



COMPARISON OF CLINICAL FINDINGS VS CT FINDINGS IN CASE OF ACUTE PANCREATITIS

Surgery

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ABSTRACT

Background: Acute pancreatitis is one of the most common cause of acute abdomen. Gall stone pancreatitis is most common cause of acute pancreatitis while alcoholic pancreatitis is most common cause of chronic pancreatitis.

Objective : Comparative study between clinical and CT scan findings for diagnosing necrotizing pancreatitis and predicting the severity of acute pancreatitis.

Method : A study of 25 cases with acute pancreatitis performed at V.S. Hospital Ahmedabad during the period of October 2015 to November 2017. On admission, detailed history, clinical, radiological and laboratory examinations were done. Then correlation between clinical findings and CT findings was studied.

Result : Of the 25 patients in this study, 15 were males and 10 were females from age group of 12 to 70 years. Maximum number of patient is below 45 years of age that is 18 (72%) patient. 60 % male patient developed acute pancreatitis and 40 % of female. Alcohol identified as the most important etiologic factor associated with pancreatitis in our patients. Abdominal pain and vomiting were the most consistent symptoms. Epigastric tenderness is present in 92% of cases. Guarding /rigidity are present in 52% of patient. 24% patient show jaundice as a sign of acute pancreatitis. CT grading system can identify patient at higher risk of mortality more accurately than clinical grading system; on other hand clinical grading system identify patient at risk of organ failure and requiring ICU admission more accurately, so there is no major difference between both grading system.

Conclusion : In conclusion, there is no significant superiority of CT scan over clinical finding in predicting severity of Acute Pancreatitis. Therefore, obtaining a CT for assessment of severity on the day of admission is not recommended.

KEYWORDS

INTRODUCTION

Acute pancreatitis is an acute inflammatory condition of the pancreas that may extend to local and distant extrapancreatic tissues.

Acute Pancreatitis is broadly classified as:

- **Mild acute pancreatitis**- often referred to as interstitial pancreatitis, based on its radiographic appearance. Interstitial pancreatitis implies preservation of pancreatic blood supply.
- **Severe acute pancreatitis** implies the presence of organ failure, local complications, or pancreatic necrosis. Necrosis suggests the disruption of pancreatic blood supply with resulting ischemia. Eighty percent of cases of acute pancreatitis are interstitial and mild; the remaining 20% are necrotizing and severe.

Alcohol abuses and gallstone are the main cases of acute pancreatitis. Acute Pancreatitis occurs when pancreatic enzymes are prematurely activated inside the pancreas leading to autodigestion of the gland and local inflammation⁽¹⁾. These enzymes can also reach the bloodstream, stimulating the production of inflammatory cytokines and tumor necrosis factor- α (TNF- α) from leukocytes. The release of those substances triggers an inflammatory cascade, which leads to the SIRS⁽¹²⁾. The severity of Acute Pancreatitis can be predicted based upon clinical, laboratory and radiological risk factors, various severity grading system and serum markers. Some of this can be perform on admission to assist in triage of patient while others can be obtained during 1st 48 -72 hours or later.

Severe acute pancreatitis is characterized by a short course, progressive MODS, early hypoxemia, increased incidence of necrosis, infection, and abdominal compartment syndrome⁽⁹⁾. MODS, the extent of pancreatic necrosis, infection, and sepsis are the major determinants of mortality in Acute Pancreatitis⁽⁹⁾. Pancreatic necrosis is considered as a potential risk for infection, which represents the primary cause of late mortality. Occurrence of acute respiratory (ARF), cardiovascular (CVF), and renal failures (RF) can predict the fatal outcome in SAP⁽¹⁰⁾.

MATERIAL AND METHOD:

A study of 25 cases performed at V.S. Hospital Ahmedabad during the

period of October 2015 to November 2017. On admission, detailed history, clinical, radiological and laboratory examinations were done.

We included patients with two of the following three features: (1) abdominal pain characteristic of Acute Pancreatitis, (2) serum amylase and/or lipase ≥ 3 times the upper limit of normal, and (3) radiological evidence of Acute Pancreatitis

and they were clinically categorized without knowledge of the CT findings as follows:

- (1) Acute edematous pancreatitis-Nausea, vomiting, and epigastric pain associated with elevation of the serum and/or urinary amylase.
- (2) Acute necrotizing (hemorrhagic, suppurative) pancreatitis-Along with findings in acute edematous pancreatitis, these patients had one or more of the following: Leucocytosis, hypotension despite volume replacement, metabolic acidosis, adult respiratory distress syndrome, and a decrease in hematocrit and/or serum calcium.

