Comparative Study between Clinical Findings and Ct Findings in 25 Cases of Acute Pancreatitis

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INTRODUCTION
Acute pancreatitis (AP) is an acute inflammatory condition of the pancreas that may extend to local and distant extrapancreatic tissues. The American College of Gastroenterology (ACG) practice guidelines provide acceptable terminology for the classification of Acute Pancreatitis and its complications.1 AP is broadly classified (the Atlanta classification) as mild and severe. Mild acute pancreatitis is often referred to as interstitial pancreatitis, based on its radiographic appearance and Severe acute pancreatitis implies the presence of organ failure, local complications, or pancreatic necrosis. Interstitial pancreatitis implies preservation of pancreatic blood supply; 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. Severe acute pancreatitis is characterized by a short course, progressive MODS, early hypoxemia, increased incidence of necrosis, infection, and abdominal compartment syndrome (ACS).2 MODS, the extent of pancreatic necrosis, infection, and sepsis are the major determinants of mortality in AP.3 Occurrence of acute respiratory (ARF), cardiovascular (CVF), and renal failures (RF) can predict the fatal outcome in SAP.4 A wide range of mortality (20%–60%) has been reported in SAP. Acute Pancreatitis occurs when pancreatic enzymes are prematurely activated inside the pancreas leading to autodigestion of the gland and local inflammation.5 These enzymes can also reach the bloodstream, stimulating the production of inflammatory cytokines and TNF-α. The release of those substances
triggers an inflammatory cascade, which leads to the SIRS.5

MATERIAL AND METHOD
AP is one of the causes of acute abdomen. So far in my post graduate study I have encountered many cases of acute pancreatitis at various stages of the disease. I undertook the analytical study of 25 such cases.

Study Period: July 2014 to August 2016

Method: On admission, detailed history was taken. General examination was performed emphasizing particularly on temperature, pulse, blood pressure, cardiovascular and respiratory system, jaundice, cyanosis and other general signs of acute pancreatitis. Abdominal signs and laboratory investigations (serum lipase levels) were sought which enabled me to arrive at the diagnosis. Clinical examination was further substantiated by Ultrasound Abdomen following which CT Abdomen was performed.

Inclusion criteria:
- Each patient was included in the study based on clinical and laboratory evidence of acute pancreatitis.

The diagnosis of acute pancreatitis (AP) was based on the presence of 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.

- Admitted in our unit between July 2014 to August 2016
- Patient with CT scan done during admission period.

And they were clinically categorized without knowledge of the CT findings as follows:
- Acute edematous pancreatitis- Nausea, vomiting, and epigastric pain associated with elevation of the serum and/or urinary amylase in the appropriate clinical setting (e.g., alcohol abuse, biliary calculi, trauma to the upper abdomen).
- 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.

Each CT examination was graded as:
Normal/-No CT evidence of pancreatic disease.
Grade 1 Focal or diffuse enlargement of the pancreas.
Enlargement was subjectively assessed, based not only on the size of the gland, but also on its symmetry. Absolute numbers for pancreatic size were not used, since they vary and depend on both the size and age of the patient.
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. (A phlegmon is the soft-tissue mass produced by spread of the inflammatory edema from the pancreas into the surrounding retroperitoneal fat. It may undergo necrosis, suppuration, or hemorrhage.)
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.

The CT grading then compared with the clinical staging and, in patients with more than one CT scan, the CT scan with the most severe grading of acute pancreatitis was used.

RESULTS
Out of the 25 patients in this study, 15 were male (average age, 41 years) and 10 were female (average age, 32 years). In my study, 60% male patient developed acute pancreatitis and 40% of female. In selected case study, acute pancreatitis occurs in 77.33% in male patient and 42.42% in female. It can be concluded that males are affected more often by acute pancreatitis than females. In my study, 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. Abdominal pain and vomiting were the most consistent symptoms in my patient. In Maingot’s Abdominal operations - “Acute Pancreatitis”, it is stated that abdominal pain was present in 85-100%. 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 1: Correlation of Ct Grading and Clinical Grading

<table>
<thead>
<tr>
<th>CT grading</th>
<th>Acute edematous pancreatitis</th>
<th>Acute necrotizing pancreatitis</th>
<th>Acute on chronic pancreatitis</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Grade 1-2</td>
<td>15</td>
<td>1</td>
<td>2</td>
<td>18</td>
</tr>
<tr>
<td>Grades 3-5</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
<td>5</td>
<td>3</td>
<td>25</td>
</tr>
</tbody>
</table>

- Correlation of CT with Clinically Diagnosed Type of Acute Pancreatitis:

Acute edematous pancreatitis: The 17 patients in this category had a total of 20 CT examinations. There was no CT evidence of pancreatic disease in 1 (table 1). In the 15 patients (61 %) with grade 1 or 2 pancreatitis, 8 had diffuse and 7 had focal enlargement of the pancreas (fig. 1 ). Pancreatic calcifications were present in four. One patient having grade 5 disease.

