

## Clinical Profile And Outcome Of Severe Acute Pancreatitis

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**Abstract : Background and Objectives:** Around 20% of the patients of acute pancreatitis develop acute severe pancreatitis in the form of extensive pancreatic or peripancreatic fat tissue necrosis with associated peripancreatic collections. These patients run a protracted clinical course, multiorgan failure, high morbidity and mortality. **Methods:** Clinically and radiologically diagnosed 30 patients of acute severe necrotizing pancreatitis were prospectively evaluated for the clinical outcome with respect to extent of pancreatic necrosis and severity in terms of CTSI. **Results:** 18 patients had pancreatic necrosis between 30-50% (Group A) whereas 12 patients had necrosis more than 50% (Group B). The rate of organ dysfunction and mortality (11.11% versus 50.50%) the rate of was significantly higher in the group B. Multiorgan failure (MOF) was present in 5.56% of group A and 58.33% of group B patients. 66.67% patients were managed conservatively of whom 80% survived and 33.33% patients underwent surgical intervention of whom 60% survived. **Conclusion:** CECT is the modality of choice to help stage the severity of pancreatic necrosis, depict severity of inflammatory processes and local complications. Patients with pancreatic necrosis with transient end organ dysfunction can be treated conservatively with favorable outcome. The need for intervention should be individualized and based on the clinical condition of patient. [Singla S et al NJIRM 2013; 4(6) : 71-74]

**Key Words:** A acute pancreatitis , conservative , intervention, necrotizing , treatment.

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**Introduction:** Severe pancreatitis occurs in 20-30% of all patients with acute pancreatitis and is characterized by a protracted clinical course, multiorgan failure and pancreatic necrosis. About 1/3<sup>rd</sup> of patients with a severe attack who develop organ failure during the first week, however subsequently develop pancreatic necrosis involving more than 30% of gland<sup>1</sup>.

According to Atlanta classification<sup>2</sup>, severe pancreatitis (necrotizing pancreatitis) is clinically defined by abdominal findings such as increased tenderness, distension and hypoactive or absent bowel sounds. The natural course of severe acute pancreatitis progresses in two phases. The first fourteen days are characterized by the systemic inflammatory response syndrome (SIRS) resulting from the release of inflammatory mediators. In patients with necrotizing pancreatitis, organ failure is common and often occurs in the absence of infection. In addition to organ dysfunction, general derangements include hypovolemia, a hyper dynamic circulatory regulation, fluid loss from the intravascular space and increased capillary permeability. The second phase begins approximately two weeks after the onset of the disease. It is dominated by sepsis related

complication resulting from infection of pancreatic necrosis. This is associated with multiple systemic complications such as pulmonary, renal and cardiovascular failure<sup>3,4</sup>.

On CECT, necrotic pancreatic tissue is recognized by its failure to enhance after intravenous contrast administration. A focal or diffuse well marginated zone of unenhanced parenchyma (>3 cm in diameter or >30% of pancreatic area) is considered a reliable CT finding for the diagnosis of necrosis<sup>5</sup>. Balthazar EJ et al<sup>5</sup> constructed a Computed tomography severity index (CTSI) for acute pancreatitis that combines the grade of pancreatitis with the extent of pancreatic necrosis. The CTSI assigns points to patients according to their grade of acute pancreatitis as well as the degree of pancreatic necrosis. More points are given for a higher grade of pancreatitis and for more extensive necrosis. The patients with higher CTSI have higher mortality and complication rates<sup>1,6</sup>.

This prospective study was conducted on patients with acute severe necrotizing pancreatitis. Their clinical profile and outcome was noted with respect to the extent of pancreatic necrosis and

severity in terms of CTSI and the results statistically analyzed.

**Material & Methods:** The study was conducted on 30 patients of age > 15 and < 75 years in the Department of Surgery of Dayanand Medical College & Hospital, Ludhiana from January 2011 to March 2013 to see the clinical profile and outcome of acute severe necrotizing pancreatitis. The approval from ethical committee was obtained. The diagnosis was made on CECT with more than 30% necrosis in pancreas (after 72 hours of onset of disease) and with at least, either pain abdomen or raised serum amylase and lipase. The patients already operated outside for necrotizing pancreatitis or for any other intra-abdominal condition at the time of presentation were not included in the study. The patients were divided into Group A which included patients with 30-50% pancreatic necrosis and Group B which included patients with more than 50% necrosis diagnosed on CECT.

