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Study to analyze the patients presenting with acute mesenteric ischemia, to surgery unit in a tertiary care hospital, Telangana, South India

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Abstract

Introduction: Acute mesenteric ischemia (AMI) is associated with high morbidity and mortality. This is a serious disease in old age with low incidence but with a very high mortality rate (60-70%). The etiology is either primary i.e. embolism or thrombosis of mesenteric arteries or veins, non-occlusive mesenteric ischemia or secondary i.e. mechanical obstruction such as intestinal volvulus, intussusception, tumor-caused compression.

Methodology: Hospital based prospective observational study, conducted in General Surgery Department of RVM Hospital, Siddipet, Telangana State. This study was conducted for a period of one and half years (February 2019 to July 2020). 35 Patients are studied during this period of study.

Results: 35 patients presenting with AMI were observed in this study with the majority being males, 25. Majority of the participants belong to the age group of 50-59yrs i.e 9 (25%). Out of the 35 patients, the mean age was 55.3years. Pain abdomen is chief complaint noted in all the 35 cases, followed by nausea among 20 and the least observed was diarrhoea in 4. Cases were distributed regarding the clinical presentation to the hospital in the form of acute obstruction 21 (61%), with only pain abdomen (25%), hollow viscous perforation leading to peritonitis 5 (14%). Majority of cases required bowel resection surgery (28 of 35) 79% as the bowels were gangrene or impending perforation. The remaining patients were managed with interventional or medical management.

Conclusion: This study helped in determining the factors involved and the lab values which could help in determining prognosis but the earliest intervention.

Keywords: Acute mesenteric ischemia, pain abdomen, acute obstruction, peritonitis, gangrene, thrombosis

Introduction

Acute mesenteric ischaemia (AMI) remains a diagnosis associated with high morbidity and mortality rate ^[1, 2]. This is a serious disease in old age with low incidence but with a very high mortality rate (60-70%). The etiology is either primary i.e. embolism or thrombosis of mesenteric arteries or veins, non-occlusive mesenteric ischemia or secondary i.e. mechanical obstruction such as intestinal volvulus, intussusception, tumor-caused compression. Independent of the origin of the illness, the clinical-pathological picture is the same: intestinal ischemia with subsequent necrosis ^[3]. The mortality associated with AMI has declined steadily over the last three decades. This is due to clinicians developing a higher index of suspicion for diagnosis, technological progress in radiological diagnostic modalities, aggressive operative intervention, endovascular management, nutritional supplementation, and better perioperative care ^[4]. In spite of the advances in diagnosis of AMI, morbidity and mortality rates remain high with patients requiring extensive gut resection, unlikely to survive ^[4]. Patients surviving intestinal resection may develop short gut syndrome. The prognosis dramatically improves if revascularization can be achieved prior to intestinal infarction ^[5]. Atypical symptoms, presence of predisposing diseases, delayed surgical intervention due to diagnostic difficulties, and in most cases, elderly patients who have cardiac problems; these may be some of the factors for higher mortality rates ^[6]. The role of radiologic imaging in AMI diagnosis is limited. The classic statement of symptoms of abdominal pain out of proportion to abdominal signs fits aptly. With the rarity of the disease, there is no clear data available on its clinical presentation and details.

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The aim and objective of the study is to analyze the cases of AMI with respect to clinical presentation, risk factors and its management 2. To identify the factors to improve its outcome.

Methodology

Hospital based prospective observational study, conducted in General Surgery Department of RVM Hospital, Siddipet, Telangana State.

This study was conducted for a period of one and half years (February 2019 to July 2020). 35 Patients are studied during this period of study.

Inclusion Criteria: All the cases of AMI presenting to Department of General Surgery at RVM hospital (elective and emergency cases).

Exclusion Criteria: Age group <15yrs, known cases of chronic mesenteric ischemia, pregnancy. Institutional ethics committee approval was taken prior to the study and Verbal along with written consent is obtained from the patients participated in the study.

The data collected was spread in Excel sheet and the results are expressed in frequency and a percentage, Chi-square test is applied wherever necessary using the SPSS package version 21.

Results

Table 1: Distribution of study participants based on Gender

Gender	Frequency	Percentage
Male	25	71
Female	10	29
Total	35	100

35 patients presenting with AMI were observed in this study with the majority being males, 25.

