Internal Hernia: a case report

A KOHLI, HS CHOUDHURY, D RAJPUT

Ind J Radiol Imag 2006 16:4:563-566

Key words: Internal Hernia, Intestinal obstruction, CT angiography

Internal hernia is an uncommon cause of small bowel obstruction. Intestinal obstruction due to internal hernia is very dangerous and lethal because it may be silent or may present as severe acute abdominal pain. We describe a transmesenteric hernia recently came to our department, which was diagnosed on typical intravenous and intraluminal contrast enhanced CT findings followed by CT angiography to characterize the vascular changes.

CASE REPORT

A 46yrs old male admitted in our hospital following head injury. He was later referred to us from surgery dept following the complaints of sudden onset severe abdominal pain for 18-24hrs and episodes of vomitings. Patient also gave history of three episodes of similar abdominal pain in the past, but relieved of spontaneously. There was no past h/o any abdominal surgery.

On clinical examinations, there was non specific diffuse abdominal tenderness and abdominal distension.

At first, plain X-Ray abdomen(a) was done. It revealed gas filled dilated small bowel loops. No air fluid level was noted. USG abdomen also did not reveal any significant information. Plain X-Ray abdomen(b) on the next very day clearly demonstrated multiple central air-fluid level indicating obstruction.

CT scan (fig 2a &b) with oral, rectal and iv contrast was done and it revealed twisting of mesenteric vascular pedicle at it’s root along with jejunal loops, the classic Whirl sign. The bowel loops were clumped and displaced. There was likely to be a mesenteric defect lateral to the ligament of Trietz. No significant bowel dilatation was noted.

CT angiography(Fig 3) done after 5 days, revealed clearly the twisted mesenteric vascular pedicle. However, no evidence of bowel ischaemia was noted. All these findings were correlated with patient’s clinical status, and imaging findings are very typical of Transmesenteric hernia with midgut volvulus.

Fig 1(a) & (b): Plain picture abdomen showing dilated bowel loops and multiple air fluid level

From the Breach Candy Hospital, Mumbai

Request for Reprints: Dr Anirudh Kohli, Breach Candy Hospital, Mumbai

Received 28 October 2006; Accepted 20 November 2006
DISCUSSION

PROTRUSION OF THE VISCERA THROUGH THE PERITONEUM OR MESENTERY & INTO A COMPARTMENT IN THE ABDOMINAL CAVITY -is known as INTERNAL HERNIA.

The responsible hernial orifices are usually pre-existing anatomic structures such as foramina, recesses and fossae. Pathologic defects of the mesentery and visceral peritoneum are mostly due to - congenital, surgical, traumatic, inflammatory, circulatory pathology.

Internal hernia is a rare cause of small bowel obstruction. The incidence is only 0.2 -0.9%. This may be Congenital or acquired & may be persistent or intermittent. There is high risk of strangulation of bowel loops. So, internal hernia is very dangerous and lethal condition.
Types of Internal hernia and their relative incidence
Paraduodenal (Lt. > Rt.) - 53%
Foramen of Winslow - 8%
Transmesenteric - 8%
Transomental - 1-4%
Pericæcal - 13%
Intersigmoïd - 6%
Suprapubesical and pelvic - 6%

*Pelvic hernias include hernias through Broad ligament (4-5%), perirectal fossa & fossa of Douglas

Clinically, it presents from intermittent & mild digestive complaints to acute intestinal obstruction. Sometimes, this condition may be silent if spontaneously or easily reducible. Majority often present with epigastric discomfort, periumbilical pain, recurrent episodes of intestinal obstruction features eg. Nausea, vomiting, tenderness, abnormal bowel sounds, palpable mass. Internal hernias are clinically apparent only when strangulation/ischæmia results.

Imaging techniques that are helpful for the diagnosis of Internal hernia are - Plain X-ray abdomen, USG, Abdominal CT scan, GI studies enhanced with intra luminal contrast (Ba enhanced studies, enteroclysis).

In high grade mechanical SBO, Ba follow through study has limitations in emergency. Enteroclysis can be performed quickly and have high degree of accuracy but is contraindicated in high grade closed loop obstruction. Since the availability of multislice CT scanners owing to its multiplexer reconstructing capabilities, 3D rendering, Abdominal CT enable accurate diagnosis of any type of internal hernia.

