AKUT MEZENTERİK İSKEMİ
(51 OLGUNUN RETROSPEKTİF ANALİZİ)

ACUTE MESENTERIC ISCHEMIA
(A RETROSPECTIVE ANALYSES OF 51 PATIENTS).

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Özet
1985-95 yılları arasında, 10 yıllık bir dönem içinde,Atatürk Üniversitesi Tıp Fakültesi Genel Cerrahi Anabilim Dalı'nda ameliyat edilen akut mezenterik iskemili 51 hastanın kayıtları gözden geçirildi. Ortalama yaş 59.5 di ve hastaların yarısından fazlası 60 yaşın üzerindeydi. Postoperatif morbidite %23.5, intra- ve postoperatif mortalite %66.6 idi. Ölen hastaların sadece %17.6 sı semptomların başlangıcından sonraki 24 saat içerisinde ameliyata alınmıştı. Yüksek mortalite ve morbidite oranlarının erken teşhis ve multipl sistem problemleri ve yetmezliği olan yaşlı hastaların genel tedavi prensiplerinin düzeltilebilmesi ile düşürülebileceği sonucuna vardık.

Anahtar kelimeler: *Akut Mezenterik İskemi*

Summary
The records of 51 patients with acute mesenteric ischemia who were operated on the General Surgery Department of Atatürk University Medical Faculty Hospital during the 10 year period from 1985 to 1995 were reviewed. The mean age was 59.5 years, and more than half of them were older than sixty years. Postoperative morbidity was 23.5 percent and total intraoperative and postoperative mortality were 66.6 per cent. Of the fatalities, only 17.6 per cent had underwent surgery within 24 hours after onset of symptoms. We concluded that the high morbidity and mortality rates can probably be reduced with earlier diagnosis and progress in the general aspects of management of elderly patients with multiple system problems and failure.

Key words: *Acute mesenteric ischemia*

AÜTD 1995, 27: 33-37 **MJAU 1995, 27: 33-37**

Introduction
Acute mesenteric ischemia is a complex disorder with varied clinical presentations, multiple causes, and a high mortality rate. Several decades of research have provided progress in understanding the pathophysiology and treatment of mesenteric ischemia. Despite better understanding of the disease process , acute mesenteric ischemia continues to be a lethal disorder with mortality rates as high as 95 per cent (1-6). The continued poor survival in these patients has been attributed to three factors: (1) the inability to make the diagnosis of ischemia before bowel infarction and gangrene develop, (2) the progression of bowel infarction after the primary vascular or systemic cause has been corrected, and (3) the increasing recognition of nonocclusive or low-flow ischemia in addition to occlusive forms of the disorder (1-6). Acute mesenteric ischemia may be nonocclusive, may be caused by occlusion of the superior mesenteric artery by thrombosis, emboli, or vasculitis, or may be caused by mesenteric vein thrombosis (1-6).

In this study, we reviewed the records of the patients with acute mesenteric ischemia to discover the factors contributing to morbidity and mortality and to find remedies for reducing the high morbidity and mortality rates.

Materials and Methods
In this study, the records of 51 patients with acute mesenteric ischemia who were operated on the General Surgery Department of Atatürk University Medical Faculty Hospital during the ten year period from 1985 to 1995 were reviewed retrospectively. Age, sex, clinical appearance, the site and extent of the mesenteric infarction and the appearance of the peritoneal fluid, the diseases that accompany to this disorder, the morbidity and mortality rates, and the factors that contribute to morbidity and mortality were investigated.

Results
There were 37 (72.5 %) males and 14 (27.5%) females. The mean age was 59.5 years with a range

from 21 to 83 years. Most of the patients were elderly; more than half of them (53.0 %) were older than sixty years.

Thirty-nine (% 76.) patients entered the hospital later than 24 hours after the onset of symptoms, and this adversely affected the survival. Of these 39 patients, 28 (71.8) died. Of 12 patients who entered the hospital within 24 hours of onset of symptoms, only 6 (50) died.

Forty-two of the patients (% 82.) had one or more underlying diseases which could be suggested as a cause or predisposing factor (Table 1).

Table 1. *The Diseases that Accompany to Acute Mesenteric Ischemia*

Disease	No. of Patients	Incidence (%)
Atrial fibrillation	14	27.5
Congestive heart failure	13	25.5
Coronary artery disease	10	19.6
Hypertension	7	13.7
Previous arterial emboli	6	11.8
Previous myocardial infarction	6	11.8
Diabetes mellitus	3	5.9
Cirrhosis	2	3.9
Diuretic therapy	2	3.9

The most common symptom was abdominal pain. Nausea-vomiting, absolute constipation, abdominal distention, diarrhea and bloody diarrhea were the other symptoms (Table 2).