Then CT scan was done:

Each CT examination was graded as: *Normal*-No CT evidence of pancreatic disease.

Grade 1-Focal or diffuse enlargement of the pancreas.

Grade 2-Enlargement of the pancreas with inflammatory changes limited to the contiguous peripancreatic fat.

Grade 3 Enlargement of the pancreas with collection extension into one peripancreatic space, usually the lesser sac.

Grade 4-collection in two or more peripancreatic spaces, usually the lesser sac and left anterior pararenal space.

Grade 5-collection extending into the posterior pararenal space and/or pelvis.

Observation and Results:

Of the 25 patients in this study, 15 were males and 10 were females from age group of 12 to 70 years. Maximum number of patient is below 45 years of age that is 18 (72%) patient. 60 % male patient developed acute pancreatitis and 40 % of female. In our patients, Alcohol identified as the most important etiologic factor associated with

pancreatitis. Also incidence of alcohol association with acute pancreatitis was significantly increased in male, while gall stone pancreatitis was predominantly a disease of the female.

Table 1:

Symptoms	No. of cases	Percentage (%)
Abdominal pain	25	100
Vomiting	20	80
Abdominal distention	5	20
fever	12	48

Abdominal pain and vomiting were the most consistent symptoms.

Table 2:

Signs	No. of cases	Percentage (%)
Epigastric tenderness	23	92
Guarding	12	48
Paralytic ileus	1	4
Shock	3	12
Jaundice	2	8

Epigastric tenderness is present in 92% of cases. Guarding /rigidity are present in 52% of patient. 24% patient show jaundice as a sign of acute pancreatitis.

Table 3:According to clinical grades:

Clinical grade	No. of Patient	Hospital stay in days(avg.)	ICU admission	Organ failure	Mortality
Acute edematous (mild)	17	9±2	3(15%)	2(10%)	1(0.5%)
Acute necrotising (severe)	5	14±1	4(80%)	4(80%)	1(20%)
Acute on chronic pancreatitis	3	7	0	0	0
Total	25				

Table 4:

According to CT grades:

CT grade	No. of Patient	Hospital stay(avg.)	ICU admission	Organ failure	Mortality
normal	2	6	0	0	0
Grade 1-2(mild)	18	8±2	3(17%)	3(17%)	0(0%)
Grade 3-5(severe)	5	15±3	4(80%)	3(60%)	2(28%)
Total	25				

According to above table we can say that CT grading system can identify patient at higher risk of mortality more accurately than clinical grading system; on other hand clinical grading system identify patient at risk of organ failure and requiring ICU admission more accurately ,so there is no major difference between both grading system.

Table 5:

Correlation of CT grading and clinical grading

CT grading	Acute edematous pancreatitis	acute necrotizing pancreatitis	Acute on chronic pancreatitis	Totals
Normal	1	0	1	2
Grade 1-2	15	1	2	18
Grades 3-5	1	4	0	5
Total	17	5	3	25

According to this table, there is no significant superiority of CT scan over clinical finding in predicting severity of Acute Pancreatitis.

DISCUSSION

Grade 1 or 2 pancreatitis was present in 87% of patients with acute edematous pancreatitis, but it occurred in only one of five patients with acute necrotizing pancreatitis (table 5).

The CT findings of grade 3-5 pancreatitis were more common with acute necrotizing pancreatitis (89%) than with acute edematous pancreatitis (11 %).

All patients with acute necrotizing pancreatitis had an abnormal CT study. The one patient in this clinical category showed grade 2 pancreatitis. This suggests that grade 3-5 changes may be absent in the early stages of this clinically severe form of acute pancreatitis. CT depicts morphologic changes, which are not always clinically relevant and do not always correlate with clinical severity of disease. Patients with severe morphologic findings on CT may run a clinically mild course. In our study two patient with severe disease on CT did not develop clinically severe disease.

A normal CT scan can result from acute edematous (7%) and acute superimposed on chronic (30%) pancreatitis. It should not be normal, however, in patients with acute necrotizing pancreatitis, and, if this occurs, some other diagnosis has to be considered. As might be expected, CT findings limited to the pancreas and immediate peripancreatic fat (grades 1 and 2) occurs with the clinically milder forms of acute pancreatitis.

