

Efficacy of Double Contrast Barium Meal Examination in Diagnosis of Acid Peptic Diseases

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ABSTRACT

Aim: To assess the efficacy of double contrast barium meal examination as diagnostic and screening tool for Acid peptic ulcer diseases.

Methods: The study was carried in radiology department MMDC and affiliated hospital, Ibae-e Siena & Research Institute from January, 2018 to June, 2018. A total of 100 patients visiting medical and surgical outpatient and inpatient department of hospital with strong history of acid peptic ulcer diseases referred to radiology department for DCBM were included in the study.

Results: The potential accuracy of double contrast barium meal was found 86 %. The DCBM is considered to be the best screening and diagnostic tool.

Conclusions: It is concluded from the study that DCBM is effective screening and diagnostic tool for acid peptic diseases.

Keywords: Double Contrast Barium Meal examination -DCBM, Acid Peptic diseases – APD, GIT

INTRODUCTION

Acid peptic disease is a common benign disease. However, it has to be distinguished from other diseases like irritable bowel syndrome, pancreaticobiliary, coronary or musculoskeletal disease by careful history and physical examination. Endoscopic and barium contrast radiography can determine the presence or absence of a peptic ulcer.

A double-contrast barium meal is a form of contrast radiography in which x-rays of the esophagus and stomach are taken using two forms of contrast to make the structures easier to see.^[1] A liquid containing barium (that is a radio contrast) is swallowed into the mouth.

For the last 60 years, Barium studies have remained unchallenged as the primary diagnostic procedures in the investigations of gastrointestinal diseases because the rigid gastro scope was used reluctantly, it did not allow the full examination of stomach and could not be passed into duodenum and barium studies were only method for the examination of gastrointestinal tract. Therefore radiologists free to make diagnosis which could not be challenged by any other reliable diagnostic modality. The increased availability and application of fiber optic endoscopy has provided us the opportunity to evaluate the diagnostic accuracy of barium studies of the stomach and duodenum^[2]. The DCBM is a more reliable method for routine radiological diagnosis of dyspepsia. This technique is more demanding expensive and does not cause the patient any greater discomfort³.

The biphasic studies combining the best features of all different techniques ought to provide the optimal results⁴.

DCBM and endoscopy are both used in the investigations of dyspepsia. The choice of procedure may be determined by sensitivity, cost and safety⁵. The barium meal is the preliminary examination in many hospitals for presenting with upper GIT diseases. When DCBM technique is used, the diagnostic accuracy of radiology of upper GIT is only marginally inferior to endoscopy while possessing the advantage of speed. Safety, patient comfort and avoidance of sedation drugs⁶.

The techniques, endoscopic examination and double contrast barium meal examination have their own merits and demerits. The barium meal remains the preliminary examination in many hospitals. For patients with upper GIT problems, barium meal is only marginally inferior to endoscopy because of its safety, patient comfort & the avoidance of sedation drugs. On the other hand endoscopy has the advantage of being a diagnostic as well as therapeutic technique. It gives direct vision of gastric and duodenal mucosa but this is achieved at the expense of increased cost and procedural risk to the patient.

In developing countries like Pakistan with limited resources, it is impossible to investigate each and patient barium meal examination remains the prime investigation and endoscopy should be reserved cases that have doubtful result on barium studies. The following are the main advantages of double contrast barium meal and endoscopy.

Advantages of barium radiology

1. Widely available.
2. Motility assessment. Particularly useful in the esophagus and has been shown to correlate closely with manometric studies.
3. More accurate for certain conditions_ particularly pouches and subtle webs and rings in the esophagus, infiltrating lesions e.g. linitis plastica. Barium demonstrates gastro esophageal reflux and is probably better at showing extrinsic compression.
4. Surgical map_ Some surgeon prefer a "picture " rather than a description of the lesion before they operate.

