Role of CT-colonography in early follow-up of acute complicated diverticulitis

Bassi M, Scagliairini L, Tilli M, Anania G, Agresta F, Rizzati R, Benea G; Ferrara/IT

2nd INTERNATIONAL SYMPOSIUM
Diverticular Disease of the colon
Rome, April 8th - 9th, 2016
ACUTE COMPLICATED DIVERTICULITIS (ACD)

Approximately 10-25% of patients with sigmoid diverticulosis will develop acute diverticulitis with complications.

Complicated diverticulitis refers to the clinical presentation of acute diverticulitis with inflammatory manifestations:
- purulent or feculent peritonitis
- obstruction
- perforation
- phlegmon and/or abscess formation

American College of Radiology
ACR Appropriateness Criteria®

Clinical Condition: Left Lower Quadrant Pain — Suspected Diverticulitis

Variant 1: Typical clinical presentation for diverticulitis, suspected complications or atypical presentations.

<table>
<thead>
<tr>
<th>Radiologic Procedure</th>
<th>Rating</th>
<th>Comments</th>
<th>RRL*</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT abdomen and pelvis with contrast</td>
<td>9</td>
<td>For this procedure oral and/or colonic contrast may be helpful for bowel luminal visualization.</td>
<td>⭐⭐⭐⭐⭐</td>
</tr>
<tr>
<td>CT abdomen and pelvis without contrast</td>
<td>6</td>
<td></td>
<td>⭐⭐⭐⭐⭐</td>
</tr>
<tr>
<td>CT abdomen and pelvis without and with contrast</td>
<td>5</td>
<td></td>
<td>⭐⭐⭐⭐⭐</td>
</tr>
<tr>
<td>MRI abdomen and pelvis without contrast</td>
<td>5</td>
<td></td>
<td>O</td>
</tr>
<tr>
<td>MRI abdomen and pelvis without and with contrast</td>
<td>5</td>
<td>See statement regarding contrast in text under “Anticipated Exceptions.”</td>
<td>O</td>
</tr>
<tr>
<td>X-ray contrast enema</td>
<td>4</td>
<td></td>
<td>⭐⭐⭐⭐</td>
</tr>
<tr>
<td>US abdomen transabdominal graded compression</td>
<td>4</td>
<td></td>
<td>O</td>
</tr>
<tr>
<td>X-ray abdomen and pelvis</td>
<td>4</td>
<td></td>
<td>⭐⭐⭐⭐</td>
</tr>
<tr>
<td>US pelvis transvaginal</td>
<td>2</td>
<td></td>
<td>O</td>
</tr>
</tbody>
</table>

Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate

*Relative Radiation Level
MANAGEMENT OF ACD: LITERATURE

No guidelines
Insufficient literature in management
Controversial issues in management
ACD & FOLLOW-UP

- Computered Tomography (CT)
- Optical Colonoscopy (OC)
- CT Colonography (CTC)
  - Ultrasound (US)
  - Magnetic Resonance (MRI)
ACD & FOLLOW-UP: OC

TIMING: within 3-6 months following the acute episode

CONCLUSIONS

- After an episode of acute diverticulitis, OC should not be systematically indicated

- OC is proposed to rule out differential diagnosis and to detect associated conditions, such as advanced adenomas or cancer
ACD & FOLLOW-UP: CTC vs CT/OC

1. Precise extension of disease (length of interested segment)
2. Wall thickening!
3. Entire colon evaluation (other colonic findings: polyps), especially when OC is incompleted or controidicated
4. Low-dose protocol (vs. CT)
5. Higher tolerability than OC
6. ICM? (only in selected cases)

7. D.D ??

References:

CT colonography versus colonoscopy in the follow-up of patients after diverticulitis - a prospective, comparative study.
Hiem H, Jonas E, Holmstrom B, Jorgensen T, Melgren A, Johansson C.

CT-colonography in the follow-up of acute diverticulitis: patient acceptance and diagnostic accuracy.
Chabot A, Smedh K, Nilsson S, Stenson M, Pahlman L.

