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EVALUATION OF SMALL BOWEL DISEASES WITH THE HELP OF CT ENTEROCLYSIS

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Conflicts of Interest: Nil

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Abstract:

Introduction: It is difficult to diagnosis of small intestine disease with the help of imaging tests. X-ray enteroclysis have limited diagnostic possibilities with a conventional technique. Because of this reason the last few years CT enteroclysis has been achieve on importance and nowadays this method is becoming the basic tool of small intestine imaging, used to detect its diseases. To evaluate patients with abdominal complaints Ultrasonography is widely used because of being non-invasive and easily available widely. Beside evaluated all bowel loops with high accuracy, intraluminal pathologies are not well evaluated. It has a low sensitivity and specificity for bowel pathology. In many clinical scenarios CT has become the modality of choice. CT enteroclysis is methods of examination in which contrast material is infused through a nasoenteric tube and contiguous axial images are observe after total opacification of adequately distended small intestine.

Aim: The main aim of this study is to evaluate the role of CT enteroclysis in small bowel diseases.

Material and Methods: In this study 30 patients with different age group were include with suspected and proven case of small-bowel diseases were referred to the Department of Radiology for CT enteroclysis. Patients with normal renal function tests were included taken up for CT enteroclysis scan after 4 hours of fasting. From the dome of diaphragm to the symphysis pubis in a cephalocaudal direction during a breath hold CT scan was performed in both arterial and venous phase.

Result: This study group comprised 30 patients in which 20 (66.7%) were male and 10 (33.3%) were female. The most common age groups of patients were 10-30 years old age group followed by 30 -60 years old age group. Out of 30 patients, 14 patients (46.7%) were positive findings and negative findings were obtained in 16 patients (53.3%). Out of total patients 14 patient's shows CT enteroclysis depicted a broad spectrum of pathologic processes that affected the small bowel. Among total positive cases 2(14.3%) cases of these were small bowel neoplasm and the remaining 12 (85.7%) patients depicted inflammatory/infective small-bowel diseases.

Conclusion: CT enteroclysis is a valuable tool for small intestine diagnostics and helps to eliminating the defects of enterography. It also helps to show the detection of extraluminal disease as well as provides information relative to the entire abdomen which is not obtained with small-bowel follow-through or endoscopy. Therefore CT Enteroclysis is an excellent modality that can be utilized for a broad spectrum of diseases.

Keywords: Small Bowel Diseases, CT, Enteroclysis

Introduction

It is difficult to diagnosis of small intestine disease with the help of imaging tests. X-ray enteroclysis have limited diagnostic possibilities with a conventional technique. Because of this reason the last few years CT enteroclysis has been achieve on importance and nowadays this method is becoming the basic tool of small intestine imaging, used to detect its diseases[i]. Since from the widely recognised introduction of the multiple-detector (multi-slice) computed tomography units (MDCT/MSCT) to radiological diagnostics it has become the especial cases[ii],[iii]&[iv]. To evaluate patients with abdominal complaints Ultrasonography is widely used because of being non-invasive and easily available widely. Beside evaluated all bowel loops with high accuracy, intraluminal pathologies are not well evaluated. It has a low sensitivity and specificity for bowel pathology[v]. There were many limitations of small-bowel follow-through. Enteroclysis only help in examinations provide only indirect information about the bowel wall, surrounding structures and also the problems due to by overlapping bowel loops[vi]. For the evaluation of small bowel disease, small bowel follows through most commonly performing examination because of its availability, simplicity and low cost. Conventional

double contrast enteroclysis has been suggested as the technique of choice for evaluation of small intestine for many years[vii]. In many clinical scenarios CT has become the modality of choice. CT enteroclysis is methods of examination in which contrast material is infused through a nasoenteric tube and contiguous axial images are observe after total opacification of adequately distended small intestine[viii]. As comparable to enteroclysis Luminal distension can be attain with oral hyperhydration, thereby preventing nasoenteric intubation and making CT Enterography a useful[ix]. The main objective of this study is to evaluate the role of CT enteroclysis in small bowel diseases.

Material and methods:

This study is carried out on 30 patients with different age group visiting the radiology section of Chandulal Chandrakar Memorial Medical College and Hospital Durg, in the Department of Radiology in a period of one year. All the patients with suspected and proven case of small-bowel diseases were referred to the Department of Radiology for CT enteroclysis. Detailed histories of patients were recorded. In this study Patients with normal renal function tests were included taken up for CT enteroclysis scan after 4 hours of fasting. A 13 or 11-F Bilbao Dotter catheter (Indovasive; Biorad Medisys, India) was located into the duodenojejunal junction by using fluoroscopic guidance (Allengers- 525, 40 KW/50 kVA, 500 mA). From the dome of diaphragm to the symphysis pubis in a cephalocaudal direction during a breath hold CT scan was performed in both arterial and venous phase.

Result:

Table 1: patients with gender wise distributions

gender	No	%
male	20	66.7
female	10	33.3
Total	30	100

Table 2: patient distributions with age group

Age	No	%
10-30	12	40
30-60	10	33.3
60-80	8	26.7
Total	30	100

This study group comprised 30 patients in which 20 (66.7%) were male and 10 (33.3%) were female. The most common age group of patients were 10-30 years old age group followed by 30 -60 years old age group as shown in the table no 1 and 2 above . The mean age group was 42 years old age. For all the 30 patients were CT enteroclysis was performed successfully.

Of the 30 patients with successful CT enteroclysis, positive findings were obtained in 14 patients (46.7%) and negative findings were obtained in 16 patients (53.3%) as shown in table no 3 below.

