

Original Research

Analysis of Prognostic Value of Computed Tomography in the Early Evaluation of Patients Presenting with Acute Pancreatitis

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Abstract

Background: Acute pancreatitis (AP) represents a prevalent gastrointestinal condition leading to hospitalization. The present study was conducted to analyze prognostic value of computed tomography in the early evaluation of patients presenting with acute pancreatitis.

Materials & Methods: A total of 100 patients who were diagnosed with acute pancreatitis by clinical and analytic criteria were enrolled. All had undergone unenhanced and contrast-enhanced helical CT within the first 24 hr after hospitalization; therefore, less than 72 hr had passed between the onset of symptoms and the CT study. Patients with history of any other systemic illness or any known drug allergy were excluded from the present study. All the results were compiled in Microsoft excel sheet and were subjected to statistical analysis using SPSS software.

Results: A total of 100 patients were assessed. Mean age of the patients was 53.8 years. Majority of the patients were males. According to CT grading, 61 percent of the patients were mild while the remaining were severe. Complications were seen in 18 percent of the patients. Mortality was present in 3 percent of the patients. Significant results were obtained while correlating CT grading with complications and mortality.

Conclusion: CT scan is useful in early assessment of morbidity and mortality associated with acute pancreatitis.

Key words: Acute pancreatitis, Computed tomography

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INTRODUCTION

Acute pancreatitis (AP) represents a prevalent gastrointestinal condition leading to hospitalization in the United States. In 2015, there were 390,940 hospital admissions attributed to AP, establishing it as one of the leading gastrointestinal causes for hospitalizations nationwide, with projections indicating a continued rise in annual incidence over the coming years. Notwithstanding recent progress in the field of gastroenterology, AP remains linked to significant rates of mortality, morbidity, and the consumption of healthcare resources.¹⁻³

A detailed treatment approach tailored to individual patient needs has been developed for acute

pancreatitis, taking into account the various etiologies and stages of the condition. The initial phase of acute pancreatitis is primarily marked by an acute inflammatory response, tissue necrosis accompanied by hemorrhage, and significant impairment of the intestinal mucosal barrier. Surgical intervention is ineffective in halting the progression of pancreatitis, as it tends to exacerbate systemic metabolic disturbances and elevate the risks of infection and mortality. Consequently, the primary focus of early intervention in acute pancreatitis relies on a range of proactive, effective, and comprehensive non-surgical strategies. These strategies encompass fasting, gastrointestinal decompression, administration of anti-

pancreatic medications, capacity supplementation, maintenance of electrolyte equilibrium, nutritional support, use of antibiotics, regional arterial infusion therapy, blood purification techniques, immunotherapy, induction of apoptosis, early peritoneal lavage, enhancement of pancreatic microcirculation, traditional Chinese medicine, endoscopic interventions, among others.⁴⁻⁶ Hence; the present study was conducted to analyze prognostic value of computed tomography in the early evaluation of patients presenting with acute pancreatitis.

MATERIALS & METHODS

The present study was conducted to analyze prognostic value of computed tomography in the early evaluation of patients presenting with acute pancreatitis. A total of 100 patients who were diagnosed with acute pancreatitis by clinical and analytic criteria were enrolled. All had undergone unenhanced and contrast-enhanced helical CT within

the first 24 hr after hospitalization; therefore, less than 72 hr had passed between the onset of symptoms and the CT study. Patients with history of any other systemic illness or any known drug allergy were excluded from the present study. All the results were compiled in Microsoft excel sheet and were subjected to statistical analysis using SPSS software.

RESULTS

A total of 100 patients were assessment. Mean age of the patients was 53.8 years. Majority of the patients were males. According o CT grading, 61 percent of the patients were mild while the remaining were severe. Complications were seen in 18 percent of the patients. Mortality was present in 3 percent of the patients. Significant results were obtained while correlating CT grading with complications and mortality.

