Atypical presentation of an abdominal aortic aneurysm
M Nair, A Athow, I Kaholics

Citation

Abstract
Ruptured abdominal aortic aneurysm is a great masquerader that can present in a variety of clinical symptoms and signs. This is a case of ruptured abdominal aortic aneurysm that presented as a strangulated left inguinal hernia. The diagnosis of an inguinal hernia, be it complicated or uncomplicated is often simple and straightforward. Rarely this simple presentation may be the external manifestation of a distant pathology, which is in communication with the inguinal canal through its anatomic relationship. Familiarity with the surgical emergencies that can mimic or present as simple irreducible hernia would enable a rapid diagnosis to be made with timely subsequent intervention. During exploration the presence of haematoma with in the cord warrants further laparotomy. Contrast enhanced CT scan is recommended for all dubious cases at an early stage.

INTRODUCTION
Ruptured abdominal aortic aneurysm is a great masquerader that can present in a variety of clinical symptoms and signs. This is a case of ruptured abdominal aortic aneurysm that presented as a strangulated left inguinal hernia. To the best of our knowledge there are only 15 such case reports. In all those, the patient was either anaemic, hypotensive or had intraoperative active bleeding in inguinal canal from retro peritoneum. This haemodynamically normal patient presented with acute left groin pain, irreducible left inguinal swelling and vomiting with normal hemoglobin and very high inflammatory markers.

CASE HISTORY
A 67-year-old gentleman presented to the accident and emergency department at 4am with left groin pain, vomiting, and bloatedness of 7 hours duration. He had a history of intermittent left groin pain for the past 5 weeks. He had opened the bowels the day before, which was normal. Apart from being asthmatic there was no significant past medical or surgical illness. On examination he was afebrile, alert, oriented with a normal heart rate of 96/mt and a blood pressure of 130/94. On abdominal examination there was generalised tenderness with rigidity on the left side of the abdomen with sluggishly bowel sounds. A 4x4 cm non-pulsatile non reducible tender lump was palpated in left groin. No pulsatile mass was palpated in the abdomen. All peripheral pulses were felt in good volume with no brachio - femoral delay. Per rectal examination was normal. His blood tests on admission were: hemoglobin 13.2 gm%, white cell count 21X10^9/l, amylase 52iu/l, C reactive protein 25 mg/l with normal electrolytes, renal and liver function tests. The x ray of chest, abdomen and ECG were normal. With the clinical diagnosis of a strangulated left inguinal hernia he underwent exploration of left inguinal region that showed haematoma of the spermatic cord from deep ring to root of testes with blood seemed to be seeping into the tunica albugenia. There was neither fresh bleeding nor any evidence of hernia. Post operatively (12 hours after admission) he was afebrile with a blood pressure of 124/80, heart rate of 118 and oxygen saturation of 98% on air. Six hours after surgery he was afebrile with blood pressure of 120/80, heart rate of 110 and oxygen saturation of 98% on air. Post operatively he had contrast enhanced CT scan of the abdomen which showed a leaking infrarenal abdominal aortic aneurysm.
Atypical presentation of an abdominal aortic aneurysm

**Figure 1**

Leaking infrarenal abdominal aortic aneurysm with a diameter of 9.149 CM with blood seeping along the retroperitoneum to the left groin(arrow)

**Figure 2**

His repeat blood test showed haemoglobin of 7.6gm%, white cell count 17.5X10^9/l, and C reactive protein of 154 mg/l with normal electrolytes, renal and liver function tests. He was taken for emergency laparotomy and repair of the aneurysm. At the time of induction his blood pressure was 115/78 mmHg, heart rate 110, and SPO2 98% on air. Haemodynamically, he was normal throughout the hospital admission.