To diagnose we need to focus on -
Configuration of bowel loops
Mesenteric vessels changes
Enhancement pattern of bowel wall

The characteristic CT findings are --
1. Sac like mass / cluster of dilated bowel loops.
2. Mesenteric vascular pedicle - stretching, crowding, twisting, displacement (Displacement of mesenteric vessel is labeled only when main mesenteric vessels are seen outside the lateral margin of aorta by more than the width of the aorta)
3. Signs of Bowel ischæmia - wall thickening, pneumatosis, ascites

The CT Angiographic findings are -
Abrupt tapering or termination of the mesenteric vessels, abnormal course and whirlpool arrangement of the arteries at the point of mesenteric twist and delayed arterial and venous filling and emptying

FORAMEN OF WINSLOW HERNIA

Lesser sac and the greater peritoneal cavity communicates through FOW, which lies anterior to IVC & posterior to Hepatoduodenal ligament including PV, CBD & Hepatic artery.

X-ray abdomen reveals gas containing intestinal loops high in abdomen and medial & posterior to stomach associated with SBO. Cecum & ascending colon may be absent from usual locations if they are part of herniated viscera. Ba follow through study reveals dilated small bowel loops.

Ba enema study will reveal - obstruction at the hepatic flexure, if hernia involves the caecum & ascending colon. The characteristic CT appearances are -
Air fluid collection in the lesser sac with a beak directed toward the foramen of Winslow. Two or more bowel loops in the high subhepatic space, presence of mesentery between IVC & PV and absence of ascending colon in Rt. Gutter

PARA-DUODENAL HERNIA

Paraduodenal fossae originate as congenital anomalies owing to failure of mesenteric fusion with the parietal peritoneum & abnormal rotation of intestine. This is the most common type of all Internal Hernia (53% of all internal hernias). Lt side is the most common site.

Left Para-duodenal Hernia occurs through fossa of Landzert into the descending mesocolon. This Fossa of Landjert is located at the D-J junction.

The characteristic CT findings are - Abnormal cluster or sac like mass of dilated small bowel loops lying between the pancreas and stomach to the left of ligament of Trietz. There will be mass effect over the surrounding structures. Mesenteric vessels will be crowded, stretched and engorged at the entrance of the hernial sac. Anterior wall of the sac contains the inferior mesenteric vein & Lt. Colic artery, which is the landmark over the encapsulated bowel loops.

Rt. Para-Duodenal Hernia involves fossa of Waldayer, located immediately behind the superior mesenteric artery and inferior to the Transverse segment of the duodenum with or without rotation anomaly.

It develops into ascending mesocolon with a Rt. Colic vein anteriorly. The superior mesenteric artery and Rt. colic vein are located at the antero-medial boarder of the encapsulated small bowel loops which is a landmark for
Rt. Paraduodenal hernia.

TRANS-MESENTERIC HERNIA

The small bowel mesentery is a broad, fan-shaped fold of peritoneum that suspends the loops of the small intestine from the post abdominal wall. Mesenteric defects, mostly congenital, are located close to the ligament of Treitz. Because of absence of limiting hernial sac, mechanical small bowel obstruction are usually associated with this type of hernia. The characteristic CT Scan findings are - Clustering of small bowel loops, Mesenteric vascular pedicle is characteristically twisted, engorged, stretched and crowded and there is displacement of the main mesenteric trunk.

TRANS-OMENTAL HERNIA

Herniation occurs either through a free greater omentum or into the lesser sac through the gastrocolic ligament. This defects are mostly congenital. Small bowel loops, caecum, sigmoid colon are involved in this defect. Clinically and radiologic findings are almost identical to transmesenteric hernia.

PERICAECAL HERNIA

This type of hernia reveals cluster of fluid filled small bowel loops located lateral to the cecum and posterior to the ascending colon, ‘beaking appearances indicative of tethering at the apertures of the peritoneal recess and dilatation of small bowel loops with a transition zone.

SIGMOID MESOCOLON HERNIA

Inter-sigmoid fossa lies behind the apex of the V-shaped parietal attachment of the sigmoid mesocolon. These are of three types -

1. Inter-sigmoid (m/c) - herniation into inter-sigmoid fossa, situated in the attachment of the lateral aspect of sigmoid mesocolon
2. Trans-meso sigmoid - posterolateral to sigmoid colon
3. Intra-mesosigmoid - it involves only one of the constituent leaves of sigmoid mesentery

PELVIC HERNIAS

Supra-vesical hernia, Hernia through broad ligament and Hernia through perirectal fossa are rare and can be diagnosed on the basis of specific locations of herniated viscera.

So, we conclude that Internal hernia represents an important and underdiagnosed condition. Understanding the anatomy of the peritoneal cavity and the characteristic anatomic location of each internal hernia as well as recognition of the characteristics CT findings may assist in consideration or identification of Internal hernias in most cases of SBO.

References:

1. Arye Blacher, Michael P. Federle, S. Forrest Dodson. Internal Hernia: clinical and imaging findings in 17 patients with emphasis on CT criteria. Radiology 2001;218:68-74