Case Report

Superior Gluteal Artery Aneurysm

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Abstract

To report the successful coil embolization of a rare gluteal artery aneurysm and review therapeutic options for this rare condition. We report a case of pseudo-aneurysm of superior gluteal artery initially diagnosed as gluteal abscess. They can be diagnosed by Doppler ultrasound, computed tomography or magnetic resonance imaging. Mainstay of the diagnosis is by angiography and the preferred management with good clinical results is with angiographic embolization. This report reviews the literature and addresses the incidence, aetiology, and treatment of gluteal artery aneurysms.

Introduction

The true frequency of gluteal artery aneurysms is unknown and symptomatic gluteal artery aneurysms are extremely rare. Gluteal artery injury is uncommon and the injury of the inferior branch (IGA) is rarer than that of the superior branch (SGA) and is found more often on the left versus on right side and men are more commonly affected than women.[1-3] In past 30 years, 22 cases of traumatic IGA injury have been reported in the world literature. There were 16 cases due to sharp injury, 5 cases due to blunt injury including 4 cases traumatic injury. All patients survived including the one case suffering massive blood loss due to delayed diagnosis and treatment.[4] The vast majority of gluteal artery aneurysms are infact pseudoaneurysms resulting from local trauma or iatrogenic causes.[3,5-7]

Case Report

A 32-year-old young male, non smoker, with no

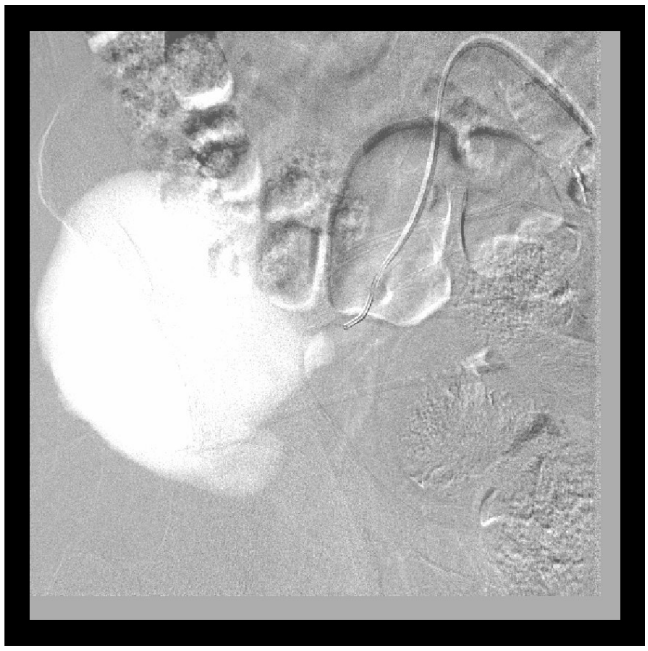

Figure-1: Before Embolization.

known co-morbid was admitted to Ziauddin Hospital on 22 September 08, with the presenting complaint of right buttock pain radiating to the posterior aspect of the right thigh for 7 days. Pain was sudden in onset; initially mild to moderate in intensity but later it became severe. It was associated with nausea/vomiting (one to two episodes). He took oral painkillers but there was no relief. There were no urinary or gastrointestinal symptoms. There was no history of trauma. He had decreased appetite and his sleep was disturbed.

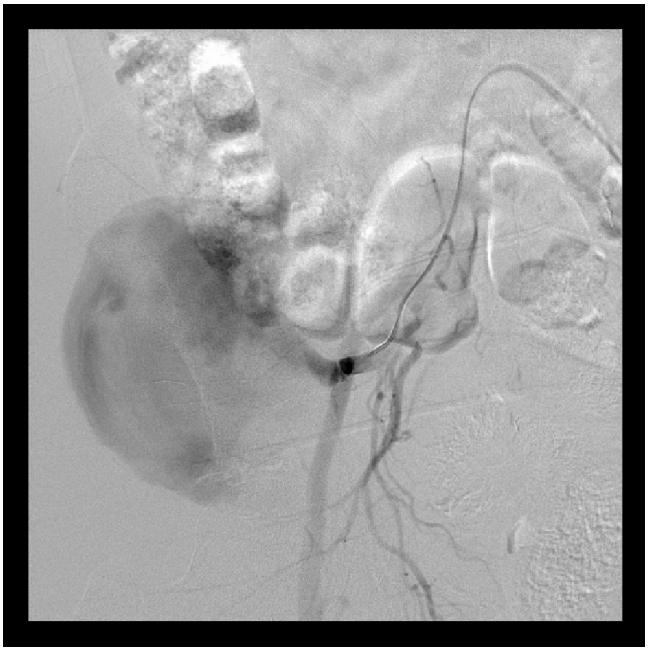

Figure-2: Post Embolization.

On examination the patient was alert and well oriented with person place and time. Vitals were within normal limits with pulse 88 beats per minute, blood pressure 125/70 mmHg and temperature 36.8ºC and respiratory rate 18 breaths/minute. There were no signs of anaemia, jaundice and dehydration. His chest and abdominal examination were within normal limits. However he was unable to perform straight leg raising test on the right side.

