

Bowel wall thickening: inquire or not inquire? Our guidelines

D. IADICOLA, P. DE MARCO, S. BONVENTRE, E.M. GRUTTA, G. BARLETTA,
L. LICARI, G. GULOTTA

SUMMARY: Bowel wall thickening: inquire or not inquire? Our guidelines.

D. IADICOLA, P. DE MARCO, S. BONVENTRE, E.M. GRUTTA, G. BARLETTA, L. LICARI, G. GULOTTA

Introduction. Bowel wall thickening is not an uncommon finding among patient undergoing abdomen CT scan. It may be caused by neoplastic, inflammatory, infectious or ischaemic conditions but also be a normal variant. Although specific radiologic patterns may direct to a precise diagnosis, occasionally misidentification may occur. Thus, in the absence of guidelines, further and not always needed diagnostic procedures (colonoscopy, esophagogastroduodenoscopy or capsule endoscopy) are performed.

Patients and methods. We conducted a retrospective study on data collected from May 2016 to June 2017. We selected 40 adult patients, admitted in Emergency Department with “abdominal

pain” and undergone an abdomen CT scan, in which bowel wall abnormalities were founded.

Results. 75% patients were found to have a benign condition vs 25% a malignant condition. In the stomach group, 50% were found to have a neoplasm, whilst 33.3% presented an aspecific pattern and 16.7% had an inflammatory disease. In the small bowel cluster, 33.3% patients had an ischaemic disease, 33.3% an aspecific pattern, 22.2% an inflammatory disease and 11.1% was diagnosed with cancer. In the colon group, 36% had an inflammatory disease, 24% a colon cancer, 24% an aspecific pattern and 16% an ischaemic condition.

Conclusions. We recommend to perform a further endoscopic procedure to all patients with gastric or colonic wall abnormalities on CT scan, on the basis of growing rate of cancer and IBD. Capsule endoscopy should be taken into account in patients with severe symptoms and after a previous negative endoscopic examination.

KEY WORDS: Bowel wall thickening - Abdomen CT - Colon - Stomach - Small bowel - Cancer - Inflammatory Bowel Disease.

Introduction

Due to the widespread and large use of multidetector CT (computed tomography) and its high sensitivity, thickening of the stomach, small bowel or colonic wall is a quite common finding among patients undergoing abdomen scan. Sometimes wall abnormalities may also be detected as an accidental finding on a routine CT. They may be caused by neoplastic, inflammatory, infectious or ischaemic conditions but also be a normal variant (1). Specific radiologic patterns are helpful for the differential diagnosis. On the one hand, focal, irregular or asymmetric thickening and frequently associated to satel-

lite lymphadenopathy. Whilst fat stranding, diffuse, regular and symmetric pattern are commonly associated to benign conditions (2). Although these features are typical, multiple pitfalls may affect the evaluation causing ambiguity (3) and occasionally conceal neoplasms. Thus, in the absence of guidelines, further diagnostic procedures (as colonoscopy or esophagogastroduodenoscopy) are often performed, though not always needed, increasing costs and delaying discharge.

Patients and methods

We conducted a retrospective study on data collected from May 2016 to June 2017, at Department of General and Emergency Surgery in “Paolo Giaccone” Teaching Hospital (Palermo, Italy). We selected 40 adult patients, admitted in Emergency De-

Department of Surgical, Oncological, and Stomatologic Disciplines (Di. Chir. On. S.), University of Palermo, Palermo, Italy

Corresponding author: Dario Iadicola, e-mail: dario.iadicola@hotmail.it

partment with “abdominal pain” and undergone an abdomen CT scan (without contrast or intravenous contrast-enhanced), in which bowel wall abnormalities were founded. The first radiologic diagnosis was later confirmed with an endoscopic procedure (esophagogastroduodenoscopy or colonoscopy), or surgery with histologic samples. Exclusion criteria were acute appendicitis, obvious clinical diagnosis, thickening not further investigated, previous diagnosis of neoplasm, previous diagnosis of IBD (Inflammatory Bowel Diseases), incomplete colonoscopy or inadequate bowel preparation. No selection bias was made according to age, sex and race. Patients were classified according to the site of finding and benign or malignant condition (confirmed with a endoscopic procedure, surgery and/or histologic samples).