In both groups of patients, CT scoring systems will either under or overestimate the clinical severity of pancreatitis. The overall limitation of CT and clinical prognostic scoring system is the fact that they were devised to identify groups of high-risk patients and not individual patients(14) . In addition, scoring systems work best at the extremes of the spectrum whereas the performance of this scoring system is only moderate in intermediate scores.

According to bollen et al.(18) The predictive accuracy of CT scoring systems for severity of Acute Pancreatitis is similar to clinical scoring systems. Hence, a CT on admission solely for severity assessment in Acute Pancreatitis not recommended.

CONCLUSION

In conclusion, there is no significant superiority of CT scan over clinical finding in predicting severity of Acute Pancreatitis. Therefore, obtaining a CT for assessment of severity on the day of admission is not recommended. Instead, from a resource utilization perspective and as a way of reducing radiation exposure in Acute Pancreatitis, when the diagnosis has been made on clinical grounds (abdominal pain and elevated serum amylase and / or lipase), severity and prognosis can initially be assessed by clinical scoring system with imaging reserved in cases where the diagnosis is equivocal, in patients who have predicted severe Acute Pancreatitis by clinical assessment or who fail to improve clinically despite conservative therapy or when a life-threatening complication is suspected.

REFERENCES

1. Fitz R. Acute Pancreatitis. A consideration of pancreatic hemorrhage, hemorrhagic, suppurative, and gangrenous pancreatitis, and of disseminated fat-necrosis. Boston Medicaland Surgical Journal. 1889;120:181-187, 205-207, 229-235.
2. Banks PA. Practice guidelines in acute pancreatitis. Am J Gastroenterol. 1997;92:377-386.
3. SABISTON textbook of surgery:19th edition
4. Schwartz's principles of surgery: 8th edition
5. G.G.Turner: Local discoloration of abdominal wall as a sign of acute pancreatitis. British Journal of Surgery, London, 1920, 7: 394-39
6. Cyril Havard : Medical Eponyms. Diseases, Syndromes and Signs.1998
7. MAINGOT 'S Abdominal Operations : 11th edition.
8. H.-Q. Tao, J.-X. Zhang, and S.-C. Zou, "Clinical characteristics and management of patients with early acute severe pancreatitis: Experience from a medical center in China," World Journal of Gastroenterology, vol. 10, no. 6, pp. 919–921, 2004. A. Buter, C. W. Imrie, C. R. Carter, S. Evans, and C. J. McKay, "Dynamic nature of early organ dysfunction determines outcome in acute pancreatitis," British Journal of Surgery, vol. 89, no. 3, pp. 298–302, 2002. L. Kong, N. Santiago, T.-Q. Han, and S.-D. Zhang, "Clinical characteristics and prognostic factors of severe acute pancreatitis," World Journal of Gastroenterology, vol. 10, no. 22, pp. 3336–3338, 2004.
9. T. Hirano and T. Manabe, "A possible mechanism for gallstone pancreatitis: repeated short-term pancreaticobiliary duct obstruction with exocrine stimulation in rats," Proceedings of the Society for Experimental Biology and Medicine, vol. 202, no. 2, pp. 246–252, 1993.
10. J. Norman, "Role of cytokines in the pathogenesis of acute pancreatitis," American Journal of Surgery, vol. 175, no. 1, pp. 76–83, 1998
11. Balthazar EJ, Robinson DL, Megibow AJ, Ranson JH. Acute pancreatitis: value of CT in establishing prognosis. Radiology. 1990;174:331–6.
12. Young Barbara, ed. (2006). Wheeler's functional histology : a text and colour atlas (5th ed.). Churchill Livingstone/Elsevier. pp. 299–301. ISBN 978-0-443-06850-8.
13. Schoenwolf, Gary C. (2009). Larsen's human embryology (4th ed.). Philadelphia: Churchill Livingstone/Elsevier. pp. 241–244. ISBN 978-0-443-06811-9.
14. Carlson, Bruce M. (2004). Human embryology and developmental biology. St. Louis: Mosby. pp. 372–4. ISBN 0-323-01487-9.
15. BRS physiology 4th edition ,page 255-256, Linda S. Constanzo, Lippincott publishing
16. Am J Gastroenterol. 2012 Apr;107(4):612-9. doi: 10.1038/ajg.2011.438. Epub 2011 Dec20.