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5. Better view of second and third part of the duodenum, a duodenal loop view should be routine part of the barium meal. Only a cursory glance at these regions is usual at a standard upper endoscopy.
6. DCBM seem better than endoscopy in the detection of gastric ulcer hidden by edema especially when situated at the lesser curve just beyond the angulus and in the case of ulcer in the fundal area of the stomach

DCBAS FIRST CHOICE IN DIAGNOSIS STUDIES:

Test	Preferred investigation
Barium Meal	<i>Dysphagia</i> <i>Pharyngeal pouch</i> <i>Motility disorder</i> <i>General Anatomy</i> <i>Gastro-colic fistula</i> <i>Extrinsic pressure</i>

Despite the increasing accessibility of endoscopy and extensive employ of H2 receptor antagonists, barium meal examination remains popular, accounting for over 17% of all general practitioner request for x-ray examinations in the hospitals and second only in occurrence to desires for chest x-ray examination.

There are numerous specific questions for which barium meal is more likely to provide an answer. This includes finding the cause of vomiting in patients with recent gastric surgery, assessing fistulae, assessing the presence of extragastric lesions, and examining esophageal and gastric motility.

GASTRIC ULCER



PYLORIC STENOSIS

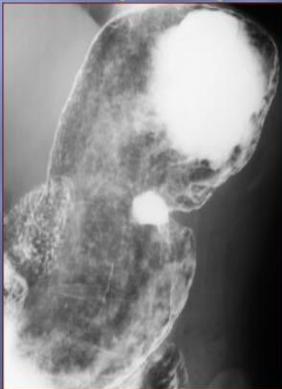


DUODENAL ULCER

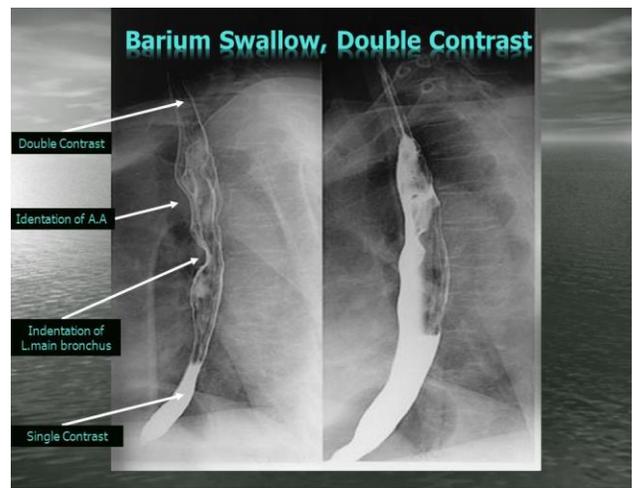


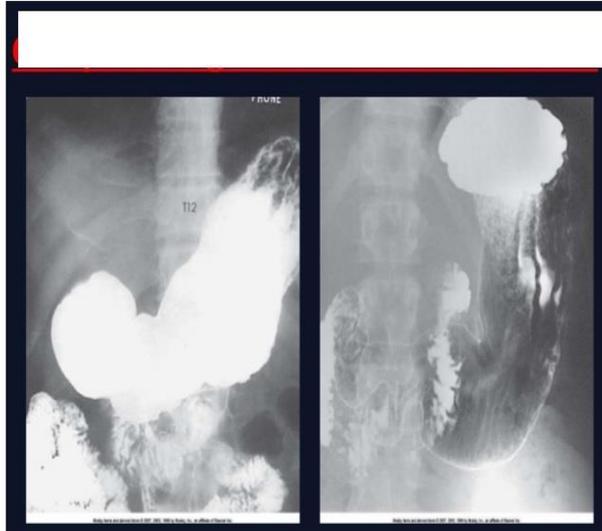
Benign Gastric ulcers

Barium meal double contrast shows localizes collection of barium in ulcer crater with smooth thickened mucosal folds reaching ulcer edge



Barium Swallow, Double Contrast





MATERIAL AND METHOD

This study was carried in radiology department MMDC and affiliated hospital, Ibae-e Siena & Research Institute from January, 2018 to June, 2018. A total of 100 patients visiting medical and surgical outpatient and inpatient department of hospital with strong history of acid peptic ulcer diseases referred to radiology department for DCBM were included in the study. Collected data was refined by making statistical record.

