Case Report

Lumbar artery pseudoaneurysm following blunt trauma: A case report and literature review

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ABSTRACT

Lumbar artery pseudoaneurysms following blunt trauma are very rare. We report a case of polytrauma patient having lumbar spine injury and pelvic fracture presenting with hemodynamic instability. The patient did not improve after aggressive resuscitation. There was no evidence of intraabdominal solid organ or visceral injury. We suspected injury to pelvic vessels as a source of bleeding. Computed tomography (CT) angiography was done. A small size (6 × 5 mm) lobulated hyperdense structure is seen in the territory of a left 4th lumbar branch of aorta suggestive of a pseudoaneurysm. Whenever there is a patient of blunt abdominal trauma with pelvic or spine injury and source of bleeding cannot be established, lumbar vessels as a source of bleeding should be kept in mind. CT angiography must be done for diagnosis and patient may subsequently need angioembolization of these vessels.

Introduction

Lumbar artery pseudoaneurysms are rare and usually occur after penetrating injuries [1,2]. Blunt trauma leading to lumbar artery injury and pseudoaneurysms are extremely rare. We report a rare case of polytrauma having a lumbar spine injury, pelvic fractures and bilateral open calcaneus fractures presenting with persistent hypotension and on diagnostic evaluation was found to be a lumbar artery pseudoaneurysm.

Case report

A 32-year male presented to our hospital after 19 h of injury with an alleged history of fall from stairs (12 ft). There was a history of abdominal pain, backache and weakness of bilateral lower limbs and the patient was hemodynamically unstable. Resuscitation done, there was free fluid on focused assessment with sonography in trauma (FAST) in the hepatorenal region. After multiple transfusions patient did not improve and was administered inotropes. Afterward, radiographs and Contrast-enhanced computed tomography (CECT) abdomen was done. There was hemoperitoneum without any evidence of solid organ and visceral injury. There were multiple fractures involving bodies of L1, L2; posterior elements of L4, L5 (Figs. 1 and 2); bilateral sacral ala and left side lateral compression injury (Fig. 3). At first, we thought the injury to pelvic vessels as a source of bleeding. CT angiography of the abdomen was done later because of hemodynamic instability and decreasing hemoglobin levels despite multiple packed red blood cell transfusions. A small size (6 × 5 mm) lobulated hyperdense (HU 240-250) structure is seen in the territory of a left 4th lumbar branch of aorta suggestive of a pseudoaneurysm (Figs. 4 and 5). We planned for arterial embolization but severely deranged coagulogram

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Fig. 1. Coronal CT image showing lumbosacral fractures.

Fig. 2. Sagittal CT image showing lumbar vertebrae fractures.

Fig. 3. 3D CT reconstruction images showing pelvic ring injury.

and very low platelet count precluded the intervention. The patient was symptomatically managed with multiple transfusions of packed red cells, platelets, and fresh frozen plasma. Moderate effusion was also present in bilateral pleural spaces with collapse consolidation of underlying lung segments. The patient got shortness of breath on day 5 of admission along with derangement in renal function tests. CT pulmonary angiogram (CTPA) was performed to rule out pulmonary thromboembolism and there was no pulmonary embolism. After that patient responded to symptomatic treatment and improved. Finally, pre-anesthetic clearance was given and debridement of open calcaneus fractures done. Lumbosacral spine injury and pelvic ring injury were managed conservatively. The postoperative period was uneventful and the patient was discharged in hemodynamically stable condition.

Discussion

There are five pairs of lumbar arteries, first four arise from the posterior aspect of the abdominal aorta and the fifth pair arises from either lateral sacral artery, iliolumbar artery or median sacral artery. These vessels form supply to lumbar vertebrae, adjoining muscles, a distal portion of spinal cord and nerve roots of cauda equine [3,4]. Lumbar artery aneurysms (Table 1) have been reported following penetrating trauma [2], blunt trauma and iatrogenic type including percutaneous kidney procedures, laparoscopic splenectomy [1], lumbar posterolateral fusion [5] vertebral osteomyelitis [6].

These pseudoaneurysms may remain asymptomatic or present with hemodynamic instability. The time of presentation is variable. Early diagnosis is the key as grave complications [7] can occur like increasing size, rupture, hemorrhage, thromboembolism if a diagnosis is missed. Abdominal pain is the primary symptom. Unawareness of this condition and vague symptomatology leads to delay in diagnosis. There should be a high index of suspicion in hemodynamically unstable patients where other causes of retroperitoneal hemorrhage are excluded like bleeding from solid organ injuries, visceral injuries, and major vessel injuries. Psoas abscess, tumors, inflammatory masses can have presentation and symptomatology similar to lumbar artery pseudoaneurysm [3,8].

The diagnosis is also difficult in spinal cord injury patients as a response to injury depends upon the level of lesion and type of injury whether complete and incomplete. The cardinal signs of acute abdominal pathology such as rigidity of abdominal muscles and rebound tenderness tend to be absent in cord lesions above T6 [9]. In our case, there was a history of vague abdominal pain and there was no rigidity and rebound tenderness on per abdominal examination.

Fig. 4. Coronal CT angiography image showing left 4th lumbar artery pseudoaneurysm.

Radiological investigations are essential in making the diagnosis. The plain radiographs and non contrast CT reveal fractures of lumbosacral spine and pelvis and there should be a high index of suspicion of retroperitoneal hemorrhage in such cases [10]. Lumbar artery pseudoaneurysms appear as increased density mass in close vicinity to the psoas major muscle and the lumen of the aneurysm can be seen on the contrast imaging [1]. Contrast-enhanced tomography is, therefore, more helpful in diagnosing retroperitoneal hematomas, mass lesions and to rule out intraabdominal solid organ injury and visceral injuries [11]. If a patient's condition is deteriorating despite adequate resuscitation and patient is hemodynamically unstable, emergent arteriography is to be done. It gives information about the origin, dimensions, expansion of aneurysm, vascular feeder and decision making for doing any intervention [1].

Conclusion

So when you encounter a patient of blunt abdominal trauma with pelvic or spine injury and source of bleeding cannot be established, lumbar vessels as a source of bleeding should be kept in mind. In undiagnosed cases, CT angiography must be done for diagnosis and patient may subsequently need angioembolization of these vessels.

Financial disclosures

None.

Fig. 5. Axial CT angiography image showing left 4th lumbar artery pseudoaneurysm.

Table 1

Summary of the studies reporting lumbar artery pseudoaneurysms.

S no.	Author	Year	lumbar artery pseudoaneurysm	Presentation
1	Ikubo et al	1993	Following blunt trauma	As severe pain abdomen and hypotension (retroperitoneal hematoma)
2	Chan et al	2003	With traumatic spinal cord injury following gunshot injury	As severe exacerbation of low back and flank pain during inpatient rehabilitation.
3	Kessel et al	2004	A complication of penetrating abdominal trauma	Delayed presentation and missed during laparotomy
4	Lee et al	2008	With transverse process fracture of the lumbar spine	As hypotensive shock
5	Tomscot et al	2013	Late complication of osteomyelitis with vertebral body destruction	As acute backache
6	Oh et al	2013	After lumbar posterolateral fusion	As a delayed retroperitoneal hemorrhage
7	This study	2018	With fractures of lumbar spine and pelvis	As hypotensive shock

Declaration of Competing Interest

None.

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