



Research Article

ILEOCOLONIC THICKENING ON CT SCAN: DOES COLONOSCOPIC EVALUATION NEEDED?

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ARTICLE INFO

Article History:

Received 15th November, 2018

Received in revised form 7th

December, 2018

Accepted 13th January, 2019

Published online 28th February, 2019

Key words:

Colonoscopy; ileocolonic thickening;
Abdominal computed tomography

ABSTRACT

Background: ileocolonic thickening is a commonly reported finding on diagnostic abdominal pelvic computed tomography (CT) in patients with history of lower gastrointestinal symptoms. The significance of this nonspecific finding is not clear.

Aim: To establish clinicopathological diagnosis in ileocolonic thickening on CT.

Methods: To identify whether colonic wall thickening identified at CT consistently warrants colonoscopy, consecutive colonoscopies performed at tertiary care centre in southern India from November 2016 to January 2018. Clinical, radiologic, Colonoscopic, and histologic data were obtained from medical records.

Results: A total of 90 patients met the inclusion criteria of our study. Of those, 88% had various identifiable pathologies on colonoscopy. Only 12% had normal colonoscopic findings. CT Abdomen prior to colonoscopy shows following diagnosis: tumor (n = 21, 27.6%), ischemic colitis (n = 15, 19.7%), diverticulitis (n = 2, 0.02%), tuberculosis (TB) (n = 10, 13.1%). After colonoscopy and biopsy, no abnormality detected in (12%, n = 9), adenocarcinoma (15.6%, n = 12), adenoma (6%, n = 4), ulcerative colitis (9%, n = 6), nonspecific colitis (32.4%, n = 24), Crohn's disease (5.3%, n = 3), and hyperplastic polyp (3%, n = 2), Ischemic colitis (6.5%, n=5), radiation-induced colitis (10%, n=7) infective colitis and TB (8%, n=9) Inflammatory bowel disease (IBD), adenocarcinoma of colon and infectious colitis were the most common causes of ileocolonic thickening.

Conclusion: we recommend that patients who are symptomatic and are found to have BWT on CT should undergo evaluation with colonoscopy to determine the underlying cause and help better direct patient care. The combination of CT and colonoscopy results in greater accuracy.

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INTRODUCTION

Computed tomography (CT) is one of the common modality used to evaluate various lower gastrointestinal symptoms including abdominal pain, bleeding per rectum, alteration in bowel habit, constipation and weight loss. [1] Ileocolonic thickening is a common finding on abdominal-pelvic CT, especially in patients who present with diarrhoea and altered bowel habit. CT criteria used to assess a thickened colonic wall, include the following: degree of thickening, pattern of attenuation, symmetry, focal or diffuse involvement, and associated extraluminal abnormalities, such as adjacent fat stranding or lymphadenopathy. [2,3] Presence of ileocolonic thickening on CT is a frequent reason for gastroenterologist consultation in our institute. All these cases were further evaluated by colonoscopy. The clinical significance of ileocolonic thickening has not been clearly established.

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In our country, no specific guidelines exist for the colonoscopic evaluation of patients with colonic-wall thickening found on CT. Previous reports that evaluated the clinical relevance of colonic thickening reported on CT have been limited by small patient numbers and heterogeneous patient populations [1, 4-6]. Most of these studies evaluated ileocolonic thickening as an incidental finding on CT scan.

Ileocolonic thickening has been reported to mainly reflect inflammatory bowel disease (IBD), intestinal tuberculosis, bowel ischemia, or colorectal carcinoma, intestinal lymphoma, infectious colitis [7-9]. However, the normal thickness of the ileocolonic wall can vary significantly, depending on the degree of bowel distension. With the colon distended, the wall should be less than 3-mm thick. BWT may be erroneously reported as abnormal on CT in the setting of bowel collapse or partial distension. Also, due to fluid, faecal contents, or redundant colon, BWT can be difficult to determine. Some researchers have used a measurement of 2-3 mm as the upper limit of normal bowel-wall thickness, [10,11] whereas others have

suggested the presence of any perceptible thickening as abnormal.^[12]

To our knowledge, there are only few studies in the recent literature that addresses the management and clinical impact of ileocolonic wall thickening found on CT.^[13] A common dilemma facing clinicians is how best to follow up a CT report describing colonic wall thickening^[14-16]. In short, how confident can the referring clinician be with the radiologist's diagnosis to explain a new finding of colonic thickening. To support the radiologic diagnosis, colonoscopy is most often the next investigation of choice. However, endoscopic capacity may be limited, and some endoscopists are concerned that limited resources are being focused unnecessarily on these cases. We investigated how strongly predictive CT is for diagnosing colonic pathology to determine whether a finding of colon wall thickening at CT consistently warrants subsequent colonoscopy.

