

Outcome Assessment in Acute Pancreatitis based on Revised Atlanta Classification: A Tertiary Care Experience from a Developing Country

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ABSTRACT

Introduction: The study evaluated the outcome variables in acute pancreatitis following its classification based on the revised Atlanta classification. Also the burden on the health care setup was evaluated.

Material and methods: Ethical approval for this type of study was obtained from concerned authority. All together 67 patients who underwent contrast enhanced CT study in the department during the period from January 2014- June 2015 were included in the study after obtaining informed consent. Statistical analyses were performed to compare the need for ICU admission, number of days of hospitalisation and treatment outcome in interstitial oedematous pancreatitis and necrotising pancreatitis.

Results: Total of 67 study subjects who underwent contrast enhanced CT was included in the study, of which 33 patients (49.3%) were diagnosed to have interstitial oedematous pancreatitis and rest 34 patients to have necrotising pancreatitis. Patients with necrotising pancreatitis were more likely to have recurrent symptoms or death ($p=0.003$ OR= 8.445; CI= 1.718-41.606). Hospital stay ($p=0.000$ OR= 103.125; CI= 12.099-878.986) and ICU admission ($p=0.012$ OR= 4.0; CI= 1.316-12.159) were also increased in case of necrotising pancreatitis.

Conclusion: Patients with necrotising pancreatitis were more likely to have recurrent symptoms or death than interstitial oedematous pancreatitis. Hospital stay and ICU admission was also increased in case of necrotising pancreatitis thus increasing the burden on the healthcare system.

Keywords: Acute pancreatitis, computed tomography, Revised Atlanta Classification.

INTRODUCTION

Acute pancreatitis (AP) is an acute inflammatory state involving the pancreas and is categorized conventionally into either mild or severe disease. Majority of patients with acute pancreatitis, approximately 80% to 85% of patients, will have the mild form, with a clinical course which has no complications. On the other hand, 15% to 20% will develop a complicated clinical course characterized by organ failure and/or local complications.¹

Exact prevalence data from India are not readily available so far. Only an idea of incidence may be obtained from patients admitted in tertiary care centers in India. At the All India Institute of Medical Sciences (AIIMS), New Delhi, 276 patients with AP were admitted from January 1997 to June 2002, on an average about 55 patients per year.² The human and financial burden of acute pancreatitis appears to be growing. The incidence of acute pancreatitis in the United States of America varies from 4.9 to 73.4 per 100,000 patients.³⁻⁵ However, estimates of incidence are inaccurate since the diagnosis of mild disease may be missed all together. In addition death may occur before diagnosis in 10% of patients with severe disease. Conversely, many patients

with abdominal pain from various causes who present with a slight elevation in the serum amylase and/or lipase are falsely diagnosed as having acute pancreatitis.

The cost of pancreatic diseases (both direct and indirect costs) in the United States alone was estimated to be \$2.6 billion in the year 2000.⁶ In the same year, in the United States there were 2834 deaths from acute pancreatitis, making it the 14th most common cause of death due to gastrointestinal diseases. Acute pancreatitis is the second most common inpatient GI diagnosis in the United States following cholelithiasis and acute cholecystitis. It's even more common than acute appendicitis as per data. The incidence of acute pancreatitis appears to be increasing worldwide.^{6,7}

Since many years several classification systems have been developed in order to predict severity. In 1992, the Atlanta classification for acute pancreatitis was introduced as a universally applicable classification system for the various abnormalities of acute pancreatitis.

In 2008, a global consensus statement was developed that included participation of many experts in the field of pancreatitis and was led by the Acute Pancreatitis Classification Working Group. It recognized that clinical severity and morphologic characteristics might not directly correlate. All this led to the development of the Revised Atlanta classification in 2012. Such a revised classification system facilitated standardized reporting of clinical and imaging data, as well as increased the objective assessment of treatment, which can be used as an effective means of communication among the medical team. It also facilitates the comparison of results among different institutions.

Since the Revised Atlanta Classification was generated through a web based consultation process, its validity in clinical practice has to be prospectively evaluated in various populations around the world. There has been paucity of studies which has applied the revised classification in the Indian population. This study aims to evaluate the outcome variables in acute pancreatitis following its classification based on the revised Atlanta classification and also assess the burden on the health care system.

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MATERIAL AND METHODS

Ethical approval for this type of study was obtained from concerned authority. This was a descriptive study done from January 2014- June 2015, in all patients with clinical suspicion of acute pancreatitis who came for CECT study in the department. All subjects referred to Radiodiagnosis department with clinical suspicion of acute pancreatitis with age more than 18yrs and time since onset of disease a minimum of one week were included in the study after informed consent. Patients who did not get adequate CECT scan due to technical reasons were excluded.

Patients were subjected to computed tomography with iv contrast. Contrast was given by bolus injection at the rate of 2-3ml/sec typically of 100 ml of Iopromide/Ultravist™ (15gI/50ml, with each ml containing 0.623gm Iopromide i.e. equivalent to 300 mg iodine). In cases where positive oral contrast was given the oral contrast was 500ml diluted diatrizoate meglumine and diatrizoate sodium (Gastrografin™), which was given approximately 30min prior to examination and an additional 250ml at the time of exam. Sections were taken from the level of diaphragm to pubic symphysis with 5mm thick sections, 6-15mm/sec table speed, and reconstruction of data at 3mm intervals. Multi phase contrast study was then done with image acquired at 30-35 sec for late arterial phase, 70 - 75 sec for portal venous phase after contrast administration.