About half of the patients were dehydrated at the time of admission. One third was in various states of shock White blood cell counts were elevated (>10.000 / mm3) in 46 (% 90.2) patients. Physical examination revealed abdominal tenderness in all and muscle guarding and rebound tenderness in 42 (82.3 %) patients. Bowel sounds were absent in 40 (78.4 %) patients. Abdominal roentgenograms showed a picture of intestinal obstruction in two thirds of the patients.

Table 2. *Symptoms of the Patients*

Symptoms	Patient number	Incidence (%)
Abdominal pain	50	98.0
Nausea-vomiting	44	86.3
Absolute constipation	18	35.3
Abdominal distention	8	15.7
Diarrhea	3	5.9
Bloody diarrhea	3	5.9

Almost all of the patients presented with a clinical picture of acute abdomen. The initial diagnosis was mesenteric infarction in only 5 (9.8 %) patients. In these 5 patients, differential diagnosis between the major etiologic groups was impossible preoperatively on the basis of history, physical examination, and laboratory and roentgenologic findings on admission.

Table 3. *Distribution of Mesenteric Infarction and Incidence of Different Combinations*

Location of mesenteric infarction	No. of patients	incidence %
Single		
Superior mesenteric artery		
Jejenum	6	11.8
Ileum	13	25.5
Ascending colon		
Transverse colon		
Inferior mesenteric artery		
Descending colon		
Sigmoid		
Combinations		
Jejenum+ileum	14	27.6
Jejenum+ileum +ascending colon	4	7.8
Jejenum+ileum +ascending + transvers colon	8	15.7
Jejenum+ileum+ ascending + transverse + descending colon		
Jejenum + ileum + sigmoid	1	1.9
Jejenum + ileum + entire colon	2	3.9
Transverse + descending + sigmoid colon	1	1.9
Entire colon	2	3.9
Total	*51*	*100*

Ileum (% 82.3) was the most frequently involved part of the intestine, followed by jejunum (% 68.6), ascending colon (% 31.3), transverse colon (% 25.4), sigmoid (% 11.9), and descending colon (% 9.8) in a sequence of decreasing frequency. The mesenteric infarction was located in the region of the distribution of the superior mesenteric artery in 45 patients (88.3 %), and in that of the inferior mesenteric artery in 2 (3.9 %) patients. On 4

In 4 (7.8) patients the peritoneal fluid was serosanginous at laparotomy. In 45 (88.3) patients it was bloody, and in 2 (3.9 %) patients no fluid was detected in the peritoneal cavity.

Table 4: *Type of Treatment and Its Effect on Survival*

Type of treatment	No. of patients	No. of fatalities	Mortality(%)
Bowel resection	44	27	61.4
Segmental small bowel	17	6	35.3
Massive small bowel	11	9	81.8
Small bowel+right colon	10	7	70.0
Small bowel+left colon	2	2	100.0
Segmental colon	2	1	50.0
Small bowel +entire colon	2	2	100.0
Laparotomy only	6	6	100.0
Embolectomy	1	1	100.0
Total	*51*	*34*	*66.6*

At laparotomy, only 1 patient (1.9) did not have intestinal gangrene. This patient underwent embolectomy and vascular anastomosis. Forty-four patients (86.2 %) with intestinal gangrene underwent bowel resection, and in 6 patients (11.8 %) no resection was performed because of the extensiveness of the disease. No patient had second-look operation.Type of treatment and its effect on survival are shown in Table 4.

Peroperatuar mortality rate was 9.8 per cent (5 patients) and postoperative mortality was 56.8 per cent (29 patient). Mortality was related primarily to the extent to which the bowel was involved. Fourteen (41.2) of the postoperative mortalities occurred within the first 24 postoperative hours. Causes of death are shown in Table 5.

Table 5. *Causes of Death*

Cause of death	No. of patients	Incidence (%)
Septic shock	24	47.0
Myocardial infarction	7	13.8
Pulmonary emboli	2	3.9
Cerebral emboli	1	1.9
Total	*34*	*66.6*

In the surviving patients the postoperative complication rate was 23.5 per cent (Table 6), and the mean hospitalization period was 20.5 days (10-81 day). The patients surviving more than thirty days required prolonged hospitalization because of poor nutrition resulting from the short bowel syndrome.

