Mortality of Acute Necrotizing Pancreatitis

Mariam Malik,[1*] Mazhar Iqbal,[1] Abdul Malik Magsi,[1] Sughra Perveen[1]

ABSTRACT

Objective — *To find out the mortality in patients with acute sterile necrotizing pancreatitis with conservative management and acute septic necrotizing pancreatitis with surgical necrosectomy.*

Study design — *Descriptive case series.*

Place & Duration of study — *Surgical Unit 1 Ward 3 Jinnah Postgraduate Medical Center (JPMC) Karachi, from January 2015 to December 2016.*

Methodology — *All patients diagnosed as acute necrotizing pancreatitis based upon serum amylase level more than three times the normal and CT scan abdomen with contrast findings, were included in the study. Group A patients belonged to acute sterile pancreatitis where aspirate did not reveal microorganisms growth. When microorganisms were found on culture and sensitivity report then the patients were kept in group B and labeled as having acute septic necrotizing pancreatitis. Group A patients were treated conservatively and mortality was recorded. In group B patients surgical necrosectomy was done and mortality recorded. Result was analyzed by SPSS Version 22.*

Results — *A total of 190 patients of acute pancreatitis were evaluated for necrosis of pancreas. CT scan with contrast showed that 65/190 (34.21%) had acute necrotizing pancreatitis. Out of these 65 patients, no growth of microorganisms on aspiration was found in fifty (76.92%) cases. After conservative treatment of group A patients, only two expired with mortality rate of 4%. In group B fifteen patients had microorganisms growth on culture. These were treated surgically and necrosectomy was done. Four patients out of fifteen expired after surgery with mortality of 26.67%. All patients who expired had more than 50% necrosis of pancreas.*

Conclusion — *Mortality in acute sterile necrotizing pancreatitis was low with conservative treatment (4%) and high (26.67%) in acute septic necrotizing pancreatitis even with surgical intervention.*

Key words — *Acute sterile necrotizing pancreatitis, Acute septic necrotizing pancreatitis, Necrosectomy.*

INTRODUCTION:

Acute necrotic pancreatitis is reported to occur in approximately 20% of all patients with pancreatitis.[1] The term infected necrosis refers to bacterial invasion of necrotic pancreatic tissue. Infection of pancreatic necrosis is the most important risk factor contributing to death in severe acute pancreatitis. It is accepted that infected pancreatic necrosis should be managed surgically; in contrast management of sterile pancreatic necrosis, accompanied by organ failure, is controversial. Recent evidence suggests that conservative management of sterile pancreatic necrosis, including early antibiotic administration, seems promising.[2]

Fine needle aspiration showed a sensitivity of 96% for detecting pancreatic infection.[1] Balthazar criteria consists of five grades with Grade A as normal pancreas to Grade E with two or more fluid collection or gas within pancreas or without the peri pancreatic inflammation. In Grade A - D the probability of abscess formation is less than 2%. In grade E the

[1] Department of Surgery, Ward-3 JPMC, Karachi.

Correspondence:
Dr. Mariam Malik [1]*
Surgical Unit 1 Ward 3
Jinnah Postgraduate Medical Center
Email: malikmariam_15@hotmail.com

probability increased to 57% and mortality up to 100% if intervention and drainage are not undertaken for infected necrosis or abscess.[1] Mortality from sterile pancreatic necrosis is reported as 10% and rises to 30% with infection in the necrotic area.[3] When organ failure and infected pancreatic necrosis are present together it presents an even worse prognosis with mortality reaching to 43%.[4]

Sterile pancreatic necrosis can be successfully treated conservatively. Patients with infected necrosis generally need an intervention. In early disease treatment starts with catheter drainage, if needed followed by minimally invasive surgical or endoscopic necrosectomy once peri pancreatic collection is sufficiently demarcated.[5] Non-surgical treatment of sterile pancreatic necrosis is controversial but surgical treatment of septic necrosis is recommended. The rationale behind this study was to find out the mortality rate of sterile pancreatic necrosis by non-operative conservative management and that of acute septic necrotizing pancreatitis with surgical necrosectomy.

METHODOLOGY:

This was a descriptive case series conducted in Surgical Unit 1 JPMC Karachi, from January 2015 to December 2016. All patients above 12 years of age who were diagnosed as a case of acute necrotizing pancreatitis were included. Diagnosis was based upon serum amylase level if raised three times than normal and contrast CT scan of abdomen showing pancreatic necrosis. All patients were admitted to ICU and managed by volume replacement, antibiotics and organ support when required. Patients were divided in two groups. Group A included patients of sterile pancreatic necrosis and Group B with septic necrotizing pancreatitis.