Results

We selected 40 patients - 16 women (40%) and 24 men (60%) - all aged from 19 to 89 (mean age 65.3 y.o.). They were classified according to the site of finding (stomach, small bowel and colon) and benign (inflammatory, ischaemic or aspecific pattern) or malignant condition (neoplasm). The first radiologic diagnosis was later confirmed with an endoscopic procedure or surgery with histologic samples. In the aspecific cluster, we grouped all the thicken-

ings not confirmed to a later examination (no abnormalities) or aspecific or uncertain conditions (e.g. mucosal oedema). On 40 CT scan performed, 20 were executed without contrast and 20 implemented with intravenous contrast with equal distribution in all the examined districts. 30 patients were found to have a benign condition (75%) - 30% inflammatory; 27.5% aspecific (uncertain significance); 17.5% ischaemic - vs 10 a malignant condition (25%) (Figure 1). Colon was the most frequently involved organ (62.5%), followed by small bowel (22.5%) and stomach (15%) (Figure 2). In the stomach group (6 patients), 3 people (50%) were found to have a neoplasm, whilst 2 people (33.3%) presented an aspecific pattern. Only 1 patient (16.7%) had an inflammatory disease (gastritis). The small bowel cluster included 9 patients, most of which were found to have a benign condition - 3 patients ischaemic disease (33.3%) vs 3 an aspecific pattern (33.3%) vs 2 an inflammatory disease (22.2%). One single patient (11.1%) was diagnosed with duodenal adenocarcinoma. In the colon group (25 patients), 9 people (36%) had an inflammatory disease (acute diverticulitis or chronic flogosis) vs 4 (16%) an ischaemic condition and 6 (24%) an aspecific pattern.

Instead 6 patients (24%) were found to have a colon cancer, in line with literature data (4); 1 of these was previously diagnosed with acute diverticulitis. In summary, colon was the most frequently

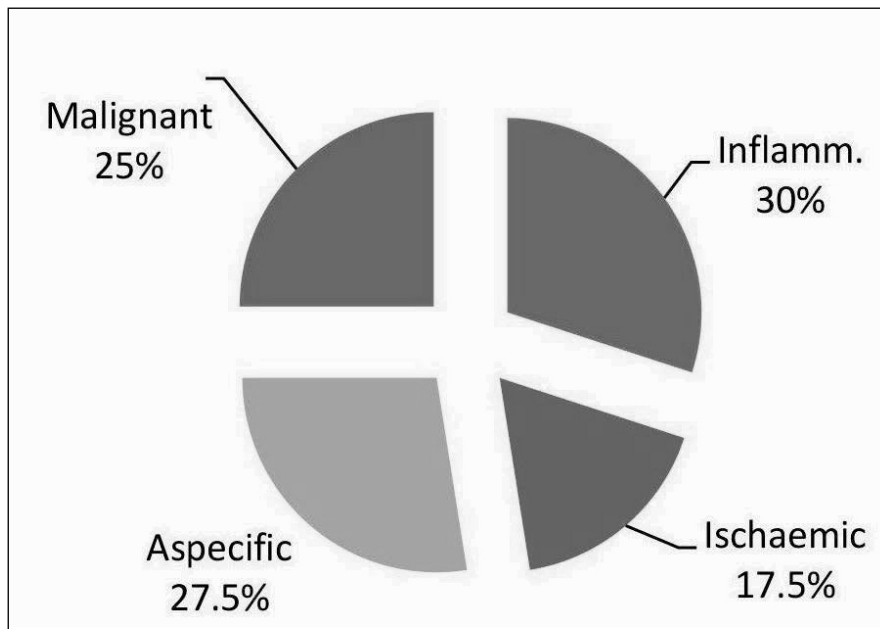


Figure 1. Percentage of thickenings by typology.

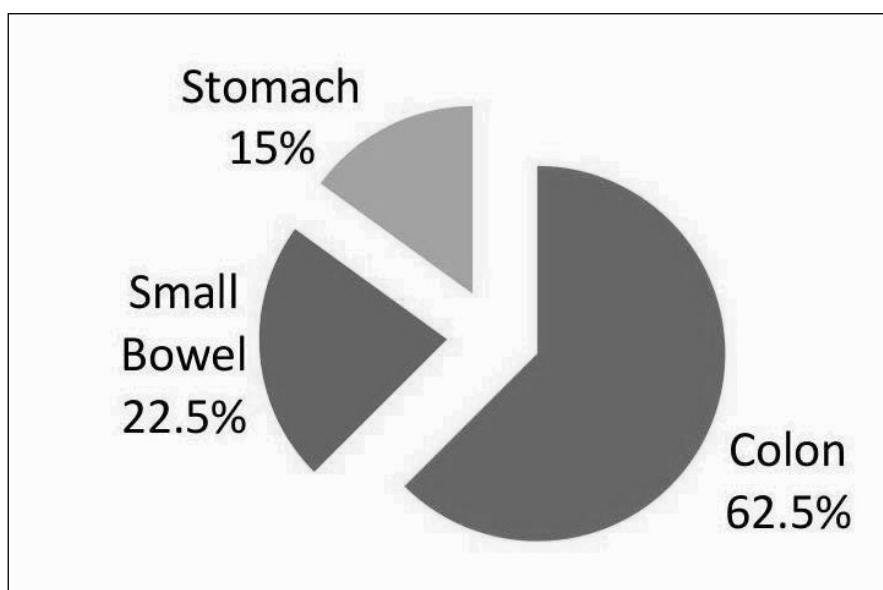


Figure 2. Percentage of thickenings by site.

