

Colitis on CT imaging: Do the radiographic findings correspond with direct visualization on colonoscopy

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INTRODUCTION

Each year, patients present to the emergency department with complaints of abdominal pain at a higher frequency than any other ailment, according to the US Department of Health and Human Services. During these visits, the healthcare provider will attempt to identify the root cause of each patient's chief complaint, beginning with a thorough physical exam, laboratory tests, and imaging studies. Performing a CT scan of the abdomen is a recommended choice to ascertain the origin of the pain. In some cases, the scan may reveal changes such as inflammation, narrowing, thickening which allows the radiologist to suggest the diagnosis of colitis. However, there are limitations to the utility of imaging when diagnosing colitis, including the identification of micro perforations, ulcerative lesions, and ulcerative colon cancer leaving colonoscopy as the gold standard for diagnosis. This study seeks to identify if radiographic diagnosis of colitis corresponds to the actual diagnosis of colitis when colonoscopy is performed to directly visualize the etiology of colitis.

METHOD

This study examines the results of CT imaging and colonoscopy of 50 patients who presented to the emergency department at a large, level-1 trauma center with a chief complaint pertaining to abdominal pain and/or hematochezia. Thirty women with an average age of 55 years and twenty men with an average age of 59 years were identified for this study. Each patient underwent CT imaging of the abdomen which suggested colitis per the radiologist's interpretation. Upon that diagnosis, the patients underwent colonoscopy to definitively diagnose the etiology of the colitis. At the completion of their diagnostic workup, the patient data was anonymized and tabulated into an excel spreadsheet for statistical analysis.

- Sample size-50
- Excluded 3 patients because of poor bowel prep. No colitis was found either on colonoscopy or pathology report in excluded patients.

N (Total number of patients with CT confirmed colitis)	47
Age in yrs. (Mean ± SD)	56.9±16
% Male	40.4%
% Smoking	42.5%
% Of patient population with specific chief complaint on presentation:	
• Abdominal pain (n=14)	29%
• Abd pain +diarrhea (n=6)	12.7%
• BRBPR/bloody diarrhea (n=22)	46.8%
• Nausea + vomiting (n=4)	8.5%
• Abnormal imaging (n=1)	2%
% Of patient population with specific Radiology finding based on CT imaging:	
• Pancolitis (n=12)	25.5%
• Colitis involving one segment (n=13)	27.6%
• Colitis involving multiple segments (n=16)	34%
• Stercoral colitis (n=5)	10.6%
• Ischemic colitis (n=1)	2%

% Of patients with specific Colonoscopy finding:		% Of patients with confirmed pathological diagnosis for their colonoscopy finding
Inflammatory colitis (n=7)	23.4%	86%
• Crohn's disease (n=4)	8.5%	
• Ulcerative colitis (n=2)	4%	
• Radiation colitis-(n=1)	2%	
Ischemic colitis (n=11)	23.4%	81.8%
Infectious colitis (n=3)	6%	100%
Colon adenocarcinoma (n=2)	4%	100%
stercoral colitis (n=1)	2%	N/A
Benign finding (n=23)	49%	90%
• No pathology identified (n=8)	17%	
• Diverticulitis (n=2)	4%	
• Polyps (n=7)	15%	
• stricture/anastomosis (n=2)	4%	
• colonic ulcer (n=1)	2%	
• Hemorrhoids (n=3)	6%	

Also noted, there is no significant difference noted in colonoscopy in identifying pathological finding (eg: colitis and cancer) vs benign (eg: diverticulitis, benign polyps and hemorrhoids) finding (92% vs 90%; p>0.05). But CT imaging was unable to differentiate between the benign findings and pathological findings.

RESULTS

Of the 50 patients examined, 47 patients with CT findings of colitis underwent colonoscopy. 22 (47%) patients had colitis on direct visualization on colonoscopy, 23 (49%) had no colitis on colonoscopy, 2 (4%) patients were found to have colonic mass. Of the 22 patients with colitis on colonoscopy, 4 (8.5%) had Crohn's disease, 2(4%) with Ulcerative colitis, 1 (2%) with radiation colitis, 11(23.4%) had ischemic colitis, 3 (6%) had infectious colitis, 1 (2%) had stercoral colitis. Pathology confirmed adenocarcinoma in the 2(4%) that had colonic mass. Of the 23 (48.9%) with no colitis on colonoscopy, no pathology was identified in 8 (17%), 7 (15%) had polyps, 2 had diverticulitis (4%), 2 (4%) had stricture/anastomosis, 1 (2%) had colonic ulcer and 3(6%) had hemorrhoids. 86% of our inflammatory colitis (Crohn's, ulcerative colitis, radiation colitis) were confirmed by pathology, 81.8% of ischemic colitis was confirmed by pathology while infectious colitis and adenocarcinoma was confirmed 100% by pathology.

DISCUSSION

Our study results illustrate a 49% false-positive rate of CT demonstrating colitis where colonoscopy findings were negative for colitis thereby leading to overdiagnosis of colitis. Also, of the 2 patients that were found to have colonic mass on colonoscopy, CT identified it as colitis not colonic mass but direct visualization with colonoscopy and biopsy of these masses demonstrated adenocarcinoma. This shows that direct visualization is always preferred as colonic masses and cancer can be missed on CT imaging. Thus, colonoscopy remains the gold standard for diagnosis of colitis and tumors/cancers of the gastrointestinal tract.

CONCLUSION

Although there is significant utility in the initial diagnosis of colitis with CT imaging, the findings from this study conclude that colonoscopy remains the gold standard for the definitive diagnosis of colitis. Given patients risk and benefit combined with presenting symptoms and CT findings suggestive of colitis, we would highly recommend direct visualization with colonoscopy to rule out pathology such as inflammatory bowel disease or cancer.