Mimickers of Crohn's disease: findings at CT peroral enterography.

Poster No.: C-2259
Congress: ECR 2015
Type: Educational Exhibit
Authors: S. De Fronzo¹, L. Camera¹, E. Calabrese², A. Rispo¹, P. De Felice¹, I. Liccardo¹, P. P. Mainenti¹, F. Castiglione¹, A. Brunetti¹; ¹Naples/IT, ²Nocera Inferiore/IT
Keywords: Parasites, Inflammation, Infection, Contrast agent-oral, Contrast agent-intravenous, CT, Gastrointestinal tract, Abdomen
DOI: 10.1594/ecr2015/C-2259

Any information contained in this pdf file is automatically generated from digital material submitted to EPOS by third parties in the form of scientific presentations. References to any names, marks, products, or services of third parties or hypertext links to third-party sites or information are provided solely as a convenience to you and do not in any way constitute or imply ECR's endorsement, sponsorship or recommendation of the third party, information, product or service. ECR is not responsible for the content of these pages and does not make any representations regarding the content or accuracy of material in this file.

As per copyright regulations, any unauthorised use of the material or parts thereof as well as commercial reproduction or multiple distribution by any traditional or electronically based reproduction/publication method ist strictly prohibited.

You agree to defend, indemnify, and hold ECR harmless from and against any and all claims, damages, costs, and expenses, including attorneys' fees, arising from or related to your use of these pages.

Please note: Links to movies, ppt slideshows and any other multimedia files are not available in the pdf version of presentations.

www.myESR.org
Learning objectives

To describe CT findings of rare pathological conditions which can mimic Crohn's disease on both clinical and radiological grounds and to identify CT features that can allow a correct differential diagnosis in the clinical setting of acute bowel disease.
Background

As peroral CT enterography is currently regarded as the technique of choice in the evaluation of small bowel disease in the acute setting [1], knowledge of CT findings of pathological conditions which can mimic Crohn's disease may be helpful in the clinical practice. Indeed, while cross-sectional imaging features of either stricturing or fistulizing Crohn's disease are fairly characteristics they may be not specific [2]. A number of miscellaneous disorders such as sclerosing mesenteritis, infective and/or auto-immune enteritis as well as parasitic diseases such as anisakiasis can indeed manifest with cross-sectional imaging findings mimicking Crohn's disease [3-7].
Findings and procedure details

Six patients (4M, 2F; 53 ± 19 yrs, range 23-75 yrs) with a clinical and/or ultrasonographic suspicion of Crohn's disease underwent a contrast-enhanced 64-rows multi-detector peroral CT enterography performed with a detector configuration of 1x32 mm; tube speed 36 mm/s; rotation time 0,75 s; helical pitch=27; section thickness = 5mm; 120 kVp, AEC (NI = 12.5). All patients were given 1500-1800 cc of Polyethylene-Glycol (PEG) solution administered orally 45-60' prior to the CT examination followed by ingestion of 500 ml 10-15 minutes prior to CT acquisition, according to a fractioned protocol [8].

Contrast-enhanced MDCT was then performed in the venous phase (70-90") after i.v. injection of 110-170 cc (2 cc/Kg) of non ionic iodinated (370 mgI/ml) contrast-media. In two patients, a delayed acquisition at 3-5' was also performed with the same scanning parameters.

All patients had MDCT findings consistent with the diagnosis of Crohn's disease such as segmental wall thickening with mural stratification and/or engorgement of vasa recta and/or mesenteric proliferation and/or enlarged mesenteric lymph-nodes (Figs.1-4). Two patients underwent surgery with a pathologic diagnosis of a sclerosing mesenteritis and Anisakiasis respectively, whereas colonoscopy, push-type enteroscopy (n=2) and gastro-duodenoscopy with biopsies were performed in the other four patients with final histological diagnoses of collagenous entero-colitis, infective enteritis, Whipple and celiac disease, respectively.

**Sclerosing mesenteritis** is a complex inflammatory disorder of the mesentery of unknown origin [3]. The CT appearance of sclerosing mesenteritis can vary from an increased attenuation of the mesentery, especially at its root, to a solid soft-tissue mass which characteristically spares the fat around the mesenteric vessels producing the "fat ring sign"[9]. The mesenteric lesion may have a "mass effect" displacing the adjacent small bowel loops and can show a "tumoral pseudo-capsule" represented by a peripheral band of soft tissue limiting the uninvolved mesentery from the inflamed fat [10]. Enlarged mesenteric or retroperitoneal lymph nodes may also be present.

In our case, CT showed a wide fibro-fatty proliferation of the mesentery with displacement of the adjacent small bowel loops and associated enlarged lymph-nodes (Fig. 1 a-c). A segmental wall thickening with mural stratification could also be appreciated at the level of some jejunal as well as proximal ileal loops (Fig. 1a).

**Anisakiasis** is a gastro-intestinal infection acquired after ingestion of raw fish infested with the larvae of the roundworm Anisakis simplex or Pseudoterranova decipiens [11]. While the parasite most commonly invades the gastric mucosa [12], small bowel
involvement has also been described [4,13,14]. However, CT findings of anisakiasis are not specific and include concentric wall thickening and mural stratification with a moderate (< 10 cm) length involvement of the small bowel and a tendency to affect the ileum [4, 13]. Small bowel involvement can also results in a small bowel obstruction requiring surgery [14]. In our case, an organized fluid collection could be appreciated in the root of the mesentery (Fig. 2a). A segmental wall thickening of an adjacent ileal loop was also clearly depicted (Fig. 2b) whereas stretching and stiffening of the vasa recta could also be observed on the coronal plane (Fig. 2c).