TABLE 1. SITE AND TYPOLOGY OF FINDINGS

	<i>Benign</i>			<i>Malignant</i>	<i>n</i>
	<i>Inflammatory</i>	<i>Ischaemic</i>	<i>Aspecific</i>		
Stomach	1 (16.7%)	0 (0%)	2 (33.3%)	3 (50%)	6
Small Bowel	2 (22.2%)	3 (33.3%)	3 (33.3%)	1 (11.1%)	9
Colon	9 (36%)	4 (16%)	6 (24%)	6 (24%)	25
Total	12 (30%)	7 (17.5%)	11 (27.5%)	10 (25%)	40

involved organ (mostly by inflammatory disease); in the small bowel group most are aspecific or ischaemic condition; whilst stomach was the organ with the highest ratio of malignancy on total thickenings (Tab. 1).

Discussion

Due to the widespread and large use of CT (computed tomography), bowel wall thickening is a quite usual condition among patients undergoing abdomen CT scan. The introduction of multidetector technology and intravenous contrast enhances the detection

of mural abnormalities. As highlighted in our study, it seems that even if the sensitivity has increased, the specificity seems to be lowered. Most of wall thickening detected (27.5%) were in fact aspecific and remained of uncertain significance since no abnormalities were later confirmed. Overall significant pathology are highlighted in 72.5% of patients: an acute or chronic inflammatory condition was at the base of the majority of the findings. Malignant conditions were founded in 25% of patients (mostly colonic).

Although radiological patterns are typical, we pointed out how these criteria are not always fully satisfied. Thus it can sometimes happen that a malignant condition may not be detected or misunder-

stood, particularly at the beginning. The lack of consensus and clinical guidelines represents a challenge for the clinicians, which are urged to request unnecessary examinations, discharge. Whereas our data shows a high likelihood of malignancy in the stomach and colon district, especially in patients >50 y.o., an esophagogastroduodenoscopy or colonoscopy is highly recommended in these patients on the basis of our experience and world growing rate of cancer, in line with many studies (3-6). Furthermore we recommend a colonoscopy to all young patients, with colon wall thickening on the basis of our experience and world growing rate of IBD (6).

Small bowel investigation by capsule endoscopy should be only proposed to patients with severe symptoms (e.g. rectal bleeding) and when an early endoscopic procedure (colonoscopy or esophagogastroduodenoscopy) is negative, due to its high cost.

Conclusions

Although almost one third of wall thickening are aspecific and are not confirmed later, we recommend to perform a further endoscopic procedure to all patients with gastric or colonic wall abnormalities on CT scan, on the basis of growing rate of cancer and IBD. Capsule endoscopy should be taken into

account in patients with severe symptoms and after a previous negative endoscopic examination. Other larger scale studies are needed to compare the significant pathology rate, the costs, the true incidence of malignancy and the need of performing further endoscopic procedures.

References

1. Macari M, Balthazar EJ. CT of bowel wall thickening: significance and pitfalls of interpretation. *AJR Am J Roentgenol.* 2001 May;176(5):1105-16.
2. Fernandes T, Oliveira MI, Castro R, Araújo B, Viamonte B, Cunha R. Bowel wall thickening at CT: simplifying the diagnosis. *Insights into Imaging.* 2014 Feb;5(2):195-208.
3. Bleibel W, Guerrero JE, Kim S, Leao L, Ghosh T, Kenney TJ Jr. The clinical significance of incidental computer tomography finding of gastrointestinal luminal wall thickening as evaluated by endoscopy. *Dig Dis Sci.* 2007 Jul;52(7):1709-1712.
4. Moraitis D, Singh P, Jayadevan R, Cavten CG. Colonic wall thickening on computed tomography scan and clinical correlation. Does it suggest the presence of an underlying neoplasia? *Am Surg.* 2006 Mar;72(3):269-71.
5. Cai Q, Baumgarten DA, Affronti JP, Waring JP. Incidental findings of thickening luminal gastrointestinal organs on computed tomography: an absolute indication for endoscopy. *Am J Gastroenterol.* 2003 Aug;98(8):1734-1737.
6. Wolff JH, Rubin A, Potter JD, Lattimore W, Resnick MB, Murphy BL, Moss SF. Clinical significance of colonoscopic findings associated with colonic thickening on computed tomography: is colonoscopy warranted when thickening is detected? *J Clin Gastroenterol.* 2008 May-Jun;42(5):472-475.