Chronic diverticulitis vs. colorectal cancer: findings on CT colonography.
Gryspeerdts S, Lefere P.
Purpose of the study

To investigate value of CT colonography (CTC) in the early follow-up after acute complicated diverticulitis in order to evaluate the best therapeutic approach.
Methods and materials
(April 2009 – August 2014)

66 patients (aged 38-91 yo)

Episode of acute diverticulitis, CT-diagnosed in emergency room and medically treated
## Modified Hinchey Classification

<table>
<thead>
<tr>
<th>Modified Hinchey classification by Wasvary et al. [6]</th>
<th>CT findings by Kaiser et al. [20]</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Mild clinical diverticulitis</td>
</tr>
<tr>
<td>Ia</td>
<td>Confined pericolic inflammation or phlegmon</td>
</tr>
<tr>
<td>Ib</td>
<td>Pericolic or mesocolic abscess</td>
</tr>
<tr>
<td>II</td>
<td>Pelvic, distant intraabdominal, or retroperitoneal abscess</td>
</tr>
<tr>
<td>III</td>
<td>Generalized purulent peritonitis</td>
</tr>
<tr>
<td>IV</td>
<td>Generalized fecal peritonitis</td>
</tr>
</tbody>
</table>

Onset CECT results

- HS I (46%)
- HS II (33%)
- HS III (21%)
- HS IV (0%)

66 PATIENTS
6-8 weeks later...

CTC follow-up
Low preparation

✓ **Bowel cleansing:**
   3 days before: low fiber diet (3rd day, only a fluid diet)

✓ **Bowel purgation:**
   1 sachet of polyethylene glycol (Movicol) in a glass of water during the 3 days of diet

✓ **Fecal Tagging:**
   1) 50 ml of Iodine contrast medium in ½ L of water:
      *3 HOURS BEFORE THE EXAMINATION*

   2) 30 ml of Iodine contrast medium ½ L of water:
      *THE EVENING BEFORE and THE SAME DAY OF THE EXAMINATION (2 h before)*
CTC protocol

- 256 row MDCT
- i.v. administration of spasmyolytic medication (without clinical contraindications)
- CO2 insufflation using automatic insufflator
- Low dose protocol (PRONE AND SUPINE POSITION)
- ICM (only in selected cases)
- Image analysis: primary 2D and then 3D approach + CAD
CTC follow-up findings

46 patients downstaged:
  • CTC quality was good in 59/66 patients (89%)
  • 100% of HS I
  • 36% of HS II
  • No CTC complications

20 patients not downstaged:
  • Additional findings:
    • 4 unknown polyps > 6 mm
    • 64% of HS II
    • 43% of HS III
  • 57% of HS III
    - Kept a conservative treatment
  • Underwent Laparoscopic / open surgery

(17/7 cases was suboptimal due to diverticular disease or colonic stenosis)
48 yo male, neutrophilia, left iliac fossa pain

BASELINE CECT

FOLLOW-UP CTC

Downstaging

Mild clinical diverticulitis

Diverticuli ± colonic wall thickening
OC: follow-up

DIVERTICULAR DISEASE
50 yo female, fever, acute hypogastric pain, known diverticular disease

BASELINE CECT

FOLLOW-UP CTC

Downstaging

0  Mild clinical diverticulitis  Diverticuli ± colonic wall thickening
39 yo male, fever, acute abdominal pain and diarrhea.

Downstaging, but...
RECURRENCE (5 months later)
67 yo female, acute left iliac fossa pain, constipation, neutrophilia, fever.

Downstaging

| 0 | Mild clinical diverticulitis | Diverticuli ± colonic wall thickening |
69 yo male, fever, neutrophilia, left fossa pain

"Wait and see"
CONCLUSIONS

CTC proved to be a safe, well accepted and accurate technique in short-term follow-up of patients recovering from an episode of acute complicated diverticulitis, re-evaluating the severity of the disease and colonic/extracolonic findings

Redefining therapeutic planning
Improving short-term outcome
Thank you