Post-Traumatic Pseudo-aneurysm of Left Common Iliac Artery Presenting as a Lumbosacral Plexopathy: A Case Report

AUROBINDO ROY1, SHAHIDUL ISLAM2, ISMAT JAHAN3, BIBEKANANDA HALDER4, TARANA YEASMIN5

Abstract:
Pseudo aneurysm (PA) of iliac arteries is uncommon and is usually associated with trauma. We reported a case of PA of Common iliac artery of a 26 yr male with a history of penetrating injury in left lower abdomen. The assault caused him bowel injury and he got operated. In the post-operative days he developed features of lumbosacral plexopathy. Immediately he underwent MRI of Lumbosacral spine and CT scan of whole abdomen, which revealed a big wide neck pseudoaneurysm of left common iliac artery and surrounding hematoma. The PA was treated before rupture. Our case showed a serious vascular complication of penetrating abdominal injury.

Key words: Common Iliac artery (CIA), Penetrating injury, Pseudo-aneurysm (PA)

Introduction:
Isolated aneurysms of the common iliac artery are rare1. Pseudo aneurysms are caused by trauma, tumors, infection, vasculitis, atherosclerosis and iatrogenic complication2. Arterial trauma is usually the main cause of pseudo-aneurysm formation. The wall of a PA does not posses the same elements as an arterial wall and usually develops as a consequence of a hematoma that has a continuous communication with the lumen of the vessel over a period of time3. Most cases present with a pulsatile mass, compressive symptoms, secondary hemorrhage and neurologic deficit4. Early diagnosis and elective treatment is essential, because the emergency management of a ruptured aneurysm of the iliac artery carries a peri-operative mortality more than 50%1. We report the case of a 26 yr old patient who got a penetrating abdominal injury which caused bowel and vascular injury. In the post–operative days he developed lumbosacral plexopathy. With cross sectional imaging post-traumatic pseudoaneurysm of left common iliac artery was diagnosed. In the present article, the authors described the fatal vascular complications of penetrating abdominal trauma, its rare clinical presentations and radiological diagnosis.

Case report:
A 26 yr male presented in the emergency with the history of penetrating injury in left lower abdomen. He was diagnosed as a case of traumatic bowel perforation. Repair of jejunum was done and large amount of blood clot was removed. No other abnormality was detected per-operatively. After 7-8 days he developed numbness and weakness of left lower limb. He complained of increased discomfort in left lumber region with palpable tumefaction. There was no history of sphincteric disturbances or vascular claudication. On examination, he was alert, afebrile and hemodynamically stable. He had diminished sensation in the L2-L5 dermatome. Flexion of left hip and dorsiflexion of left foot were weak. His feet were warm and the peripheral pulses were palpable in both legs. Muscle power was diminished. He was diagnosed as a case of Lumbosacral plexopathy. MRI of lumbosacral spine was done by a 0.3 Tesla machine which revealed left sided neural foraminal narrowing with corresponding nerve roots compression at L3-L5 level, an oval signal void-lesion in the vicinity of

1. Radiologist, Dhaka Medical College Hospital, 2. Professor & Head, Department of Radiology & Imaging, Dhaka Medical College Hospital, 3. Assistant Professor, Department of Radiology & Imaging, Dhaka Medical College Hospital, 4. Assistant Professor, M H Samorita Hospital & Medical College, 5. Associate Professor, Sir Salimullah Medical College & Mitford Hospital, Dhaka, 6. Assistant Professor, Enam Medical College & Hospital, Savar, Dhaka
left common Iliac artery (CIA) and surrounding heterogeneous clots in left paraspinal region. USG revealed an irregular anechoic area (35 mm x 35 mm) with surrounding hyper-echoic area. Doppler showed “swirling phenomenon” in the same area. CT scan and CT Angiography showed a big (9.0 x 4.7) cm wide-neck (1cm) pseudo-aneurysm of distal segment of left common iliac artery covering the bifurcation, along with surrounding voluminous non-expanding clot in left paraspinal region (Figure: 1-3). Neither CT nor MRI demonstrated rupture of the PA. No bony erosion or fracture was detected. Left kidney was displaced anterior-superiorly but no hydroureteronephrosis was seen. Edema of the Psoase muscle was noted. He was referred to National Institute of Cardiovascular Diseases for management.