Acute necrotizing (hemorrhagic, suppurative) pancreatitis: The 5 patients in this group had a total of 7 CT examinations. 4 had grade 4 or 5 phlegmonous pancreatitis; one of these had a diffusely enlarged pancreas.

One patient was clinically suspected of having a pancreatic abscess. He had bubbles of gas within a collection.

- CT Grading of Acute Pancreatitis Compared with Clinical Diagnosis:

Normal Ct: Of the 2 patients in this category, acute edematous pancreatitis was diagnosed. None were diagnosed as having acute necrotizing pancreatitis. 66

Grade 1 or 2 acute pancreatitis: Of 18 patients in this group, acute edematous pancreatitis was diagnosed in 15. One patient in this group having necrotizing pancreatitis with drop in hematocrit and organ failure. Five patients had repeat CT. Three patients either remained unchanged or showed improvement over a 2-6 week interval.

No patient in this group advanced to grade 3, 4, or 5 pancreatitis on follow-up CT.

Grade 3, 4, or 5 pancreatitis: One of the 5 patients in this group had acute edematous pancreatitis; he had pseudocyst in the tail. The other four patients had acute necrotizing pancreatitis and developing pseudocyst and grade 4 or 5 phlegmonous pancreatitis on CT (fig. 5). One had diffuse pancreatic enlargement with gas in the collection compatible with an abscess, which was proven at surgery. One patient with grade 5 pancreatitis developed pancreatic hemorrhage. We have graded pancreatitis in mild and severe according to CT scan findings and clinical findings. And then taken 67 pancreatic necrosis, hospital stay, icu admission, organ failure, and mortality as end points .results are as follow. 

Table 2: According To Clinical Grades

<table>
<thead>
<tr>
<th>Clinical grade</th>
<th>Hospital stay in days(avg.)</th>
<th>ICU admission</th>
<th>Organ failure</th>
<th>Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute edematous pancreatitis mild</td>
<td>9+_.2</td>
<td>3(15%)</td>
<td>2(10%)</td>
<td>1(0.5%)</td>
</tr>
<tr>
<td>Acute necrotising pancreatitis severe</td>
<td>14+_.1</td>
<td>4(80%)</td>
<td>4(80%)</td>
<td>1(20%)</td>
</tr>
<tr>
<td>Acute on chronic pancreatitis</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>25</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

Table 3: According To Ct Grades:

<table>
<thead>
<tr>
<th>CT grade</th>
<th>Hospital stay(avg.)</th>
<th>ICU admission</th>
<th>Organ failure</th>
<th>Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>2</td>
<td>6</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Grade 1-2(mild)</td>
<td>8+_.2</td>
<td>3(17%)</td>
<td>3(17%)</td>
<td>0(0%)</td>
</tr>
<tr>
<td>Grade 3-5(severe)</td>
<td>15+_.3</td>
<td>4(80%)</td>
<td>3(60%)</td>
<td>2(28%)</td>
</tr>
<tr>
<td>Total</td>
<td>25</td>
<td></td>
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</table>

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.
DISCUSSION
In this study we have compared clinical and CT findings of in diagnosing severe pancreatitis and predicting the outcome of the disease; and using them for early stratification of severity of disease. For our study, acute pancreatitis was divided into two simple groups: acute edematous pancreatitis, acute necrotizing (hemorrhagic, superlative) pancreatitis. 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-1). The CT findings of grade 3-5 pancreatitis were more common with acute necrotizing pancreatitis (89%) than with acute edematous pancreatitis (11%). A decrease in hematocrit and/or serum calcium can be absent in the presence of grade 3-5 pancreatitis, and this occurred in 1 of 5 of our patients. All patients with acute necrotizing pancreatitis had an abnormal CT study. One patient in this clinical study category showed grade 2 pancreatitis (fig.1). 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. In this patient with mild disease on CT with associated comorbid condition may pancreatitis act as trigger and run a severe course of a disease. Conversely, 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 (fig.2) 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. 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. The predictive accuracy of CT scoring systems for severity of Acute Pancreatitis similar to clinical scoring systems. Hence, a CT on admission solely for severity assessment in Acute Pancreatitis is not recommended.

CONCLUSION
In conclusion, there is no significant superiority of CT scan over clinical finding in predicting severity of Acute Pancreatitis. There appears to be no advantage of performing a CT on admission for prognostic purposes compared with the simpler and more easily obtained clinical scoring systems. 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