MATERIALS AND METHODS

This retrospective observational study was carried for colonoscopy data from November 2016 to January 2018. Data for this study was collected from department of radiology, gastroenterology and pathology. Patients with ileocolonic thickening, both admitted and attending the outpatient clinic of the medical gastroenterology department of a large tertiary care referral centre in south India, was analysed. The demographic data and symptoms including altered bowel habit, diarrhoea (both acute and chronic), constipation, hematochezia, abdominal pain and unintended weight loss (defined as decrease of more than 5% of original body weight in three months) were recorded. Exclusion criteria included already diagnosed cases of ileocolonic diseases prior to CT scan including IBD (ulcerative colitis or Crohn disease), malignancy (e.g. CT for disease staging, follow-up) or ileocecal tuberculosis under treatment, diverticulitis. All the patients were scanned on third-generation multislice scanners and had received intravenous (IV) and the oral contrast. No strict definition of BWT exists in the literature and thus the description was based on the radiologist's interpretation on the CT report. The colonoscopy was carried out with a standard electronic videoendoscope by two experienced colonoscopists. Biopsy samples were analysed by experienced gastrointestinal pathologist. Histopathological evaluation was done, Haematoxylin & Eosin staining done. Ziehl & neelson stain were applied in all suspected ileocecal tuberculosis cases. Samples were separately cultured for tubercle bacilli in all suspected cases. The provisional CT diagnosis was classified as cancer, polyp, colitis, diverticular disease, tuberculosis, or miscellaneous. Analysis was performed to show CT and colonoscopy agreement with the final diagnosis after histology. Ethical committee approval was waived due to retrospective observational study design.

RESULTS

A total of 90 patients had ileocolonic thickening in CT scan. Out of these 76 patients were included in study. Drop out of 14 cases were due to incomplete colonoscopy (8 due to poor preparation and 6 due to technical failure). Selected cases had age ranges from 18 to 80 years with mean age of 48 years. Total patients having age more than 50 years were 32(42%). There were 34(45%) male. Demographic information of study population shown in Table 1.

Description of the symptoms and duration of illness of study population shown in table 2. Most of the patients had symptom onset within 6 months. Most common reason for abdominal CT scan was lower abdominal pain 51(68%), diarrhoea in 32(42%). Significant weight loss was present in 16(21%) of cases.

In our study, all the patients were symptomatic and underwent CT and colonoscopy for further analysis: 88 % of patients were found to have various endoscopic pathologies, whereas only 12% had a "normal" colonoscopy. CT Abdomen prior to colonoscopy shows following diagnosis: tumor (n = 21, 27.6%), ischemic colitis (n = 15, 19.7%), diverticulitis (n = 2, 0.02%), tuberculosis (TB) (n = 10, 13.1%) and diagnosis was unspecified in (n = 28, 36.6%). With respect to terminology on the radiology reports, we found that a description of "skip lesions" on CT (5%) was associated with a finding of IBD in every case. "Pancolitis" reported on CT (11%) was associated with an endoscopic finding of IBD in 45%, infection in 35%, and normal endoscopy in 20% of cases. The use of the term "stranding" (36%) in the presence of ileocolonic thickening was associated with many non-neoplastic endoscopic pathologic processes, including IBD (29%), infectious colitis (26%), and ischemia (15%) but was associated with a normal endoscopy in 26%. "Lymphadenopathy" was reported in 37% of CT cases and was associated with IBD (38%), infectious colitis (30%), or cancerous processes (15%), but a normal endoscopy also was found (15%).