**DISCUSSION**

Hypotension, pulsatile abdominal mass, and flank or back pain constitutes the classic triad for ruptured abdominal aortic aneurysm. However, this triad may be incomplete in as many as 50% of patients. In the majority of cases the assessment of a correct, early diagnosis of ruptured abdominal aortic aneurysm is simple and makes a prompt surgical or endovascular operation possible. In some instances, however, rupture of aneurysms of the abdominal aorta simulates other clinical conditions. These include acute cholecystitis, acute diverticulitis of the sigmoid colon, renal colic and other gastrointestinal pathology that may delay the correct diagnosis and reduce the patient’s chance of survival. It is worth mentioning that the scientific genius Albert Einstein died from rupture of abdominal aortic aneurysm that simulated acute cholecystitis, and in the world literature this symptomatology was subsequently described as Einstein’s sign, 3. Atypical presentations of ruptured abdominal aortic aneurysm include pain radiating to the groin, upper gastrointestinal obstruction from compression of the third portion of the duodenum, gastrointestinal bleeding secondary to aortoenteric fistula usually involving the third part of the duodenum, hematuria, large bowel obstruction, priapism, lower extremity swelling related to a fistula from the aorta to IVC or renal, lumbar, or common iliac vein, acute femoral neuropathy with or without thigh ecchymosis due to femoral nerve compression as blood dissects inferiorly between the iliacus and psoas muscles and the overlying fascial pockets, acute bilateral limb ischemia from aortic thrombosis, lower extremity ischemia, visceral thromboembolism caused by embolization of mural thrombi and high output cardiac failure. Marston catalogued the initial erroneous diagnosis in 46 of 152 retrospectively reviewed cases of ruptured abdominal aortic aneurysm as shown in Table 4.

**Figure 3**

Table 1

<table>
<thead>
<tr>
<th>Initial Diagnosis</th>
<th>Misdiagnosed Cases, %</th>
<th>Average Delay, h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renal colic</td>
<td>24</td>
<td>15</td>
</tr>
<tr>
<td>Diverticulits</td>
<td>13</td>
<td>78</td>
</tr>
<tr>
<td>GI haemorrhage</td>
<td>13</td>
<td>17</td>
</tr>
<tr>
<td>Acute MI</td>
<td>8.7</td>
<td>13</td>
</tr>
<tr>
<td>Back pain</td>
<td>8.7</td>
<td>18</td>
</tr>
<tr>
<td>Motor vehicle accident</td>
<td>6.5</td>
<td>1.5</td>
</tr>
<tr>
<td>Sepsis</td>
<td>6.5</td>
<td>26</td>
</tr>
<tr>
<td>Other GI problem</td>
<td>6.6</td>
<td>4</td>
</tr>
<tr>
<td>Other aortic diagnosis</td>
<td>13</td>
<td>18</td>
</tr>
</tbody>
</table>

Ruptured abdominal aortic aneurysm presenting as strangulated left inguinal hernia (groin swelling) due to seepage of blood through inguinal canal from retro
peritoneum is very rare. To the best of our knowledge only
15 cases have been reported in the literature.\textsuperscript{5, 6, 7, 8, 9, 10}
Hypotension, anaemia and retroperitoneal blood in inguinal
operative field suggest the presence of aneurysm.\textsuperscript{7}
But in our case the only finding was the presence of blood in
spermatic cord. The anatomy of the retroperitoneal space
and the phylogenetic development of a channel between the
scrotum and the kidney are important factors in the
development of this symptom complex.\textsuperscript{9}
This patient dropped his haemoglobin after initial surgery as a result of
increased aneurysm leak due to loss of tamponade as a result
ofral anaesthesia. Most abdominal aortic aneurysm rupture
into the left retroperitoneum. The retroperitoneum contains
the leak by means of mechanisms that cause clotting or
tamponade. This rupture can also cause abdominal, back, or
flank pain. This symptom is related to impingement of the
hematoma on adjacent structures. Aneurysms that continue
to leak or those that rupture into the peritoneal cavity can
result in hemodynamic collapse and, often death. Following
rupture of a abdominal aortic aneurysm bleeding occurs into the
following regions: retroperitoneal - 85.3\%, peritoneal -
7.1\%, inferior vena cava (IVC) or iliac vein - 5.8\%, enteric -
1.8\%. Rupture into the retroperitoneum typically originates from the
left posterior aspect of the abdominal aortic
aneurysm and intra peritoneal rupture tend to occur from the
right anterior aspect.\textsuperscript{11}