Table 2: Distribution of study participants based on age

Age (Years)	Frequency	Percentage
<40	6	18
40 to 49	6	18
50 to 59	9	25
60 to 69	8	21
>=70	6	18
Total	35	100

Majority of the participants belong to the age group of 50-59yrs i.e 9 (25%). Out of the 35 patients, the mean age was 55.3years

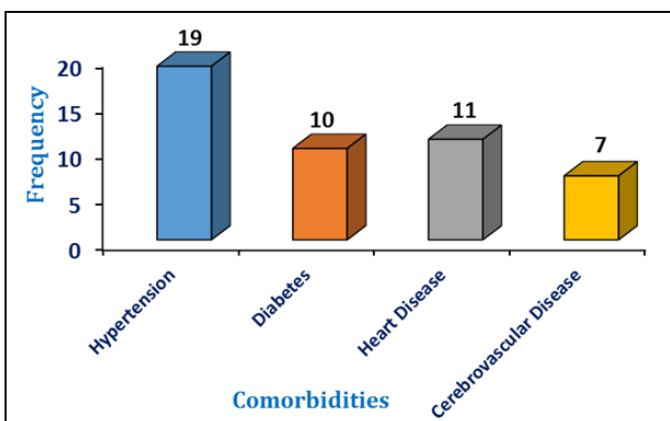


Fig 1: Showing distribution of comorbidities among the study participants

Among the 35 participants, 19 are having Hypertension, 11 are known cardiac diseases patients, 10 had DM and 7 had cerebral embolism or stroke.

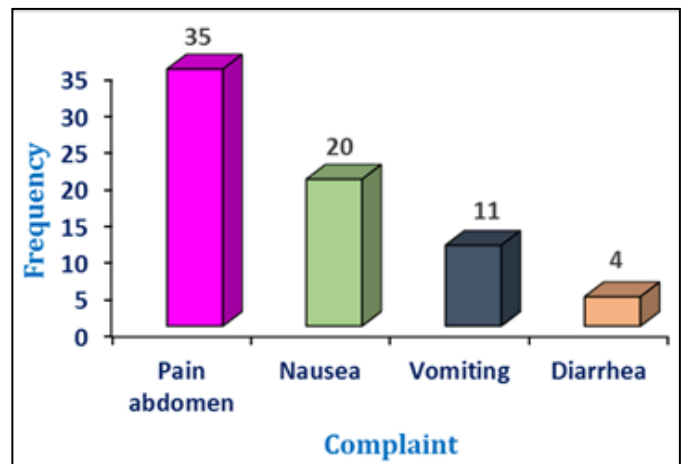


Fig 2: Common complaint observed among the participants

Pain abdomen is chief complaint noted in all the 35 cases, followed by nausea among 20 and the least observed was diarrhoea in 4.

Table 3: Clinical Presentation among the study participants

Presentation	Frequency	Percentage
Acute obstruction	21	61
Hollow viscus perforation	5	14
Acute pain abdomen	9	25
Total	35	100

Cases were distributed regarding the clinical presentation to the hospital in the form of acute obstruction 21 (61%), with only pain abdomen (25%), hollow viscus perforation leading to peritonitis 5 (14%)

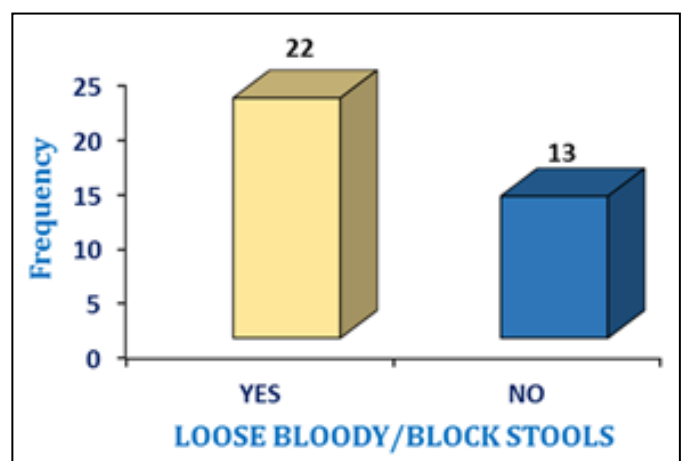


Fig 3: Black stools

The history of loose bloody stools was reported among 22 out of 35 (64%)

Table 4: Distribution of study participants presented in shock

Presenting in shock	Frequency	Percentage
YES	7	21
NO	28	79
Total	35	100

On recording the vitals, 7 out of 35 patients (21%) presented to the hospital in shock.