**Infectious enteritis** caused by opportunistic pathogens are frequent causes of acute abdomen in immunocompromised patients [5]. In particular, intestinal inflammation mimicking Crohn's disease, has been described in patients with X-linked agammaglobulinemia [6]. These enteritis are generally caused by enterovirus and involve the terminal ileum manifesting with non specific findings such as thickening of the bowel wall and evidence of multiple stenoses at cross-sectional imaging [15].

In our patient, peroral CT enterography showed a segmental wall thickening of a jejunal loop along with a mural stratification and narrowing of the lumen with multiple enlarged mesenteric lymph-nodes (Fig.3).

**Collagenous enterocolitis** is a rare cause of watery diarrhea, characterized by a subepithelial collagenous deposition in the bowel wall at histological examination. Colon is the typical site, however an involvement of small bowel has also been described [16]. While cross-sectional imaging findings are usually normal, minor mucosal changes can occasionally be seen at endoscopy [17]. In our case, peroral CT enterography showed a segmental involvement of multiple small bowel loops with extensive wall thickening and narrowing of the lumen along with engorgement of mesenteric vessels (Fig. 4).
Fig. 1: Contrast-enhanced peroral MDCT enterography: axial (a,b) and coronal reformatted (c) 5 mm thick images of a 61 yr old man are shown. In (a) some proximal small bowel loops show mild thickening as well as mural stratification of the walls which appeared stretched (white arrow). A wide fibro-fatty proliferation of the mesentery with multiple enlarged lymph-nodes (head-arrows) can also be appreciated both in the axial(b) as well as in the coronal plane (c) where displacement of bowel loops is best depicted. Histological examination performed on the surgical specimen revealed a sclerosing mesenteritis.

© RADIOLOGY, UNIVERSITY "FEDERICO II" - Naples/IT
Fig. 2: Contrast-enhanced peroral MDCT enterography: axial (a,b) and coronal reformatted (c) 5 mm thick images of a 55-yrs-old woman are shown. In (a) and (c) an organized fluid collection is depicted in the root of the mesentery (arrow-head) with stretching of the adjacent small bowel loops. In (b) a segmental wall thickening with mural stratification can also be appreciated (circle). In (c) stiffening of vasa recta ("comb sign") can also be observed (white arrow). A small-bowel Anisakiasis was revealed by the pathological analysis of the surgical specimen.

© RADIOLOGY, UNIVERSITY "FEDERICO II" - Naples/IT
Fig. 3: Contrast-enhanced peroral MDCT enterography: axial (a,b) and coronal reformatatted (c) 5 mm thick images of a 23 yr old boy with x-linked agammaglobulinemia are shown. In all images extensive wall thickening with mural stratification and narrowing of the lumen can be appreciated at the level of the jejunum (arrows) with associated enlarged lymph nodes, best depicted on the coronal plane (circle). Histological analysis performed on biopsies specimens revealed an infectious enteritis.

© RADIOLOGY, UNIVERSITY "FEDERICO II" - Naples/IT
Fig. 4: Contrast-enhanced peroral MDCT enterography: axial (a,b) and coronal reformatted (c) 5 mm thick images of a 76-yrs-old woman are shown. In all images extensive wall thickening with mural stratification and narrowing of the lumen can be appreciated at the level of the ileum (arrow-heads) as well as the colon (arrows). Histological analysis performed on biopsies specimens revealed a collagenous enterocolitis.

© RADIOLOGY, UNIVERSITY "FEDERICO II" - Naples/IT
Conclusion

While segmental wall thickening, mural stratification, narrowing of the lumen and engorgement of the vasa recta are commonly observed in patients with Crohn's disease [2], they represent non specific findings which can also be appreciated in a wide variety of GI tract disorders [3-7].

While an accurate differential diagnosis cannot always be feasible by imaging criteria alone, the proximal location of the affected bowel which was observed both in the sclerosing mesenteritis (Fig. 1) and in the infective enteritis (Fig. 3) as well as the sparing of the terminal ileum which could be appreciated in the case of small bowel Anisakiasis (Fig. 2) should have been raised the possibility of alternative diagnoses. In particular, the wide proliferation of the mesentry which we observed in sclerosing mesenteritis represent a fairly characteristic finding of the disease along with the stretching of the adjacent small bowel loops (Fig. 1) whereas the organized fluid collection observed in the root of the mesentery in the case of Anisakiasis (Fig. 2) is a not specific finding indicating a bowel wall perforation. This however is a rather common complication of the parasitic disease when localized to the small bowel [13] and it can also leads to a small bowel obstruction [15]. In the case of the infectious enteritis, aside from the atypical proximal location, only the clinical history of immunodeficiency should have been raised the possibility of such an alternative diagnosis as cross-sectional imaging findings (Fig. 3) overlapped considerably with those considered typical of Crohn's disease [2]. Lastly, even on retrospective analysis, CT findings of the collagenous entero-colitis (Fig. 4) are to be considered undistinguishable from those of Crohn's disease [2].

Various unusual pathological entities may mimick Crohn's disease at cross-sectional imaging and should therefore be considered in the differential diagnosis in the acute setting.
Personal information

Simona De Fronzo, Emanuela Calabrese, Paola De Felice, Immacolata Liccardo: Radiology residents at the University "Federico II" - Naples, ITALY

Luigi Camera and Arturo Brunetti: Department of Advanced Biomedical Sciences - Diagnostic Imaging Section - University "Federico II" - Naples, ITALY

Antonio Rispo and Fabiana Castiglione: Department of Gastroenterology - University "Federico II" - Naples, ITALY

Pier Paolo Mainenti: Institute of Bioimages and Biostructures - CNR - Naples, ITALY
References


