

Diagnostic Accuracy of Magnetic Resonance Enteroclysis for Crohn's Disease taking histopathology as Gold Standard

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ABSTRACT

Background: Crohn disease diagnosis is not easy and some radiological technique is being used to explore the Crohn's disease, MRI enteroclysis is important because the lack of ionizing radiation facilitates its use in younger patients as well as repetitive use, required in Crohn's disease.

Aim: To conclude the diagnostic accuracy of MR enteroclysis in Crohn's disease, so that these particular patients may be provided with non-invasive technique in early finding and timely action of Crohn's disease in order to decrease patient morbidity due to complications.

Methods: A total of 128 suspected cases of crohn's disease with age ranges from 10-40 years of both gender were included in the study. Patients with h/o abdominal surgery, chemotherapy, pregnant females and significant small bowel obstruction were excluded. All these patients were undergone MR Enteroclysis and looked for presence or absence of crohn's disease. Then all these patients had undergone biopsy and histopathology report was correlated with MR enteroclysis findings.

Results: Mean age was 33.67±4.23 years. Out of these 128 patients, 60.16% were male and 39.84% were females with ratio of 1.5:1. MR Enteroclysis findings have shown 52 True Positive, 10 False Positive, 08 False Negative and 58 True Negative cases. The sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy of MR enteroclysis in crohn's disease were 86.59%, 85.29%, 83.87%, 87.88% and 85.94% respectively

Conclusion: This study concluded that MR Enteroclysis is a simple and non-invasive imaging modality of choice with a high diagnostic accuracy in diagnosing crohn's disease.

Keywords: inflammatory bowel disease, imaging modality, sensitivity.

INTRODUCTION

Crohn's disease is a type of IBD that can occur at any age mostly in adults and can involve any part of gut mostly terminal ileum^{1,2,3}. The early symptoms are low grade fever, weight loss, blood and mucus in stool and generalized weakness and fatigue. The exact cause is unknown but it trends is more in Type 1 personality and most anxieties, exaggerated and depressed people. Hereditary also play a role in its development. It is one of autoimmune disease, can cause a lot of complications including anemia, obstruction, skin rashes, inflammation of eyes, arthritis and cancer^{4,5,6}. Crohn's disease may be due to immunodeficiency situation^{7,8,9}. The diagnosis is very difficult and MRI enteroclysis and colonoscopy especially capsular is effective in 70%-80% cases^{10,11,12,13}. There is no management of Crohn's disease either medically or surgery. The only is symptomatic treatment, maintain remission and prevent relapses^{14,15,16}.

As previous studies have shown variations in sensitivity of MRI enteroclysis in crohn's

disease^{17,18,19}, so the rationale of this study was to determine the diagnostic accuracy of MR enteroclysis in diagnosing crohn's disease. Moreover, there was no local study available on this, so this study would also give the diagnostic accuracy of MR enteroclysis in local population and these particular patients could be provided with non-invasive technique in early diagnosis and timely treatment of crohn's disease in order to reduce patient morbidity due to complications.

The objective of the study was to determine the diagnostic accuracy of magnetic resonance enteroclysis in diagnosing crohn's disease, taking histopathology as gold standard."

METHODOLOGY

This study was conducted in the Department of Radiology, Nishtar hospital, Multan from 6th March 2014 to 5th September 2014. The calculated sample size was 128 cases with 5 % margin of error for sensitivity and 2% for specificity, prevalence of crohn's disease 35%, 95% confidence level, sensitivity=79%, specificity=97% of MR enteroclysis in crohn's disease. Sampling technique was non-probability sampling.

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Inclusion Criteria:

- All patients with Low-grade fever.
- Prolong diarrhea
- Abdominal pain
- Mucus, blood, and pus in the stool
- weight loss
- Generalized fatigability.
- Patients with 10-40 years of age.
- Both genders.

Exclusion Criteria:

- Pregnant or breastfeeding females.
- Patients with h/o abdominal surgery.
- Patients with h/o chemotherapy or anti-inflammatory therapy.
- Patients not willing to be included in the study.

RESULTS:

Age range in this study was from 10 to 40 years with mean age of 33.67±4.23 years. Majority of the patients 81(63.28%) were between 31 to 40 years of age as shown in Table I. Out of these 128 patients, 77(60.16%) were male and 51(39.84%) were females with ratio of 1.5:1. Mean duration of symptoms was 3.31±2.14 months with majority of patients i.e., 97(75.78%), were presented with <6 months of duration as shown in Table II.

Table I: %age of patients according to Age distribution (n=128).

Age (in years)	Frequency	%age
10-20	10	7.81
21-30	37	28.91
31-40	81	63.28
Mean ± SD	33.67±4.23	

Table-II: %age of patients according to duration of symptoms (n=128).

Duration	n	%age
<6 months	97	75.78
>6 months	31	24.22
Mean ± SD	3.31±2.14 months	

Table III: Summary of Results

	Positive result on MR Enteroclysis	Negative result on MR Enteroclysis
Positive Histopathology findings	52 (TP)*	08 (FN)***
Negative Histopathology findings	10 (FP)**	58 (TN)****

*-TP=True positive **-FP=False positive ***-FN=False negative ****-TN=True negative

All the patients were subjected to MR Enteroclysis and it supported the diagnosis of crohn's disease in 62(48.44%) patients while on

histopathology, crohn's disease was found in 60(46.88%) patients. Among MR enteroclysis positive patients, 52 (True Positive) had crohn's disease and 10 (False Positive) had no crohn's disease on histopathology. Among, 66 MR Enteroclysis negative patients, 08 (False Negative) had crohn's disease on histopathology where as 58 (True Negative) had no crohn's disease as shown in Table III.

DISCUSSION

Crohn disease (CD) is unknown origin enteritis that most commonly affects the terminal ileum. In most of cases, it engages the small bowel, more specifically the terminal ileum, and is characterized by luminal, transmural and mesenteric abnormalities. Crohn's usually manifests in early maturity and typically runs a relapsing and remitting course. Initial diagnosis plan at establishing and characterizing the disease including the location, extent of inflammation, and the presence of stenosis, fistulae or abscesses.

CONCLUSIONS

This study concluded that MRI Enteroclysis is a simple and non-invasive imaging modality of choice with a high diagnostic accuracy in diagnosing crohn's disease. So, we recommend that MR Enteroclysis should be used as a primary imaging modality in crohn's disease patients for early diagnosis and timely treatment of crohn's disease in order to reduce patient morbidity due to complications.

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