Data was collected using the study proforma prepared as per the Revised Atlanta Classification of acute pancreatitis.⁸

STATISTICAL ANALYSIS

Data collected was entered into Microsoft Excel worksheet and analysed for obtaining the frequency tables and for chi square evaluation of various variables in the study. Fischers exact test was done where ever the samples were less.

RESULTS

In the study, 49.3% were diagnosed to have acute interstitial oedematous pancreatitis. 50.7% had acute necrotising pancreatitis. No fluid collections were seen in 17.9% of the study population. APFC were noted in 17 cases (25.4%) and pseudocysts in 7.4%. WON was noted in 23.8% of the study population.

When comparing, occurrence of fluid collections and the type of pancreatitis, there was significant difference among the study population. Fluid collections were more likely to occur in patients with necrotizing pancreatitis than with interstitial oedematous pancreatitis (Table 1).

ICU admission was noted to be more in cases with necrotising pancreatitis with statistical analysis showing significant association (p = 0.012). The Odds ratio was 4 indicating increased risk as well with 95% confidence interval 1.316 - 12.159 (Table 2).

33 out of the 34cases with necrotising pancreatitis had hospital admission lasting for more than 7 days. Significant association was found with p<0.05 and odds ratio being 103.125 suggestive of increased risk for longer duration of hospital stay (Table 3).

In our study there were 4 deaths, out of which 3 were having necrotising pancreatitis. When analysed there was significant association between necrotising pancreatitis and the occurrence of recurrent symptoms/death. The odds ratio was 8.445

Fluid collections	Type of Pancreatitis	
	Interstitial Oedematous Pancreatitis	Necrotising Pancreatitis
No	11	1
Yes	22	33
Total	33	34
Chi-Square value 10.521; p = 0.001		
Table-1: Comparison between type of acute pancreatitis and fluid collections		

Type of Pancreatitis	ICU admission	
	Yes	No
Necrotising Pancreatitis	16	18
Interstitial Oedematous Pancreatitis	6	27
Pearson Chi-Square value = 6.332; p=0.012		
Odds ratio= 4.0 with 95% CI :1.316-12.159		
Table-2: Comparison of type of pancreatitis and need for ICU admission.		

Type of pancreatitis	No. of days in hospital stay	
	More than 7 days	Less than 7 days
Necrotising Pancreatitis	33	1
Interstitial Oedematous Pancreatitis	8	25
Total	41	26
Chi square value 37.391; p = 0.000		
Odds Ratio 103.125; 95% CI : 12.099 - 878.986		
Table-3: Comparison of number of days in hospital stay and type of pancreatitis.		

Type of Pancreatitis	Treatment outcome	
	Recurrent symptoms or death	Symptoms Relieved
Necrotising Pancreatitis	12	22
Interstitial Oedematous Pancreatitis	2	31
Total	14	53
Chi square value = 8.529;p= 0.003		
Odds ratio 8.445; 95%CI:1.718 - 41.606		
Table-4: Comparison of outcome and type of pancreatitis.		

indicating the increased risk as well for the same group (Table 4).

DISCUSSION

23.8% (16 cases) of study population had walled off necrosis which was considerably higher when compared to the 7.4% (5 cases) who had pseudocyst. This is consistent with the recent study by Sanatan Behera et al which has suggested that walled off necrosis is more common than pseudocyst.⁹

In our study, 25.4% (17 cases) each with APFC and ANC were also detected. In our study majority of the study population were subjected to only conservative management (92.5%), with interventions done only in 5 cases (7.5%). This is consistent with the literature which mentions that majority of acute pancreatitis patients do not require any interventions.¹⁰

In our study, there were 4 deaths (6%) and 10 cases (14.9%) had recurrent symptoms within the 3 month follow up period. Majority (79.1%) of the patients had no other complaints within

the three month period.

When outcome was compared to the type of pancreatitis it was found that there was significant ($p=0.003$ and OR 8.44) increased risk of recurrent symptoms/death in patients with necrotising pancreatitis than in interstitial oedematous pancreatitis.

In our study, ICU admission was needed in 22 cases (32.8%), with significantly increased risk of ICU admission seen in necrotising pancreatitis ($p =0.012$; OR 4.0). Only 6 out of the 33 cases of interstitial oedematous pancreatitis required ICU admission.

Number of days in hospital was also found to be significantly higher with necrotising pancreatitis ($p =0.000$ and OR 103.125). Most patients with necrotising pancreatitis had hospital admission lasting for more than 7 days, whereas 25 out of 33 cases with interstitial oedematous pancreatitis required less than 7 days in hospital. These data were consistent with findings in various available data.¹¹⁻¹³

CONCLUSION

The study showed that patients with necrotising pancreatitis were more likely to have recurrent symptoms or death than interstitial oedematous pancreatitis and hence Revised Atlanta classification does prove to be useful in predicting the prognosis. Also hospital stay and ICU admission was also increased in case of necrotising pancreatitis thus increasing the burden on the healthcare system.

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