Right Iliac Fossa Pain ? Cause

Learning Objectives:

Right iliac fossa (RIF) pain is a common acute surgical presentation and a frequent cause of referral to the radiology department for emergency Computed Tomography (CT) scanning. We present the radiology trainee with a systematic approach for the diagnosis of RIF pain on CT imaging using a classification based on the site of origin of the pain.

Background:

Acute appendicitis has been found to be the commonest pathological cause of RIF pain, identified on cross-sectional imaging, with an incidence of around 25%. There are however a multitude of other conditions which cause RIF pain and in this pictorial review we provide a list of these pathologies and their imaging features

Below is a classification of the causes of RIF pain based on the site of origin:



Figure 1 : Differential diagnoses of right iliac fossa pain

Meckles Diverticulum





There is a blind ended, fluid filled structure arising from the distal ileum with surrounding inflammatory changes. This is in keeping with an inflamed Meckle's diverticulum. The appendix is identified separate to this structure. Complications to be aware of are: abscess, fistulae, obstruction and bleeding. Meckel's diverticulum commonly follows the rule of two's: 2% of population, 2 feet from ileocecal valve, 2 inches in length with 2 types of heterotopic mucosa.

Chrons Disease





The axial CT demonstrates hyper-enhancement and thickening of the terminal ileum, caecum and ascending colon secondary to active inflammatory bowel disease. There is also surrounding fat standing and fluid in the pelvis. The coronal MRI image demonstrates fistulation between the distal and mid ileum; in keeping with fistulating Crohn's disease.

Small Bowel Lymphoma





Coronal and axial CT demonstrates a short segment of wall thickening of the mid ileum. There is minor aneurysmal dilation, but no bowel obstruction. An enlarged regional lymph node is also present.

Gastrointestinal stromal tumour





This is a rare mesenchymal tumour arising from gastrointestinal tract. They are usually of soft tissue density and exophytic, as seen on the coronal and axial CT images. Sometimes they can have a necrotic centre and ulceration, but usually there is no calcification. Complications include: invasion to adjacent structures with distant, peritoneal and omental metastases.

Carcinoid Tumour





There is a lobulated, soft tissue mass in the mesentery with surrounding desmoplastic reaction, which is due to a nodal metastasis of a Carcinoid tumour (arrows on the axial and coronal CT). Surrounding desmoplasia is present and calcification is also a common feature.

Appendix Mucocele



The appendix is thick walled, dilated with low attenuation, mucinous fluid and a small fleck of calcification within it. No significant surrounding inflammatory fat standing is present. These features suggest a mucocele of appendix. The presence of irregular wall thickening or mural nodularity would raise the suspicion of a malignancy

Caecal Diverticulitis





Axial and coronal CT demonstrates a number of caecal diverticuli, which are surrounded by pericolic fat stranding and vascular engorgement. There is also mucosal thickening and small volume lymph nodes. Complications of caecal diverticulitis include perforation and abscess formation.

Caecal Volvulus



The plain film demonstrates a large gas filled loop of large bowel in the central abdomen. The axial and coronal CT images, demonstrate a dilated caecum pointing towards the left upper quadrant and whirling of the mesenteric vessels, in keeping with a caecal volvulus.

Caecal Cancer





There is annular wall thickening of the caecum with narrowing of the lumen, surrounding fat stranding and small volume lymph nodes. On the axial CT there is metastatic omental disease. Other complications associated with caecal cancers are: obstruction leading to small bowel obstruction, obstructive appendicitis and perforation.

Pelvic Inflammatory Disease





In the right adnexa, there is a dilated, thickened tubular structure, with surrounding inflammatory fat stranding, in keeping with a tubo-ovarian abscess.

Omental Infarct





There is a focal area of fat stranding, with swirling of the omental vessels suggesting omental torsion in the right side of the abdomen, arrows on coronal and axial CT. These are usually greater than 5cm in size, which help distinguish it from epipolic appendagitis.

Right Ureteric Calculus





Axial CT demonstrates a small right distal ureteric calculus with surrounding perinephric stranding. On the coronal CT images the calculus is causing right sided uretero-hydronephrosis.

Psoas Abscess



The right psoas muscle is distended with rim enhancing fluid collections which contain air locules due to abscess formation. Surrounding inflammatory change is also noted.

Right Inguinal Hernia



Axial and coronal CT demonstrates multiple small bowel loops within the right inguinal canal. There is fluid and fat stranding within the hernial sac and one of the small bowel loops is hyperenhancing, suggesting incarceration. The coronal image also shows secondary bowel obstruction.

Gallstone lleus





There is a calcified rounded opacity within the small bowel loop i.e. a gallstone, which is causing upstream mechanical small bowel obstruction. In this case there is no evidence of intrahepatic biliary gas, which is a common feature of Rigler's triad (dilated small bowel loops, pneumobilia and obstructive gallstone in small bowel).

Biliary Stone



The axial CT demonstrates intrahepatic duct dilatation, which is suggestive of obstruction. The patient underwent MRCP to further investigate this and there was a filling defect in the common bile duct (arrow), causing the obstruction and symptoms.

Conclusion:

CT is being increasingly used for patients presenting with right iliac fossa pain and a thorough knowledge of the various differential diagnoses causes and their imaging characteristics is essential for accurate diagnosis and timely management

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