Organ failure was defined as PaO<sub>2</sub> < 60 mm Hg despite receiving 4 L oxygen /minute via nasal tube or need for mechanical ventilation; serum creatinine level > 2 mg/dl; systolic blood pressure (BP) < 90 mm Hg or need for catecholamine support. Multiple organ failure was defined as

failure of 2 or more organ systems<sup>7</sup>. The data obtained was analyzed using chi square method to know the outcome of acute severe necrotizing pancreatitis with respect to CT Severity Index<sup>6</sup> and percentage of necrosis.

**Result:** The youngest patient in our study was of 22 years and the oldest of 67 years (mean age: 44.7 years). 18 (60%) patients were male and 12 (40%) were female, the male to female ratio being 3:2. 10 (33.3%) patients were alcohol addict, out of whom 4 (40%) were morphine abusers. 17 (56.6%) patients had documented gall stone induced pancreatitis. No obvious cause of pancreatitis was found in 3 (10%) patients. All the patients had a significant increase (> 100 mg/dl) in the serum amylase and lipase levels. (p = 0.0007), 2 patients (6.67%) in our study had 7 points on CTSI, 15 (50%) had 8 points, 4 (13%) had 9 points and 9 (30%) had 10 points on CTSI. As per the inclusion criteria, all the patients had necrosis diagnosed on CECT. 18 (60%) patients had 30-50% pancreatic necrosis (Group A) and 12 (40%) patients had more than 50% necrosis (Group B) diagnosed on CECT. The analysis concerning single organ failure and MOF in these two groups is given in the Table 1. The rate of mortality and the rate of organ dysfunction was significantly higher in the group B.

**Table 1: Comparison Of Variables In Both The Groups**

Variable	Group A (30 - 50%)		Group B (> 50%)		Total	%	p - value
Organ dysfunction	No.	%	No.	%			
Cardiovascular							
Yes	2	11.11	8	66.67	10	33.33	0.00816
No	16	88.89	4	33.33	20	66.66	
Renal							
Yes	6	33.33	5	41.67	11	36.67	0.35559
No	12	66.67	7	58.33	19	63.33	
Respiratory							
Yes	5	27.78	8	66.67	13	43.33	0.04654
No	13	72.22	4	33.33	17	56.66	
MOF							
Yes	1	5.56	7	58.33	8	26.66	0.00806
No	17	94.44	5	41.67	22	73.33	
Mortality							
Yes	2	11.11	6	50.0	8	26.66	0.04153
No	16	88.89	6	50.0	22	73.33	

Infection in pancreatic tissue (pigtail and operative tissue) was present in 10 patients. Escherichia coli grew in 8, acinetobacter in 6, and pseudomonas in 4 of 10 patients. Out of these 10 patients, 2

underwent pigtail insertion and recovered. Remaining 8 required either necrosectomy or pigtail + necrosectomy and out of these, 50% patients died.

**Table 2 : Relationship Of Management With Necrosis And Outcome**

Management		No.	%	Necrosis				Discharged		Expired	
				30 – 50%		> 50%		No.	%	No.	%
				No.	%	No.	%				
Conservative		20	66.67	12	60.0	8	40.0	16	80.0	4	20.0
Surgical		10	33.33	6	60.0	4	40.0	6	60.0	4	40.0
p – value				NA				0.1413			
Surgical	Pigtail	2					0	100	0	0.00	
	Necrosectomy	4					2	50.00	2	50.00	
	Pigtail + Necrosectomy	4					2	100	2	50.00	

The mean hospital stay of the patients was 23.20 days (SD: 7.12; range: 4 – 35 days). Maximum number 17 (56.67%) of patients had a hospital stay in range of 21 – 30 days. Minimum stay was 4 days of a patient who expired due to multiple organ failure. The patient with maximum hospital stay (35 days) underwent pig tail insertion followed by surgery and was discharged in a stable condition.