Laboratory examination was significant for haemoglobin of 8.6 g/dL and three units packed cells were transfused. Ultrasound of abdomen revealed normal liver, common bile duct, pancreas, spleen, normal size non hydronephrotic both kidneys and prostate. There was no evidence of cholelithiasis and chylecystitis sonologically. X-ray Lumbosacral region was normal. MRI of Pelvis and right gluteal region was done, which showed Void structure in right gluteal region measuring 5.0 to 4.5 cm (T2W1) that appeared to be an aneurysm. It also showed evidence of inflammation and abscess formation towards the periphery of gluteal region. Marked oedema was seen in the subcutaneous tissue and muscle extending down to the thigh. An ill defined signalling lesion in the posterior compartment of upper mid and lower thigh abutting the semi membranous and semi tendinosus muscle (axial diameter 3.0cm) was seen. No pathological signal was observed in bone marrow. For further work up contrast study/D.S.A recommended. D.S.A was done, which showed right common iliac artery and femoral artery within normal limits. The right Popliteal artery was occluded before bifurcation, into anterior and posterior tibial arteries. Anterior tibial artery and peroneal artery outline was visualized by collaterals, however posterior tibial artery was not opacified from upper 1/3 level. There was normal distal flow in anterior tibial and dorsalis pedis arteries. Selective right internal iliac artery was engaged and there was evidence of a large aneurysm towards the gluteal region related to the posterior trunk. The impression was of total occlusion of posterior tibial artery before bifurcation of posterior and anterior tibial arteries. Anterior tibial and peroneal arteries were opacified by collateral and posterior tibial artery was occluded. Large aneurysm was seen in the right gluteal region related to the posterior trunk of internal iliac artery.

After all aseptic measures the left femoral artery was punctured with a 16 G needle, followed by placement of a vascular access sheath, A 5 Fr catheter was introduced over the guide wire through sheath into right internal iliac artery. Contrast run revealed that the superior gluteal branch was hypertrophied and was seen to end into a large pseudoaneurysm measuring 10.6 by 8.7 cm. Steel coil measuring 5mm into 5cm was introduced at the origin of aneurysm from the superior gluteal artery. Complete

embolization was achieved with exclusion of pesudoaneurysm. No post procedure complications were noted.

The patient was discharged three days after the operative procedure. He had an uneventful recovery with resumption of normal daily activities. The patient had regular follow-ups after embolization and was asymptomatic and had no active complaints.

Discussion

The majority of gluteal artery aneurysms are pseudoaneurysms secondary to trauma[1,2] pelvic fracture or iatrogenic causes. They present with a painful, sometimes pulsatile swelling in the gluteal region, there may be a bruit and signs of inflammation or symptoms of sciatic nerve compression.[3] They may mimic a gluteal abscess with disastrous results.[2] It rarely ruptures and presents with profuse bleeding. True gluteal artery aneurysms are rare and their etiology is secondary to atherosclerosis, infection and polyarteritis nodosa. The main arteries to the gluteal region are the inferior and superior gluteal arteries. It was once reported that the Superior Gluteal Artery (SGA) supplied blood to the superior half of the gluteus maximus and the Inferior Gluteal Artery (IGA) supplied blood to the inferior half of the muscle. However, dominant IGA pattern shows higher frequency than the dominant SGA pattern. Among the four gluteal artery patterns, the branches of IGA distributes blood to a larger area than those of SGA.[8] The course of the muscular branches of SGA and IGA are in the lateral or inferolateral direction. The SGA perforators were found adjacent to medial two-thirds of a line drawn from posterior inferior iliac spine to greater trochanter of the femur while the IGA perforators were concentrated along a line in the middle third of the gluteal region above the gluteal crease.[9] The course of IGA perforating vessels is more oblique through the substance of gluteus maximus muscle than the course of SGA perforators. When falling down onto the ground, the IGA and its branches are anatomically more at-risk than the SGA.[10]

Standard surgical therapy for gluteal artery aneurysms involves a transperitoneal or retroperitoneal approach for proximal control coupled with direct endoaneurysmorrhaphy via a gluteal incision. This procedure was first described by Battle in 1898 and has since been modified in several reports.

Although surgery remains the mainstay of therapy, several recent cases relate successful treatment of gluteal artery aneurysms with endovascular embolization.

Arterial lesions may be repaired using either surgical or less inasive techniques, such as embolization during angiography. However, Keeling et al (2008) reported a patient with a traumatic pseudoaneurysm who suffered life-threatning blood loss due to delayed diagnosis and treatment.[8] The patient was initially treated by surgical exploration. Three days later, there was a large, acute bleed from the previous surgical wound site. Despite repeated packing, the blood loss failed to cease following 10 units of packed red blood cells. Selective angiographic embolization of such cases is an effective and reliable method to stop arterial bleeding, especially in the pelvic region, with minimal invasion and improved outcomes. The advantages of angiography with embolization include a decreased risk of infection, the avoidance of opening the retroperitoneal space and decreased risk of iatrogenic nerve and arterial injuries. In the present case report, embolization was performed urgently to decrease bleeding and avoid permanent damage to the sciatic nerve from the expanding haematoma.

These results challenge the traditional belief that surgery is superior to endovascular therapy for symptomatic gluteal artery aneurysms. The theoretical advantage of surgery over embolization is that the aneurysm and thrombus can be removed only via open surgical technique, thus relieving symptoms caused by compression or displacement of adjacent structures. However, it is possible that, following embolization, the absence of arterial pressure and subsequent tissue remodeling may be sufficient for relief of compressive phenomena causing pain.

In conclusion, gluteal artery aneurysms remain a rare, yet challenging problem for both the surgeon and interventional radiologist. Embolization may provide a safe and efficacious alternative to standard surgical repair.

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