

## ACUTE MESENTERIC ISCHEMIA: EXPERIENCE IN A TERTIARY CARE HOSPITAL

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**Background:** Acute mesenteric ischemia is an abdominal catastrophe. This has been described as a complex of diseases rather than a single clinical entity. The incidence in United States is 1 in 1000 hospital admissions. The objective of this descriptive study was to determine the clinical presentations and out come after surgery of patients with acute mesenteric ischemia. It was conducted at Dubai Hospital, Dubai, United Arab Emirates. **Methods:** All patients having per operative or histopathological diagnosis of acute mesenteric ischemia from 2002 to 2006 were included. **Results:** There were 16 patients in all. Their mean age was 51 years, 12 were male and 4 were female. Abdominal pain was present in 16 patients, vomiting in 12 and anorexia in 9 patients. Abdominal tenderness was present in 16 patients, abdominal distension and rebound tenderness in 12 patients. Five patients had hypertension, 4 had myocardial infarction and 4 had diabetes mellitus as risk factors. X-Ray abdomen was done in 13 patients, Ultrasound in 9 and CT Scan in one patient. Resection of bowel was done in 14 patients. Post operatively 5 patients developed pneumonia, 3 had wound dehiscence, 3 had sepsis, and 3 had Lower GI bleeding. Five patients were expired after surgery in the hospital. Four patients were lost to follow up. **Conclusion:** We should have a high index of suspicion for mesenteric ischemia in patients with unexplained abdominal pain. Early diagnosis and prompt surgical intervention improves the outcome.

**Keywords:** Mesenteric Ischemia, Diagnosis, Surgery Outcome

### INTRODUCTION

Acute mesenteric ischemia is an abdominal catastrophe. This has been described as a complex of diseases rather than a single clinical entity.<sup>1</sup> The incidence in United States is 1 in 1000 hospital admissions.<sup>2</sup> It carries a high mortality which is directly related to diagnostic delay. The diagnosis is delayed because the patients with acute mesenteric ischemia produce nonspecific signs, and develop overt signs when the disease is advanced. These clinical features are caused by impaired perfusion to the bowel, bacterial translocation and systemic inflammatory response syndrome.<sup>3</sup>

Acute mesenteric ischemia can be classified in to primary and secondary types. The primary type is due to the thrombosis, emboli or vasospasm of the mesenteric vessels. Secondary type is caused by the vascular compression, strangulation or vascular trauma.<sup>2</sup> The primary acute mesenteric ischemia carries a high morbidity and mortality.

The purpose of this study was to review the clinical presentations, and to review the outcome after surgery in patients with acute mesenteric ischemia.

### MATERIAL AND METHODS

This is a descriptive study and data was collected retrospectively in Dubai Hospital Dubai, United Arab Emirates, over five year period from 2002 to 2006. All adult patients diagnosed to have acute mesenteric ischemia of primary type were included in the study. The patients with secondary causes, such as internal

or external hernia, volvulus, or vascular trauma were excluded from the study.

Multiple parameters were analysed, including demographic features, presentations, risk factors, diagnostic modalities and surgical procedures performed in these patients. The obstruction involving arterial or venous system was also assessed. The morbidity following surgery as well as in-hospital mortality was also analysed.

### RESULTS

A total of 22 patients presented to our hospital with acute mesenteric ischemia out of which 6 patients were found to have secondary causes of ischemia, and were excluded from the study. The remaining 16 patients were included. Their medical records were analysed in detail. The mean age of the patients was 51 years (Range: 32–75 years). There were 12 male and 4 female patients. The mean duration of symptoms was 5 days (Range: 1–10 days). The clinical presentations and the number of patients is shown in Table-1.

**Table-1: Presentations and No. of patients**

Presentations	Patients
Abdominal pain	16
Vomiting	12
Anorexia	9
Diarrhoea	3
Per rectal bleeding	2
Abdominal tenderness	16
Tachycardia	13
Abdominal distension	12
Rigidity of abdomen	7

Hypertension and hypercholesterolemia were risk factors in 5 patients, ischemic heart disease in 5 patients, diabetes mellitus in 4 patients, colonic carcinoma in one patient, and smoking in one patient.

X-Ray abdomen was done in 13 patients, which showed small bowel dilatation in 10 patients, and air fluid levels in 4 patients. Ultrasonography was done in 9 patients. This showed bowel dilatation in 4 patients, and mesenteric vein thrombosis in one patient. CT scan of the abdomen was done in one patient, which detected mesenteric vessels thrombosis.

Exploratory laparotomy and resection of the ischemic segment of the small bowel was done in 12 patients. Two patients had ischemia of the terminal small bowel as well as ischemia of the ascending colon, therefore the ischemic segments of the small and large bowel were resected. Primary anastomosis was done in 12 patients, and stoma was made for 2 patients. On exploration 2 patients were found to have whole bowel infarct and hence no segment of the bowel was resected. Mesenteric venous obstruction was detected in 8 patients, mesenteric arterial obstruction in 5 patients, and both arterial and venous obstruction in 3 patients.

