPORATION) within the lumen of left subclavian artery. Completion angiography showed complete closure and exclusion of the pseudoaneurysm.

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Conflicts of Interest

None

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