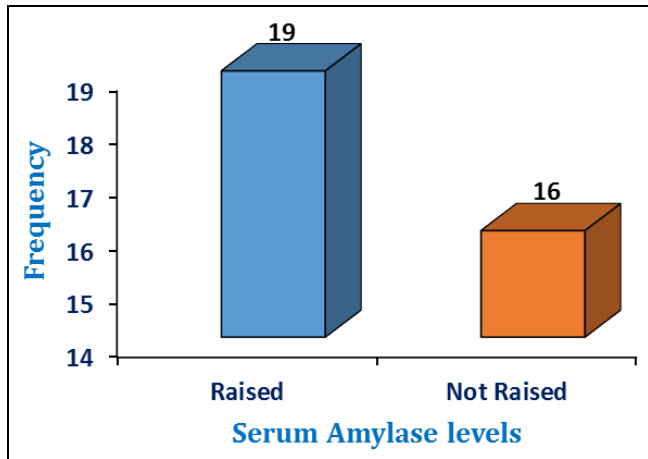


Fig 4: Showing increased levels of Serum Amylase among the study participants

19 (54%) cases show increased Serum Amylase levels, with 16(46%) showing normal values, thus indicating Serum Amylase is correlating but does not help individually in diagnosis.

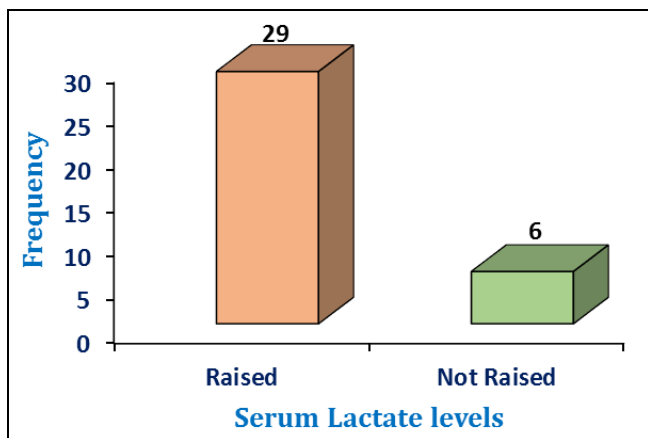


Fig 5: Showing increased levels of Serum lactate levels among the study participants

29 of the 35 cases i.e. 82% show an increased Serum Lactate levels, which on correlation were found to be raised more, so in delayed cases with increased sepsis.

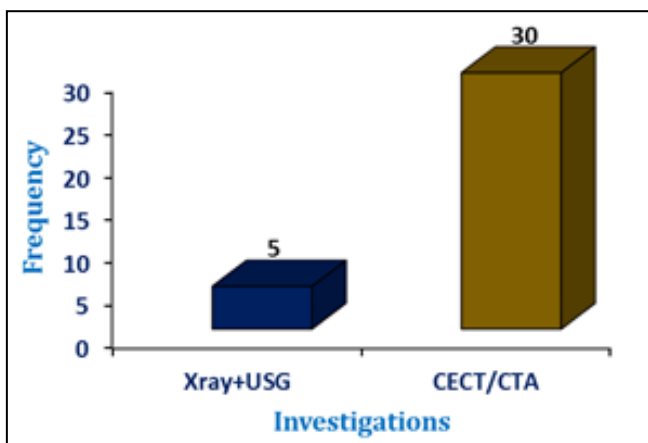


Fig 6: Showing distribution of investigations among the study participants

In view of clinical and clear indication of laparotomy on X-ray and USG abdomen, 5 of 35 cases were not subjected to CT. Remaining 30 (86%) cases were subjected to CT studies.

Table 5: Treatment of choice among the study participants

Management	Frequency	Percentage
Bowel/Resection surgery	28	79
Other	7	21
Total	35	100

Majority of cases required bowel resection surgery (28 of 35) 79% as the bowels were gangrene or impending perforation. The remaining patients were managed with interventional or medical management.

Table 6: Post-operative mortality observed among the study participants

30 days Post-operative mortality	Frequency	Percentage
YES	19	54
NO	16	46
Total	35	100

Among the study participants, 30days mortality was reported in 19 (54%).It included patients who died immediately and also those within 30days due to surgical complications.