The complications were observed in 10 patients. Lower gastrointestinal bleeding occurred in 3 patients. Two patients improved on conservative treatment. Two patients had urinary tract infection, treated with antibiotics. Wound dehiscence occurred in 2 patients, sepsis in 2 patients and progression of infarction in one patient.

A total of 5 patients were expired in the hospital of which 2 had whole bowel infarction, and bowel resection was not done. One patient developed pneumonia followed by ARDS, and multi organ failure. One patient who was known to have ischemic heart disease, had cardiac arrest per operatively and expired, and one patient expired due to ongoing bleeding, DIC, and multi organ failure.

The mean duration of follow up was 28 months. Four patients were lost to follow up, once they were discharged from the hospital as they returned to their native countries. Among the remaining 7 patients, one patient has short bowel syndrome, and has repeated admissions in the hospital. He had thrombophilia and is on anticoagulation. Two patients were found to have factor v deficiency and they were also started on anticoagulation by hematologist.

## DISCUSSION

Acute mesenteric ischemia is a lethal disease and early surgical intervention is required to improve the outcome.<sup>4</sup> The early diagnosis is often difficult as these patients present with non specific symptoms

and signs. In the literature abdominal pain is present in 85% of the patients, abdominal tenderness in 90%, abdominal distension in 70%, rebound tenderness in 40%, and tachycardia in 30% of the patients.<sup>5</sup> In our study abdominal pain and tenderness was present in all the patients, tachycardia in 13 patients, abdominal distension in 12 patients and rebound tenderness in 7 patients. This signifies the late presentation of patients to our hospital.

Identification of risk factors may be helpful in evaluating the patients with acute mesenteric ischemia. The different risk factors are, atherosclerosis, myocardial infarction, malignancy, prothrombotic disorders, hypovolemia, advanced age and diabetes mellitus.<sup>6</sup> Hypertension, atherosclerosis and ischemic heart disease were common risk factors detected in our group of patients at the time of admission. Three patients were found to have prothrombotic disorders on investigations. The mean age of patients in a study by Park WM *et al*<sup>7</sup> was 67 years, while in our patients the mean age was 51 years, showing involvement of younger population in our setting.

The pre operative diagnosis is often difficult, however radiological investigations are important for the diagnosis of acute mesenteric ischemia. A multi slice CT scan has a sensitivity of 92% and specificity of 100% in detection of mesenteric ischemia.<sup>8</sup> A multi detector CT Scan with angiography has a sensitivity of 92% in detecting vascular obstruction.<sup>9</sup> A CT Scan was done in one patient in this study which showed mesenteric vessels thrombosis. MR Angiography and MR Oximetry, which detects oxygen desaturation caused by segmental ischemia has a sensitivity of 90–100% in diagnosing mesenteric ischemia.<sup>10</sup> MRI was not done in our patients. Angiography is said to be the gold standard in diagnosing mesenteric vascular obstruction. It detects types of obstruction, site of obstruction and the development of collaterals.<sup>3</sup> A study by Paral J *et al* showed, by the use of laparoscopy, ultraviolet light and fluorescein it is possible to differentiate viable segments of the bowel from nonviable parts.<sup>11</sup> Diagnostic laparoscopy was not done in our patients.

A study by McKinsey JF *et al*<sup>2</sup> showed majority of the cases of acute mesenteric ischemia was due to arteriopathy, and venous thrombosis involves 5 to 10% of the cases. In our study 8 patients had mesenteric venous obstruction, and 3 patients had both arterial and venous obstruction, which is contrary to the literature.

The treatment options as described in the literature includes, surgical exploration, resection of the infarcted bowel, embolectomy or thrombectomy, and a bypass graft if possible and thrombolysis.<sup>12</sup> A

vasodilator therapy is indicated in cases of non occlusive Arteriopathy. Resection of the infarcted bowel was done in 14 patients in our study as two patients had whole bowel infarct.

Five patients expired in the hospital post operatively in our study, while mortality was 74% in a study done by Nonthasoot B *et al*<sup>13</sup> This may be attributed to younger age group and more venous obstruction in our patients. The mean follow up in our patients is 28 months.

Four patients were lost to follow up after they were discharged from the hospital. Among the remaining 7 patients, 2 patients had factor v deficiency and one patient had thrombophilia, and they are on anticoagulant therapy. A prothrombotic disorder can be the cause of acute mesenteric ischemia in younger patients with more prevalence of venous obstruction. In one study a prothrombotic disorder was detected in 57% of patients with acute mesenteric ischemia.<sup>14</sup>

In conclusion, we should have a high index of suspicion for acute mesenteric ischemia in patients with unexplained abdominal pain. An early diagnosis and prompt surgical intervention improves the outcome. The patients with younger age group and with venous obstruction should be evaluated for a prothrombotic disorder.

## CONCLUSION

We should have a high index of suspicion for mesenteric ischemia in patients with unexplained abdominal pain. Early diagnosis and prompt surgical intervention improves the outcome.

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