Table 1: Relation between CT grade and complications

CT grade	No complications	Complications	Total
Mild	61	0	61
Severe	21	18	39
Total	82	18	100
p-value	0.002 (Significant)		

Table 2: Relation between CT grade and mortality

CT grade	Mortality absent	Mortality present	Total
Mild	61	0	61
Severe	36	3	39
Total	97	3	100
p-value	0.001 (Significant)		

computed tomography in the early evaluation of patients presenting with acute pancreatitis.

DISCUSSION

A patient presenting with an abrupt onset of epigastric pain that radiates to the back, accompanied by nausea and vomiting, necessitates the swift exclusion of various life-threatening conditions affecting both the cardiovascular system (such as myocardial infarction and ruptured or dissecting aortic aneurysm) and the gastrointestinal system (including peptic ulcer disease with perforation or bleeding, and acute pancreatitis). The clinician's assessment, informed by the patient's history and physical examination, is further enhanced by pertinent diagnostic investigations that help refine the differential diagnoses, ultimately directing the management and treatment of the identified condition and its potential complications. Among hospital admissions for acute pancreatitis, around 20% to 30% of patients experience a severe course, with severe life-threatening complications arising in approximately 25% of these cases. The mortality rate for severe acute pancreatitis can reach as high as 30%, while the overall mortality rate for acute pancreatitis is estimated to be around 5%.⁷⁻⁹ Hence; the present study was conducted to analyze prognostic value of

A total of 100 patients were assessment. Mean age of the patients was 53.8 years. Majority of the patients were males. According o CT grading, 61 percent of the patients were mild while the remaining were severe. Complications were seen in 18 percent of the patients. Mortality was present in 3 percent of the patients. Significant results were obtained while correlating CT grading with complications and mortality. Raghuwanshi S et al assessed prognostic correlation and clinical outcome of acute pancreatitis on the basis of CT severity index. A prospective study of 50 cases was carried out in the Department of Radio Diagnosis, with complaint suggestive of acute pancreatitis on the basis of clinical/laboratory/ultrasonography findings were evaluated in Siemens somatom 40 slice CT. The severity of pancreatitis was scored using CT severity index, modified severity index and revised Atlanta classification and classified into mild, moderate, severe categories. Gall stone disease was most common aetiological factor seen in 40% cases, it was more common in females than males. Alcohol was

second most common aetiological factor seen in 38% cases and was noted only in males. Pleural effusion was the most common extra-pancreatic complication seen in 46% cases. Balthazar grade C was the most common (40%) followed by grade D and E (25% each). Acute peri-pancreatic collection was the most common findings seen in 72% cases. Majority of the cases (42%) were categorized as mild pancreatitis according Balthazar CTSI score. Majority of the cases (44%) were categorized as severe pancreatitis according modified CTSI. Majority of the cases were categorized as mild pancreatitis according revised Atlanta classification. Organ system failure, death were more seen in severe grade in modified CTSI and revised Atlanta classification.¹⁰ Kothari S et al assessed the overutilization and associated cost of CT imaging among patients meeting diagnostic criteria for AUP. 1305 patients presented to the emergency department with AP, and 405 patients (31%) met our inclusion criteria for AUP (201 males, 204 females; mean age 49 years, range 18-98). Of those, 210 patients (51.85%) underwent CT imaging. One patient (0.47%) had evidence of pancreatic necrosis, one patient had cyst formation (0.47%), and the remaining 208 patients (99.05%) had either normal CT scan imaging or findings consistent with mild AP without necrosis. The average cost of CT scan imaging was \$4510 with a total cost of \$947056. Median length of hospitalization stay was 3 d among both groups. Combining Ranson's Criteria and BISAP score identified AUP in our patient population with an accuracy of 99.5%.¹¹

CONCLUSION

CT scan is useful in early assessment of morbidity and mortality associated with acute pancreatitis.

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