After colonoscopy and biopsy, no abnormality detected in (12%, n = 9), adenocarcinoma (15.6%, n = 12), adenoma (6%, n = 4), ulcerative colitis (9%, n = 6), nonspecific colitis (32.4%, n = 24), Crohn's disease (5.3%, n = 3), and hyperplastic polyp (3%, n = 2), Ischemic colitis (6.5%, n=5), radiation-induced colitis (10%, n=7) infective colitis and TB (8%, n=9) (Fig. 1)

Colonoscopy was normal in 12% of cases but random biopsy from involved area as suggested by CT scan shows definitive diagnosis (Fig.2). In 85% of cases CT and colonoscopy were concurred with similar location. 34.2% pathology were shown distal to splenic flexure by both CT and colonoscopy, whereas in 42.8% showing pathology in transverse colon and ascending colon, rest 20% were in ileocecal region. In 3% of cases CT and colonoscopy were not showing similar location for pathology.

Table 1 Demographic information of study population

Patients included	90
colonoscopy performed	76 (84.4%)
Age-mean years	48
Range (age in year)	18 – 80
Age >50 years	32 (42%)
Male gender	34 (45%)

Table 2 Description of the symptoms

Symptoms onset	
1 day to 6 months	45 (60%)
6 month to 2 years	19 (25%)
More than 2 years	11 (15%)
Type of symptoms	
Lower abdomen pain	51 (68%)
diarrhoea	32 (42%)
bleeding per rectum	21 (28%)
Weight loss	16 (21%)

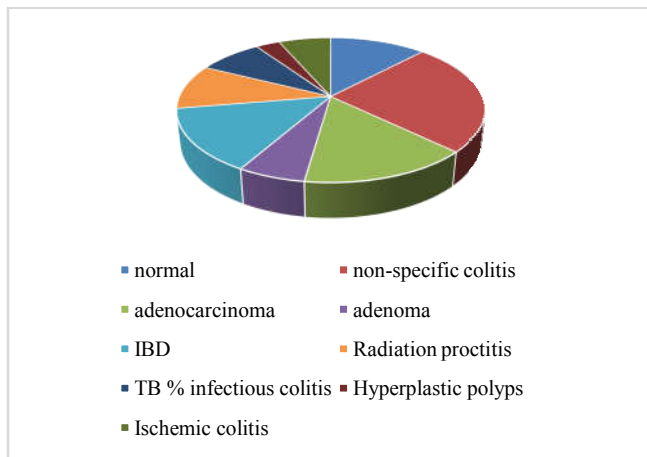
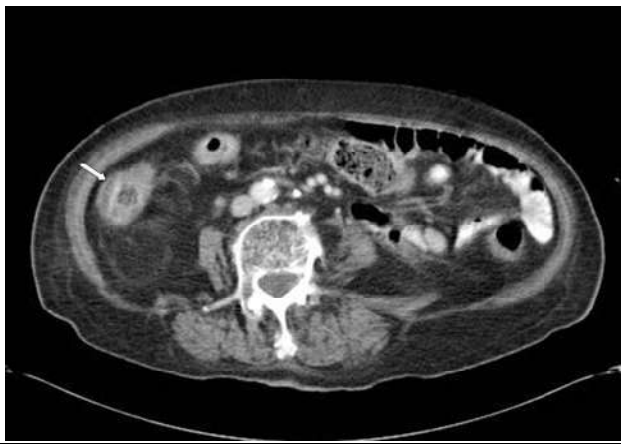


Fig 1 Final outcome of patients after colonoscopy and biopsy, showing most commonly non-specific colitis and adenocarcinoma



DISCUSSION

To date, no consensus clinical guidelines proposed to look at the issue of a clinical report of ileocolonic thickening on radiologic abdominal CTs in relation to the endoscopic findings on follow-up colonoscopy. Several studies have investigated the clinical significance of ileocolonic thickening reported on an abdominal CT. A study by Rockey *et al*^[6] has shown ileocolonic thickening to be associated with significant pathology on colonoscopy in approximately 67% of patients. Similarly, a retrospective study by Moraitis *et al*.^[1] of 40 patients found that 23% of the patients with ileocolonic thickening were found to have colonic neoplasia and recommended colonoscopy for further evaluation. Our study also shows similar findings as 85% of cases had pathological conditions including IBD, malignancy, ileocecal tuberculosis, infectious colitis.