Discussion

AMI is a catastrophic illness and has a poor outcome even when the disease is diagnosed and treated promptly [7]. Despite the considerable advances in the diagnosis and treatment of such patients and a better understanding of the pathophysiology of the disease, the mortality and morbidity still remain high [8]. The reasons for this are manifold. The incidence of AMI is 1 in 1000 hospital admissions. Because it is relatively infrequent, most data comes from retrospective studies, with limited patients. Similarly, risk factors effecting mortality have not been studied much. The present prospective observational study consists of 35 cases, from RVM Hospital in one and half year's time, considering the limited occurrence of disease, the similar study was conducted by Ibrahim *et al.* [3]. In the year 2013 with 95 patients and Panagotis *et al.* [5]. in 2006 with 72 cases. The study had 25 males (71%) and 10 females (29%), with majority in the 50-60 years age group. The mean age of presentation is 55.3years. Thus males of >50yrs are at higher risk. Ibrahim *et al.* study showed higher male preponderance but the Woosup *et al.* [9]. study had more females. Both the studies though had near balance of males and females, unlike the present study. The mean age in present study is 55.3 yrs which is near similar to recent study of Mansur *et al.* [7]. i.e., 56.61 years. The most common associated comorbid condition is hypertension seen in 54% patients. The next most common association is seen with heart disorders 32%.The relation to DM is 29% which is less than expected, but consistent with previous studies conducted by Mansur *et al.* [7]. 57%, 27%, 20% and Panagotis *et al.* 56%, 41%, 16%. Abdominal pain was the commonest presenting symptom that was reported in 100% of patients. Nausea was the second most common symptom. Other common symptoms included vomiting (32%) and rarely diarrhoea (11%). similar presentation is reported by the studies conducted by Ibrahim *et al.* (100%), Panagiotis *et al.* (94%). The presence of bloody stools is seen in 64% in the present study compared to 16% in Woosup *et al.*, 2000. This was found as one of the significant finding in present study which helped in considering AMI as diagnosis in equivocal cases. AMI by causing bowel ischemia

causes significant sepsis and septic shock, more prominently seen in cases of bowel perforation peritonitis. 21% cases presented to the hospital in shock, this is high compared to Panagiotis *et al.* study wherein 6% cases had evidence of shock. This could probably be correlated with delayed diagnosis at peripheral setup causing late presentation to our hospital. Serum Amylase is elevated in 54% patients in present study, in comparison to Ibrahim *et al.* study wherein 34% patients had elevated serum amylase. Serum lactate is found to be very important investigation in some studies wherein patients with elevated serum lactate, especially more than 3mmol/L, are found to have poor prognosis. CT studies were carried out in 30 patients (86%). 19 cases showed one of the findings to consider AMI (arterial or venous thrombi or suggestive findings like intramural or portal venous gas, focal lack of bowel wall enhancement after intravenous contrast, or hepatic or splenic infarction) with 79% sensitivity. On comparison with other studies, in Woosup *et al.* study, contrast CT scanning was performed in 18 (31%) patients and results confirmed superior mesenteric artery occlusion in 14 patients (78%). Findings suggestive of bowel ischemia, including pneumatosis intestinalis, bowel wall thickening, ileus, and bowel dilatation, were seen in 11 patients (61%). Overall, 16 of the 18 CT scans (89%) had positive results, the findings are near similar with the present study. Management of AMI depends on patient condition. Acute and unstable patients with indications of laparotomy need urgent exploration. Stable patients can be tried with heparinisation or papaverine infusion and vascular interventional procedures. 79% patients needed surgical exploration due to nonviable bowel. The 30day mortality in current study is 54%, the results are near similar with similar study conducted by Voltolini *et al.* 47 (72%). One most important factor in determining survival was <24hrs from symptoms onset to admission and intervention. AMI is a fast progressing disease; therefore early admission and early diagnosis are of critical importance. One of the leading reasons of high mortality rate is difficulty and delay in the diagnosis before necrosis.

Conclusion

This study has analysed the demographic data, clinical presentation, the investigations required and the management, prognosis and factor implicating poor prognosis. The main issue regarding AMI is its presentation and late diagnosis and intervention. This study helped in determining the factors involved and the lab values which could help in determining prognosis by the earliest intervention.

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