**Discussion:** In our study the youngest patient was of 22 years, the oldest was of 67 years and the mean age was 44.7 years. Male to female ratio was 3:2. Our findings were comparable to that of Sivasankar A<sup>8</sup>. Besselink MGH et al<sup>7</sup> found median age of presentation as 53 years (range: 18 – 86 years) and 55% were males.

10 (33%) patients were alcohol addict, out of whom 4 also abused morphine. 17 patients had documented gall stone induced pancreatitis. In 3 patients no obvious cause of pancreatitis was found. Sivasankar A<sup>8</sup> found alcohol consumption in 11 (45.8 %), biliary microlithiasis in 2 (8.3%), blunt abdominal trauma in 1 (4.1%) and unknown cause of acute pancreatitis in 4 (16.6%) patients. The difference may be due to high incidence of alcohol intake in North India.

All the 30 patients had a significant increase in their serum amylase and lipase levels. It has been stated that the specificity of serum lipase and amylase can be improved by raising the threshold

to at least three times the upper limit of the normal reference values<sup>9</sup>.

We did not find any significant difference in the comparison of the CTSI score > 7 in patients with acute severe pancreatitis. Similar observation has been made by Mortelet KJ<sup>6</sup> who stated that CTSI is a powerful tool to predict outcome when comparing patients with mild and severe pancreatitis; however no significant correlation was obtained when comparing patients with moderate and severe pancreatitis. Balthazar EJ<sup>5</sup> stated that patients who had a severity index of 0 or 1 exhibited a 0 % mortality rate and no morbidity, while patients with severity index of 2 had no mortality and a 4% morbidity rate. While a severity index of 7 – 10 yielded a 17% mortality rate and a 92% complication rate.

33.3% patients in our study were in shock and required ionotropic support, 43.33% had respiratory failure, 36.67% had renal failure and 26.66% had multiorgan failure (MOF) at admission. Buchler MW<sup>3</sup> gave 72% incidence of organ failure in necrotizing pancreatitis; cardiocirculatory insufficiency in 23%, respiratory failure in 63% and renal failure in 13%. Pal KM<sup>10</sup> found the incidence of 53.3%, 66.7% and 33.3% respectively. We found a significant increase in the mortality of the patients in group B with increase in the pancreatic necrosis (> 50%). Similar observation has been

made by Beger HG<sup>2</sup> who found that patients with extended sterile necrosis of the pancreas are at high risk for infected necrosis with the consequence of progressive multiorgan dysfunction syndrome. The mean hospital stay of the patients in our study was 23.20 days. This was in comparison with that of other authors<sup>3,10</sup>. Besselink MGH<sup>7</sup> concluded that conservative management is associated with decrease mortality but increased hospital stay.

In our study, 66.67% patients were managed conservatively and 33.33 % underwent surgical intervention (pigtail, necrosectomy or both). Santvoort<sup>4</sup> did conservative management in 62% and surgical intervention in 38% patients and concluded that primary catheter drainage improves outcome in patients with infected pancreatic necrosis. There was no significant difference in the outcome of the patients managed either conservatively or surgically (20% vs 40% mortality) in our study. Many authors<sup>4,7</sup> concluded that postponing necrosectomy is associated with decrease mortality but increased hospital stay. Alsfasser G<sup>11</sup> opined that a highly conservative approach in necrotizing pancreatitis results in significantly lower mortality and open surgery should be reserved for concomitant intra abdominal complications. Buchler MW<sup>3</sup> concluded that in patients with severe infected necrosis, surgical treatment is preferable.

**Conclusion:** Contrast enhanced computed tomography scan (CECT) is the modality of choice to help stage the severity of pancreatic necrosis, depict severity of inflammatory processes and local complications. The rate of mortality was significantly higher in patients with higher degree of necrosis. Patients with pancreatic necrosis with transient end organ dysfunction can be treated conservatively with favorable outcome. The need for intervention should be individualized and based on the clinical condition of patient.

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