Table 6. Postoperative Complications

Complication	No. of patients	Incidence (%)
Wound infection	3	6.0
Anastomotic leakage	3	6.0
Acute renal failure	2	3.9
Pulmonary emboli	1	1.9
Pulmonary oedema	1	1.9
Evisseration	1	1.9
Severe gastroenteritis	1	1.9
Total	*12*	*23.5*

Discussion

Mesenteric ischemic disorders result from acute or chronic insufficiency of blood flow to all or part of the intestine (1-7). As the number of elderly individuals in the population grows, mesenteric ischemic disorders are being diagnosed with increasing frequency (1-7). As it is in our analysis, these diseases are more common in men than in women (4).

Mesenteric ischemic symptoms are rare, and the diagnosis often proves to be difficult. Early identification requires a high index of suspicion by the clinican in those patients who are at risk of developing these diseases. In early periods of the disease, the pain experienced by the patient is markedly out of proportion to the physical findings . As infarction develops, increasing tenderness, rebound and muscle guarding reflect the progressive loss of intestinal viability (1-8). It has been reported

disease, the pain experienced by the patient is markedly out of proportion to the physical findings . As infarction develops, increasing tenderness, rebound and muscle guarding reflect the progressive loss of intestinal viability (1-8). It has been reported that the correct initial diagnosis may be reached in only 6 per cent of the patients (4). In this study, most of the patients were applied with a clinical picture of acute abdomen because there was intestinal gangrene in 98 % of the patients. The initial diagnosis was mesenteric infarction in only 5 (9.8 %) patients.

Twelwe (23.5 %) of the patients arrived at the hospital within 24 hours of onset of symptoms, and the remaining (76.5 %) after 24 hours. This was too late for the optimal time of operation because the need for resection increases as soon as 6 hours have elapsed (1-3).

Forty-two patients had a one or more underlying diseases which could be suggested as a cause or predisposing factor. Heart disease, long-standing congestive heart failure, cardiac arrhythmias, recent myocardial infarction, or hypotension due to burns, pancreatitis, hemorrhage or previous or synchronous arterial emboli elsewhere all predispose to acute mesenteric ischemia (1-6, 9). Development of abdominal pain in a patient with any of these conditions should suggest the diagnosis of acute mesenteric ischemia.

Superior mesenteric artery emboli are responsible for 50 % of episodes of acute mesenteric ischemia. The emboli usually originate from a mural or atrial thrombus. Mesenteric venous thrombosis accounts for less than 10 % of acute mesenteric ischemia (1-4, 6, 8).

Typically, lesions were encountered in both the small and the large bowel, but the ileum was the segment most frequently and severely involved. The region supplied by the inferior mesenteric artery was involved in 3.9 per cent.

Because of the difficulty in making an early diagnosis of acute mesenteric ischemia, angiography has an important role in diagnosis, especially in cases in which the cause of abdominal pain is obscure (1-4,6,8). Ultrasonography and magnetic resonance imaging can also demonstrate the thrombus within the superior mesenteric vein (1). Angiography will confirm mesenteric arterial or venous occlusive disease and may demonstrate findings of vasoconstriction and diminished flow in nonocclusive ischemia (1-4,6,8). We could not perform angiography for our patients.

Jonston et al (10) treated the patients with acute and chronic mesenteric ischemia with a bypass graft and experienced that the early and late results were good. Surgical embolectomy remains the standard approach to acute mesenteric ischemia caused by superior mesenteric artery emboli, provided a diagnosis is reached before bowel necrosis occurs. Nevertheless, acute mesenteric ischemia is still associated with 70 to 90 % mortality; this is attributed to a delay in diagnosis but also to the consequences of laparotomy and second-look operation in these often elderly cardiac and debilitated patients (1-6,11). So, Fuentes et al (12) applied intraarterial thrombolytic therapy with urokinase , a nonsurgical option, in selected cases of superior mesenteric artery embolisms and experienced good results.

Our total peroperative and postoperative mortality rates of 66.6 per cent compare favorably with the values reported in the literature.

Nutritional support with reversal of the negative nitrogen balance is mandatory in any patient who survives the immediate postoperative period. Total intravenous nutrition has proved beneficial in the immediate and long-term management of these patients (1-6, 13).

In conclusion, acute mesenteric ischemia should be suspected in all elderly cardiac patients with symptoms of acute abdomen. The value of early diagnosis, fast resuscitation, and aggressive operative treatment cannot be overstated.

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