RESULTS

The potential accuracy of double contrast barium meal was found 86 %. The DCBM is considered to be the best screening and diagnostic tool. The diagnostic accuracy of

DCBM examinations was found 86 in 100 patients- 70 males and 30 females age varying from 28 years to 55 years as in Table 1, 2 and 3.

Table 1

DCBM Examinations	n	%age
Positive	86	86
Negative	14	14
Total patients	100	100

Table 2

DCBM Examinations	n	%age
Positive	65	92
Negative	5	8
Total Male patients	70	100

Table 3

DCBM Examinations	n	%age
Positive	21	70
Negative	9	30
Total female patients	30	100

DISCUSSIONS

During the last 20 years, there has been a considerable tussle between the radiologists and endoscopists for supremacy in the areas of gastrointestinal diagnosis. Although the use of endoscopy has been increased dramatically, but barium –contrast studies are still widely performed and accounts for a large numbers of examinations annually even in advanced counter like USA.

Fraser and Earnshaw have found that 13% of gastric ulcers confidently diagnosed are undetected at endoscopy⁷. The percentage of gastric ulcers detected on barium meal has been previously reported between 73 and 95%^{8,9}.

In our study of 100 patients, 86 peptic ulcers detected in DCBM. The intramural changes are well demonstrated on barium studies. Duodenal cap cicatrisation well demonstrates on barium meals. Linitis Plastica well picked up on DCBM examinations.

Eradication of H.pylori from the stomach and duodenum eliminates gastritis and duodenitis and markedly reduces recurrences of ulcer disease.

Another environmental risk factor for peptic ulcer is cigarette smoking ^[10]. Eradication of H. pyloi in ulcer patients, who smoke, seems to be sufficient to prevent recurrent ulceration. However, smoking may be more important in the pathogenesis of H. pylori-negative ulcer disease.

Alcohol can cause acute gastric injury (usually hemorrhagic and erosive) but does not cause peptic ulcers. In addition to severe physical stress, which is a risk factor for acute stress ulcers, emotional stress is a risk factor for peptic ulcers^{11,12}.

Technique of double contrast barium meal: Barium contrast studies can be used to demonstrate the GIT in three ways; Mucosal relief films are obtained after a small volume of barium has been administered just sufficient to demonstrate the mucosa! folds in collapsed viscus. These views are particularly valuable for demonstrating abnormality of folds in the conditions

such as esophageal varices or inflammatory bowel disease.

Barium filled views: are obtained after the viscous has been distended with barium. These views are particularly valuable for demonstrating contour anomalies, stricture and large polypoid filling defects.

Double contrast views are obtained after the mucosal surface has been coated with a thin layer of high-density barium and the hollow viscous is distended with gas. These films are particularly valuable for demonstrating the subtle mucosal abnormalities in the early stage of various inflammatory and neoplastic diseases. They also allow a confident diagnosis of normality¹³.

The use of double contrast procedure employs both radiolucent and radiopaque contrast media. The majority frequent positive or radiopaque contrast media is barium sulphate. It is inert chalk like powdered substance suspended in water and very little absorbed by GIT, therefore contrast of choice¹⁴.

Standardization is necessary for relatively accurate mixing of barium sulphate suspension. The two well known systems used are the weight/weight (w/w) and the weight/volume (wt/vol) percentage system¹⁵. The powdered barium sulphate is mixed with the water prior to ingestion by the patient.

CONCLUSION

It is concluded from the study that DCBM is effective screening and diagnostic tool for acid peptic diseases.

Recommendations: DCBM is still effective screening and diagnostic tool for acid peptic diseases and should be used in majority of peptic ulcer diseases. Further more studies should be conducted relating to DCBM examinations.

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