The diagnosis of an inguinal hernia is often simple and
straight forward. Rarely this simple presentation may be the
external manifestation of a distant pathology, which is in
communication with the inguinal canal through its anatomic
relationship. Surgical emergencies that can mimic simple
irreducible hernia include ruptured ectopic pregnancy,
retroperitoneal haemorrhage due to any cause, femoral
hernia, torsion of ovaries, and torsion of testis. The presence
of haematoma with in the cord warrants further exploration. Familiarity with the surgical
emergencies that can mimic or present as simple irreducible
hernia would enable a rapid diagnosis to be made with
timely subsequent intervention.

Surgery for ruptured abdominal aortic aneurysms continues
to have an excessively high mortality rate of around 50%,
where as untreated ruptured abdominal aortic aneurysm
carries a mortality rate of nearly 100%. Even though some
preoperative variables could be identified as predictors of
mortality, an absolute mortality risk has not yet been
determined and the decision to negate surgery should be
individualized rather than taken on that basis only.\textsuperscript{12, 13}
There are conflicting reports about the Glasgow Aneurysm Score
and the Hardman Index in predicting the immediate outcome
after emergency open repair of ruptured abdominal aortic
aneurysms.\textsuperscript{14, 15} Early diagnosis and treatment of symptomatic
aneurysms would improve mortality figures and selective
screening should be contemplated.\textsuperscript{16}

CONCLUSION
Thus, the present case is another unusual presentation of
ruptured abdominal aortic aneurysm and a high index of
suspicion should be kept in all cases of acute abdomen with
or with out groin swelling. The diagnosis of an inguinal
hernia, be it complicated or uncomplicated is often simple
and straight forward. Rarely this simple presentation may be
the external manifestation of a distant pathology, which is in
communication with the inguinal canal through its anatomic
relationship. The presence of haematoma with in the cord
warrants further exploration. Familiarity with the surgical
emergencies that can mimic or present as simple irreducible
hernia would enable a rapid diagnosis to be made with
timely subsequent intervention. Contrast enhanced CT scan
is recommended for all dubious cases.

CORRESPONDENCE TO
Dr Manojkumar Sreedharan Nair Specialist Registrar in
General Surgery North Middlesex University Hospital NHS
Trust London UK N18 1SU Mob:0044 07910946629 Email:
drmanojms@yahoo.co.in

References
1. Bollinger A, Ruttimann B. Aneurysms from the viewpoint
2. Sollberg S Curriculum vitae aortae. Tidsskr Nor
3. Treska V. The Einstein sign Rozhl Chir. 2003
Feb;82(2):73-4.
4. Marston WA, Ahlquist R, Johnson G Jr, Meyer AA:
Misdiagnosis of ruptured abdominal aortic aneurysms. J
5. Moissinae K, Boon Chong Se To, Liew NC, Yunus Gul
Abdominal aortic aneurysm rupture masquerading as
Nov;19(7):604-5
6. Retteadal EA, Vennesland O Ruptured abdominal aortic
aneurysm. A rare form of presentation Tidsskr Nor
Laegeforen. 1993 May 10;113(12):1470.
7. Louras JC, Welch JP. Masking of ruptured abdominal
8. Khaw H, Sottiurai VS, Craighead CC, Batson RC.
Ruptured abdominal aortic aneurysm presenting as
9. Owen ER, Klark AE Irreducible inguinal hernia as a
presentation of ruptured abdominal aortic aneurysm. J R Coll
the rupture site of abdominal aortic aneurysms with regard to
postoperative survival rate. J Cardiovasc Surg (Torino) 1984
Atypical presentation of an abdominal aortic aneurysm


Author Information

Manojkumar S. Nair, MRCS MS MNAMS
North Middlesex University Hospital NHS Trust

A. Athow, FRCS
North Middlesex University Hospital NHS Trust

I. Kaholics, FRCS
North Middlesex University Hospital NHS Trust