CT Evaluation of Bowel Wall Thickening

By
Dr: Adel El-Badrawy; M.D.
Lecturer of Radio-Diagnosis
Faculty of Medicine
Mansoura University.
The CT findings of bowel wall thickening includes:

1- Degree of thickening.
2- Pattern of attenuation (homogeneous or heterogeneous).
3- Symmetric versus asymmetric thickening.
4- Length of thickening.
5- Associated peri-enteric abnormalities.
Degree of Bowel Wall Thickening

I- Mild thickening ( < 2 cm).
   A- Common
      1- Infectious enterocolitis.
      2- Ulcerative colitis.
      3- Crohn’s disease.
      4- Radiation injury.
      5- Ischaemia.
      6- Bowel edema in cirrhosis.
      7- Submucosal haemorrhage.

B- Uncommon
   1- Adenocarcinoma.
   2- Lymphoma.
II- Marked thickening (>2 cm)

A- Common
1- Adenocarcinoma, G.I. stromal tumor, metastases, lymphoma.
2- Severe colitis.
3- S.L.E.

B- Uncommon
1- Crohn’s disease, T.B., histoplasmosis, cytomegalovirus.
2- Submucosal hemorrhage.
Pattern of attenuation in bowel wall thickening

I- Homogeneous
   A- Common
      1- Submucosal hemorrhage.
      2- Lymphoma.
      3- Small adenocarcinoma.

B- Uncommon
   1- Infarcted bowel.
   2- Pitfalls related to residual fluid.
   3- Chronic Crohn’s disease.
   4- Chronic radiation injury.
II- Heterogeneous

A- Stratified attenuation

1- Common
   a- Ischemia.
   b- Infectious enterocolitis.
   c- Crohn’s disease, ulcerative colitis.
   d- Vasculitis, Lupus, Henoch-Schonlein purpura.
   e- Radiation.
   f- Bowel edema related to cirrhosis or low-protein state.

2- Uncommon
   a- Infiltrating scirrhous carcinoma (usually stomach or rectum).
   b- Residual fluid and contrast material.
   c- Submucosal fat deposition.
   d- Pneumatosis.
II- Heterogeneous

B- Mixed attenuation (Common)

1- Large adenocarcinoma.
2- G.I. stromal tumour.
3- Mucinous adenocarcinoma.
Symmetry of bowel wall thickening

I- Symmetric
   A- Infections of the small & large bowel.
   B- Ulcerative colitis.
   C- Crohn’s disease.
   D- Radiation injury.
   E- Ischaemia.
   F- Bowel edema in cirrhosis.
   G- Lymphoma.
   H- Submucosal haemorrhage.

II- Asymmetric
   A- Adenocarcinoma
   B- G.I. stromal tumor.
Length of bowel wall thickening

I. Focal ( < 10 cm)
   A. Common:
      1. Diverticulitis, appendicitis.
      2. Adenocarcinoma.
   B. Uncommon
      1. Lymphoma.
      2. T.B.

II. Segmental ( 10- 30 cm)
   A. Common
      1. Lymphoma.
      2. Crohn’s disease.
      3. Infectious ileitis.
      4. Radiation.
      5. Submucosal haemorrhage.
      6. Ischaemia.
   B. Uncommon
      S.L.E.
III- Diffuse

A- Common

1- U.C.
2- Infectious enterocolitis.
3- Edema from low protein & cirrhosis.
4- S.L.E.

B- Uncommon: ischaemia.
Morphologic criteria aiding interpretation of CT scans in intestinal disease

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Benign</th>
<th>Malignant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edges</td>
<td>Tapered</td>
<td>Heaped up</td>
</tr>
<tr>
<td>Thickness</td>
<td>-Uniform</td>
<td>-Variable</td>
</tr>
<tr>
<td></td>
<td>-Symmetric</td>
<td>-Asymmetric</td>
</tr>
<tr>
<td></td>
<td>-Thinner</td>
<td>-Thicker</td>
</tr>
<tr>
<td>Valvulae conniventes or haustration</td>
<td>Present</td>
<td>Absent</td>
</tr>
</tbody>
</table>
Deposition of fat in submucosa - chronic ulcerative colitis.
Target" sign ulcerative colitis. Mild wall thickening with classic target appearance and inner enhancement of mucosa (short white arrow) and outer enhancement of muscular layer (long white arrow) surrounding low-attenuation edematous submucosa (black arrow).
acute ulcerative colitis. The thickened wall of the rectosigmoid segment demonstrates uniform increased enhancement similar to the attenuation of the external iliac vein. Pericolonic vessels are dilated (white arrow).
Accordion sign - *Clostridium difficile* colitis. Marked thickening of haustra (arrowheads). Barium (arrow) trapped between thickened haustra mimic appearance of accordion.
Focal asymmetrically thickened ulcerated mass (arrow) on nondependent wall of rectum. Biopsy revealed rectal adenocarcinoma.
Water halo sign in pseudomembranous colitis. On an intravenous contrast-enhanced CT scan, the thickened inner layer of the rectosigmoid (straight arrows) is surrounded by a thicker outer layer (curved arrows).
Case 1: Gastric Carcinoma With Hepatic Metastases
Case 2: Gastric carcinoma
Case 3: Small bowel lymphoma
Case 4: Ascending Colonic Carcinoma
Case 5: Gastric & Duodenal Lymphoma
Case 6: Rectal Carcinoma
Case: Rectal carcinoma
Case 7: Intestinal Lymphoma
Case 8: Gastric & Duodenal Lymphoma
Case 9: Ascending Colonic Carcinoma
Case 10: Carcinoma Transverse Colon
Case 11: Ileal lymphoma
Case 12: Schwannoma of Vagus Nerve of the Stomach.
Case 13: Crohn’s disease with Mesenteric abscess
Case 14: Crohn's disease with Mesenteric abscess
Case 15: CT Scan
S.M.V.T. With intestinal congestion
Case 16: Cecal Carcinoma with Hepatic Metastases.
Case 17: CT Scan
Gastric varices
بہلوں وطریقہ خیرا

بہلوں وطریقہ خیرا