All patients of acute pancreatitis without necrosis, and other comorbid were excluded. CT scan with contrast was done weekly up to 4 weeks. CT guided aspiration of fluid was done and sent for culture and sensitivity. If microorganisms growth found then patient of acute necrotizing pancreatitis were declared as having septic necrotizing pancreatitis otherwise labeled as sterile necrotizing pancreatitis.

Patients who had 30% necrosis were graded as A and 30 – 50% necrosis as grade B and more than 50% necrosis as grade C. Surgical intervention with necrosectomy was done in all patients with septic necrotizing pancreatitis. Sterile necrotizing pancreatitis was treated conservatively according to international guidelines. Mortality in both the groups was recorded. Cholecystectomy of all cholelithiasis patients was done in the same admission when needed, and stones from CBD were extracted by ERCP. SPSS version 22 was used to analyze the data.

RESULTS:

A total of 190 patients were admitted with the diagnosis of acute pancreatitis. Contrast enhanced CT scan abdomen revealed that 65 (34.21%). patients developed necrotizing pancreatitis. Age range was 25 to 65 years. There were 25 (38.46%) male and 40 (61.54%) female patients. Fifty patients had sterile necrotizing pancreatitis (Group A). In this group there were 18 (36%) males and 32 (64%) females. In group B, 7 (46.66%) were males and 8 (53.34%) females.

In group A of acute sterile necrotizing pancreatitis group two (4%) died due to organ failure. In group B, where surgical intervention was done, four (26.66%) patients died due to sepsis. In group A thirty patients had necrosis of pancreas less than 30% and 15 patients had necrosis 30 – 50% and five patients had necrosis more than 50% and only two patients died who had necrosis of pancreas more than 50%. In group B five patients had necrosis of pancreas more than 50% out of these four patients expired. Eight patients had necrosis of pancreas less than 30% and two patients had necrosis 30% to 50%.

Mortality occurred when necrosis of pancreas was more than 50%. Five patients out of the sixty five later developed pseudo cyst of pancreas. Cyst gastrostomy was done in these patients. One patient developed abscess after 2 months of treatment in whom percutaneous CT guided drain was placed and antibiotics according to C/S report were given.

DISCUSSION:

Pancreatic necrosis is an acute condition in which there is variable amount of necrosis and fluid collection. By around 4 weeks a walled off pancreatic necrosis may form in which the collection is surrounded by fibrotic inflammatory wall. The term infected necrosis refers to bacterial invasion of necrotic pancreatic tissue. Pancreatic abscess is often a late complication of acute necrotizing pancreatitis occurring more than four weeks after the initial attack. The mortality rate associated with pancreatic abscess is generally less than that of pancreatic necrosis. The mortality rate of pancreatic necrosis may exceed 20% or more in the presence of infected pancreatic necrosis due to sepsis and multiple organ failure.[1]

In our study the mortality rate of infected pancreatic

necrosis was 26.67% in all the patients with more than 50% necrosis (grade C). Acute necrotic pancreatitis is reported to occur approximately in 20% of all episodes of acute pancreatitis.[1] In our study 34.21% patients developed necrotizing pancreatitis. The mortality rate from sterile pancreatitis is report as 10% and in infected necrotizing pancreatitis is from 30 – 43%.[6] In our study mortality in infected necrosis was 26.67% and in sterile necrotizing pancreatitis 4%.

The specific timing and indication for surgical intervention in necrotizing pancreatitis are still controversial, however there is consensus about operative necrosectomy for the treatment of infected pancreatic necrosis.[7] High mortality is reported with operation.[8,9] In septic necrotizing pancreatitis surgical intervention was done in 3rd week in our series. This is earlier than reported literature but mortality rate remained 26.67% which is comparable with most of the international studies.[10,11]

Pancreatic necrosis can be prevented by early aggressive resuscitation of patient. The severity of necrotizing pancreatitis at imaging is determined on the basis of the extent of parenchymal involvement with necrosis.[12] After one week diagnosis of peri pancreatic necrosis may be formed and it can be diagnosed due to heterogeneous peri pancreatic fat and liquefied component.[13,14] Infection as a complication of necrotizing pancreatitis occurs in 20% of patients.[15] This include biliary obstruction because of mass effect on adjacent organs, pancreatic duct stricture, hemorrhage and venous thrombosis.[16] In this study conservative management of sterile necrotizing pancreatitis produced good results. Limitations of the study include short time span and sample size. Further studies can be done with big sample size to strengthen this observation.