Another retrospective study, found a 64% correlation rate between BWT and abnormal colonoscopy with nonspecific colitis as the most common cause of those patients undergoing colonoscopy^[17]. Similarly in our study non-specific colitis, malignancy and radiation proctitis were most common finding, accounting for 57% of cases. Since study place is south East Asia where infection is quite prevalent, in our study 8% cases have intestinal TB & other infectious colitis like amoebic colitis and typhilitis. More recently, at an American teaching hospital, a study of 107 patients who presented with abdominal pain reported similar findings to ours in that only 26% had normal colonoscopies and the rest were found to have IBD (9.3%), ischemic colitis (36.4%), infectious colitis (15%), and cancer (7.4%), with a small minority having other

miscellaneous endoscopic findings [13]. Although we restricted our study to patients who did not have a diagnosis of gastrointestinal disease before a CT, our results concurred with finding of above mentioned studies.

Our secondary outcome looked at whether we could extrapolate key words from radiology reports that may help predict significant colonoscopic findings. We frequently found the term “stranding” in the presence of BWT, which is nonspecific. It was associated with noncancerous pathologic processes such as infection or IBD but also was seen in a proportion of patients with a normal colonoscopy. Lymphadenopathy, although trending towards underlying IBD or infection, was a nonspecific finding, unless there was other evidence for lymphoma on radiologic evaluation. Pancolitis was associated with noncancerous aetiologies, however, not with a specific pathology. Skip lesions on CT were related to IBD in all cases. There is no doubt, however, that colonoscopy and histology together provide the most accurate assessment of a colonic lesion in the majority of cases, and that by sequentially combining CT and colonoscopy, we reduce the rate of false-positive and false-negative evaluations. Colonoscopy alone is an invasive investigation that carries a small risk of bowel perforation and requires bowel purgation and sedation. It provides limited evaluation of tortuous colon or the colon beyond an obstructing lesion. Clearly, the question of accuracy must be remembered when biopsies taken at colonoscopy are considered because histologic diagnosis is entirely dependent on identification and successful biopsy of the correct area of the colon. Negative histology in the face of convincing clinical and radiologic evidence should therefore be treated with caution, with repeat biopsies taken if appropriate.

The limitations of our study include selection bias because this was a retrospective study and patients presenting with gastrointestinal symptoms to our hospital do not all undergo CT (the decision to order a CT is clinician dependent). Because this was a retrospective study, we relied entirely on pre-existing data and classification of findings. Although we limited our study population to those without a pre-existing diagnosis to explain the colonic wall thickening. Also, we did not exclude cases based on the time lag between CT and colonoscopy. It is possible therefore that the indicative symptoms and the condition causative of the thickening may have resolved in the interval between the CT imaging and the colonoscopy, thereby reducing the apparent performance of CT (false-negative). It is unlikely, however, that for cases in which the causative pathology was tumor or polyp, the timing would have affected the outcome because in cases suspicious for malignancy, the lesion is unlikely to have regressed. Furthermore, certain factors affect the appreciation of bowel wall thickness and enhancement, such as the degree of distension and the presence or absence of oral contrast material, which may lead to interobserver differences, a variable not controlled in this study. Despite these limitations, we believe strongly that BWT when described in a CT report, in the absence of any other clinical explanation, warrants attention and should be further investigated with colonoscopy. a significant number of patients with positive CTs did have underlying pathology on direct visualization. Because signs and symptoms exhibited by the patient may not predict a certain etiology and pathology.

CONCLUSION

we recommend that patients who are symptomatic and are found to have BWT on CT should undergo evaluation with colonoscopy to determine the underlying cause and help better direct patient care. The combination of CT and colonoscopy results in greater accuracy than either method alone because each technique alone yields false-positive or false-negative results.

Conflict of interests: The authors declare that they have no conflicting interests.

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How to cite this article:

Lavkush Prasad Tiwari *et al* (2019) 'Ileocolonic Thickening on ct Scan: Does Colonoscopic Evaluation Needed?', *International Journal of Current Advanced Research*, 08(02), pp. 17309-17310.
DOI: <http://dx.doi.org/10.24327/ijcar.2019.17310.3279>