Table 3: patient's distributions after CT scan showing positive and negative studies

study	no	%
positive	14	46.7
negative	16	53.3
Total	30	100

In this study, CT enteroclysis was easy to perform and tolerated in all patients. Out of total patients 14 patient's shows CT enteroclysis depicted a broad spectrum of pathologic processes that affected the small bowel. Among total positive cases 2(14.3%) cases of these were small bowel neoplasm and the remaining 12 (85.7%) patients depicted inflammatory/infective small-bowel diseases as shown in the table no 4 below.

Table 4: Distribution of patients with Inflammatory and Neoplastic lesions from total positive cases

Study	no	%
Inflammatory	12	85.7
Neoplastic	2	14.3
Total	14	100

Figures:

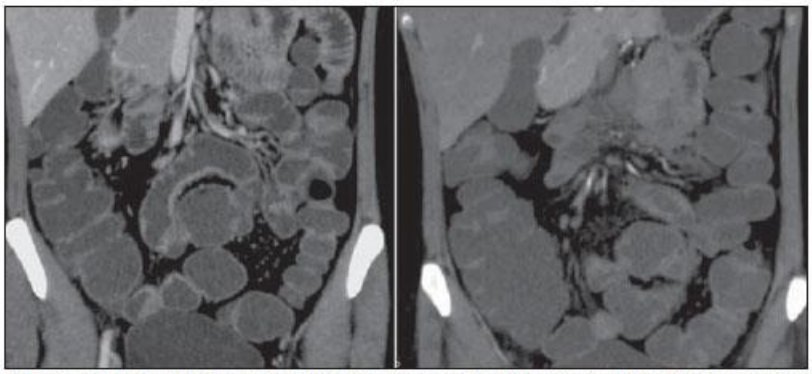

Figure 1. CT enterography, coronal section of a 30-year-old female patient. The study was performed after oral ingestion of non-absorbable neutral contrast medium (polyethylene glycol), demonstrating good distension of different intestinal segments, from the jejunum to the ileum, with appropriate contrast-enhancement of the intestinal walls.

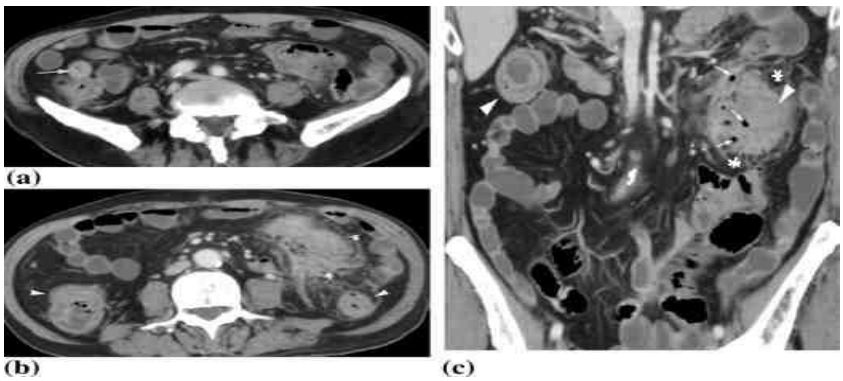

Figure 2: Male patient of age 28 years old, with 2 year history of Crohn's disease. CT enterography (axial a & b, coronal c) revealed active Crohn's disease with mural thickening and hyper enhancement involving the terminal ileum (arrow) and most of the large bowel (arrowheads). The splenic flexure is the seat of pericolic inflammatory process with stranding of the pericolic fat (asterisk) and multiple air locules (thin arrow) are noted, consistent of a "phlegmon".

Discussion:

From the past 100 years contrast passage of the small bowel had been a chief imaging method in radiological diagnostics as it was widely available, cost-effective and easy to perform though it has its diagnostic value was extremely limited[2]. The studied of Kloppel et al. in 1992 the first European report on diagnostics of inflammatory conditions of the small intestine using CT enteroclysis. The another studied Benderow et al. in 1996 ameriocan report the use of CT enteroclysis in the diagnostics of the small intestine occlusion[x]. CT enteroclysis allows detection of various small-bowel diseases, wherever they are located. In ther studied of Hara AK et al[xi] CT enterography portray more than twice as many cases of Crohn's disease than with small bowel follow through examination. However there are not enough studies had been reported for evaluate the role of CTE for detection of small bowel disease. study by Pilleul F et al, overall sensitivity and specificity of study was 84.7% and 96.9%. Sensitivity of CT enterography for picture of small bowel masses was seen to be 84.7% in this study which was comparable to study of Pilleul F et al[xii]. According to the studied by Anzidei M et al[xiii] review the evaluation of small bowel tumours

with MDCT and MRI protocols. In this study results suggest that CT enteroclysis facilitates better evaluation of patients with small- bowel disease than endoscopic examinations alone that only demonstrates the intraluminal abnormality. This study also shows that CT enteroclysis helped in demonstration and diagnosis of suspected cases of complicated IBD more accurately than with MDCT because of increased bowel distension achieved in CT enteroclysis. This study also shows that effective role of MDCT enteroclysis in detection of small bowel diseases, both neoplastic and inflammatory. CT allows better detection of extraluminal component of the disease, evaluation of small bowel disease and provides information relative to the entire abdomen.

Conclusion:

CT enteroclysis is a valuable tool for small intestine diagnostics and helps to eliminating the defects of enterography. CT enteroclysis should be routinely used for better localization of small bowel disease. CT enteroclysis is well-tolerated, fast and reliable imaging modality for the depiction of small-bowel diseases. It also helps to show the detection of extraluminal disease as well as provides information relative to the entire abdomen which is not obtained with small-bowel follow-through or endoscopy. Therefore CT Enteroclysis is an excellent modality that can be utilized for a broad spectrum of diseases.

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