CONCLUSIONS:

Conservative treatment of sterile necrotizing pancreatitis had good prognosis so surgical intervention in these patients should be avoided. Early diagnosis of infected necrotizing pancreatitis is mandatory. Surgical intervention and necrosectomy are necessary. This can decrease mortality and morbidity in infected necrotizing pancreatitis.

REFERENCES:

1. Mathew A. Pancreatic necrosis and pancreatic abscess: Drugs and disease gastroenterology. [internet]. Medscape; [cited 2017 Feb 23]. Available from URL:http://emedicine.medscape.com/article/181264-treatment.
2. Büchler MW, Gloor B, Müller CA, Friess H, Seiler CA, Uhl W. Acute necrotizing pancreatitis: treatment strategy according to the status of infection. Ann Surg. 2000;232:619-25.
3. Petrov MS, Shanbhag S, Chakraborty M, Phillips AR, Windsor JA. Organ failure and infection of pancreatic necrosis as determinants of mortality in patients with acute pancreatitis. Gastroenterology. 2010;139:813-20.
4. Sarwald S, Ang TL, Richler H, Tang KR, Zhong R, Groth S. Long term result after endoscopic drainage and necrosectomy of symptomatic pancreatic fluid collection. Dig Endosc. 2012;24:36-41.
5. van Brunschot S, Bakker OJ, Besselink MG, Bollen TL, Fockens P, Gooszen HG, van Santvoort HC. Treatment of necrotizing pancreatitis.Clin Gastroenterol Hepatol. 2012;10:1190-201.doi: 10.1016/j.-cgh.2012.05.005.
6. Banks PA, Bollen TL, Dervenis C. Classification of acute pancreatitis—2012: revision of the Atlanta classification and definitions by international consensus. Gut. 2013;62:102-11.
7. Hartwig W, Werner J, Buchles MW. Management of infection in acute pancreatitis. J Hepatobiliary Pancreat Surg. 2012;9:423-8.
8. Bradley EL, Allen K. A prospective longitudinal study of observation versus surgical intervention in the management of necrotizing pancreatitis. Am J Surg. 2011:161-24.
9. Fernández-del CC, Rattner DW, Makary MW. Debridement and closed packing for the treatment of necrotizing pancreatitis. Ann Surg. 2012:676-84.
10. Aultman DF, Bilton BD, Zibari GB. Nonoperative therapy for acute necrotizing pancreatitis. Am Surg. 2011;1114-7.
11. Ang TL, Teoh AYB. EUS-guided drainage of pancreatic fluid collections. J Dig Endosc. 2016;108:400-15.
12. Spanier BWM, Nio Y, van der Hulst RWM,

Practice and yield of early CT scan in acute pancreatitis: a Dutch observational multicenter study. Pancreatology. 2010;10:222-8.

13. Thoeni RF. The revised Atlanta classification of acute pancreatitis: its importance for the radiologist and its effect on treatment. Radiology. 2012;26:751-64.

14. Sakorafas GH, Tsiotos GO, Stan MG. Extrapancreatic necrotizing pancreatitis with variable pancreas, Am Coll Surg. 2013;188:643-8.

15. Beger HG, Rau R, Mayer J, Pralle U. Natural course of acute pancreatitis. World J Surg. 2009;21:130-5.

16. Oza VM, Rahaelle M. Endoscopic management of chronic pancreatitis. World J Gastroenterol Endosc. 2013;5:19-28.

Received for publication: 11-05-2017

Accepted after revision: 22-09-2017

Author's Contributions:
Mariam Malik: Manuscript writing and data collection.
Mazhar Iqbal: References, result and conclusion section.
Abdul Malik Magsi: Data collection.
Sughra Parveen: Review & discussion section.

Conflict of Interest:
The authors declare that they have no conflict of interest.

Source of Funding:
None

How to cite this article:
Malik M, Iqbal M, Magsi AM, Perveen S. Mortality of acute necrotizing pancreatitis. J Surg Pakistan. 2017;22(3):97-100. doi:http://-dx.doi.org/10.21699/jsp.22.3.7.