**Discussion:**
Common iliac artery is 4 cm in length and 1 cm in diameter, which bifurcate into larger external and smaller internal iliac artery. An aneurysm is a permanent and localized dilatation of an artery with a diameter more than 50% of the expected size\(^3\). Isolated aneurysm of the common iliac artery is rare, with an estimated prevalence of 0.008% to 0.03% in the general population. Isolated aneurysms more than 3 cm in diameter require surgical intervention. Emergency treatment of ruptured iliac aneurysm carries peri-operative mortality is over 50%\(^1\).

Pseudoaneurysms are a result of damage to the vascular wall due to factors such as trauma, tumor, infection, vasculitis, atherosclerosis or iatrogenic injury. The iliac artery is a rare site accounting for 3 to 18% of all cases\(^2\). PA may occur spontaneously and may present with fever of unknown origin\(^4\). Vascular lesions of the iliac arteries are more common in cases of penetrating wounds. Vessels with lesions may be extremely difficult to identify and attempting to do so on the operating table may result in abundant hemorrhage and fatal shock. The time at which pseudoaneurysm is presented is variable and can be at any time from the original injury until years later\(^5\).

Injuries to the iliac vessels, such as pseudoaneurysms and arterio-venous fistula are often missed or diagnosed late. Radiological studies are appropriate for the diagnosis\(^6\).

Pseudoaneurysms result from transmural rupture of the arterial wall, extravasation of blood and formation of a hematoma that remains in communication with the arterial lumen. Unlike true aneurysms, pseudoaneurysms lack the three layers of the vessel wall (intima, media and adventitia) and are contained by perivascular tissue. Coagulation occurs on the periphery of the hematoma, which on ultrasound examination appears to be hyper echoic, while the center remains anechoic. During the intra-arterial high pressure of the systole, the blood flow is anterograde towards the pseudoaneurysm; during the diastole, the flow direction is retrograde. This phenomenon causes swirling, which is the usual flow pattern seen on Doppler images\(^5\).
Lumbosacral plexopathy is defined as the symptoms and signs associated with damage to the plexus of nerves formed by ventral divisions of the lumbar, sacral, and coccygeal nerve roots. The most common intrinsic cause is diabetes mellitus, while the most common extrinsic cause is local compression or invasion of the nerve roots by an abdominal or pelvic neoplasm. Rarer causes include radiation therapy, an abdominal aortic aneurysm, and renal transplantation.

The clinical presentation is variable and depends on the etiology. Patients usually present with localized pain in the lower back, buttock, hip or thigh. The pain is unilateral and described as an ache or pressure. It can take a number of months before specific neurological symptoms are present. Progressive unilateral sensory loss and motor weakness occur in most patients, but incontinence is rare. The distribution offers clues to the specific nerve or nerve roots involved. Electromyography and nerve conduction studies usually demonstrate decrease in amplitude of the evoked motor responses and borderline nerve conduction velocities. CT scanning of abdomen and pelvis is valuable as it can identify tumors, lymph nodes enlargement and bony involvement.

Pseudoaneurysms may undergo spontaneous thrombosis, or may evolve with development of complications such as infections, development of local compression over the neurovascular structures, or rupture. However, some pseudoaneurysms, may undergo spontaneous thrombosis. Such occurrences are related to the size of the aneurysm, the neck length of the pseudoaneurysm and the patient’s state of anticoagulation. Risk of rupture of iliac artery aneurysm can approach 75% when they reach 5 cm in diameter. The therapeutic options are traditional surgery, less invasive radiological procedures such as echo-guided compression, echo-guided percutaneous thrombin injection and endovascular procedures. Endovascular approaches are the gold standard for treating deep arterial hemorrhage.

**Conclusion**

Our case underscores the importance of pseudoaneurysm as a serious vascular complication in penetrating injury, its rare clinical presentation and radiological diagnosis.

**References:**