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Research Article

Acute Pancreatitis Among Patients in Saudi Arabia

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Abstract

Background: Acute pancreatitis is a common disease with wide clinical variation and its incidence is increasing. Acute pancreatitis may vary in severity, from mild self-limiting pancreatic inflammation to pancreatic necrosis with life-threatening sequelae. Severity of acute pancreatitis is linked to the presence of systemic organ dysfunctions and/or necrotizing pancreatitis.

Purpose: The present study was meant to evaluate the clinical profile of acute pancreatitis and to evaluate the efficacy of several severity indices in predicting the outcome of patients.

Material and Methods: This is a prospective study completed in Hospital from May 2016 - July 2017. All patients with a diagnosis of acute pancreatitis were encompassed in this study. Accompanied by routine lab parameters, calcium, lipase, lipid profile, CXR, CRP, LDH, and CT abdomen was done for all patients.

Results: A total of 220 patients were analysed. 100 patients required Intensive care, among them 18 patients died. 40 patients had MODS, 30 patients had pleural effusion, 18 patients had pseudocyst, 4 patients had hypotension, 4 patients had ARDS and 4 patients had DKA. In relation to various severity indices, high score of CRP, LDH and CT severity index was related with increased morbidity and mortality. 30 patients underwent open necrosectomy surgery, 6 patients underwent laparoscopic necrosectomy and 14 patients were tried step up method but could not avoid surgery. Step up method and surgery did not have a significant decrease in the mortality.

Conclusion: Early valuation of severity by CRP, LDH and lipase can be reliable indicators of result in acute pancreatitis.

Keywords: *Acute Pancreatitis; LDH; CRP; Severity Index; Step Up Method*

Introduction

Acute pancreatitis is a common disease with wide clinical variation and its occurrence is increasing. The average mortality rate in severe acute pancreatitis methods 2 - 10% [1]. Severe acute pancreatitis (SAP) grows in about 25% of patients with acute pancreatitis. Severe acute pancreatitis is a two phase systemic disease. The first phase is categorized by extensive pancreatic inflammation and/or necrosis and is followed by a systemic inflammatory response syndrome (SIRS) that might lead to multiple organ dysfunction syndromes (MODS) with in the first week. Around 50% of deaths arise within the first week of the attack, typically from multiple organ dysfunction syndromes. The formation of diseased pancreatic necrosis or fluid collection arises generally in the second week. The factors which cause death in most patients with acute pancreatitis appear to be associated explicitly to multiple organ dysfunction syndrome and these deaths represent 40 - 60% of in-hospital deaths in all age groups. The mortality figures accompanying with MODS differ between 30 - 100%. Infection is not a feature of the early phase. Pro inflammatory cytokines subsidize to respiratory, renal, and hepatic failure. The second or late phase which begins 14 days after the start of the disease is noticeable by infection of the gland, necrosis and systemic complications causing a noteworthy increase in mortality. The association between increasing age and death from acute pancreatitis is well recognised. Respiratory failure is the furthermost frequent type of organ failure in acute pancreatitis [2].

In relation to the severity, acute pancreatitis is alienated into mild acute pancreatitis (absence of organ failure and systemic or local complications), moderately severe acute pancreatitis (no organ failure or transient organ failure fewer than 48 hrs with or without local complications) and severe acute pancreatitis (persistent organ failure greater than 48 hrs that might contain one or multiple organs) [3]. Early assessment of severity ought to include assessment of fluid loss, organ failure (mainly cardiovascular, respiratory, or renal compromise), measurement of the APACHE II score and systemic inflammatory response syndrome (SIRS) score [4,5]. Even though measurement of amylase and lipase is valuable for diagnosis of pancreatitis, serial measurements in patients with acute pancreatitis are not valuable to forecast disease severity, prognosis, or for modifying administration.

Unchanging abdominal computed tomography (CT) scan is not suggested at initial presentation for the reason that there is no indication that CT develops clinical outcomes and the complete extent of pancreatic and peripancreatic necrosis can only become clear 72 hours after the beginning of acute pancreatitis [6]. Numerous other scoring systems similarly exist to forecast the severity of acute pancreatitis established upon clinical, laboratory, radiologic hazard elements, and serum markers however can be utilized just 24 to 48 hours after infection beginning and have not been appeared to be reliably better than evaluation of SIRS or the APACHE II score.

A few grouping frameworks have been exhibited to evaluate the seriousness of intense pancreatitis. Nearness of SIRS (Systemic provocative reaction disorder), scores, for example, the Ranson, the Glasgow, and Acute Physiology and Chronic Health Evaluation (APACHE) are down to earth for surveying the seriousness of the sickness however are not adequately very much approved for foreseeing mortality. Early organ brokenness predicts infection seriousness and patients require early escalated mind treatment. Anti-toxin prophylaxis is typically insufficient and early enteral encouraging outcomes in decrease of nearby and foundational disease [6,7]. Management of intense pancreatitis has changed fundamentally finished the previous years. Early administration is nonsurgical, exclusively steady and patients with tainted corruption with declining sepsis require mediation. Early serious care has certainly enhanced the result of patients [8]. Genetic polymorphisms and changes likewise add to trouble in foreseeing the result [9]. The increasing expenses of ICU treatment and the need to delay the life of basically sick patients makes a requirement for early recognizable proof of those patients who will profit by serious care. The present investigation was gone for assessing the mortality and horribleness chance in connection to different seriousness files and the part of procedural intercession.

Material and Methods

This is a prospective study completed in Hospital from May 2014 - July 2017. All patients diagnosed with acute pancreatitis were involved in this study (220 patients). Patients with pancreatic malignancy and chronic pancreatitis are excluded from the study. Patients

were categorised into mild, moderate and severe acute pancreatitis established on Ranson's score, Glasgow scoring and CT severity index (CTSI). Complete hemogram, renal function tests, liver function tests, random blood sugar, serum amylase, lipid profile, serum lipase, serum calcium and C - reactive protein were completed for all the patients. CECT abdomen was done when specified and CT severity index was calculated. Patients with moderate and severe pancreatitis were administered in ICU. Patients with mild pancreatitis were administered in the ward. Step up method and surgery was done in patients who did not develop on intensive medical administration.

All statistical analysis was performed using statistical software SPSS (Statistical Package for Social Science) statistical program version (16.0). Graphs were done using Microsoft Excel program version 2010. Statistical significance was set at $P < 0.05$.

Results

In the current study, most patients were in the age group of 20 to 40 years. We found that acute pancreatitis was found five times more common in men than in women. The results of the study in connection with numerous clinical and lab parameters are summarised in tables 1 and 2.

Parameter	Discharge	Death	P-value
CKD	4	0	0.9
Hypotension	4	0	0
ARDS	4	0	0
DKA	4	0	0
Laparoscopy	6	0	0
Surgery	16	14	0
Hypertension	18	2	0.9
Pseudocyst	18	0	0
MODS	24	16	0
Diabetes Mellitus	26	2	0.9
Pleural effusion	28	2	0
Gall stones	74	2	0.9
Intensive care	82	18	0.01

Table 1: *Clinical profile and outcome.*

Parameter	Mean value	P value
	Discharge/death	
Lipase	527/938	0
CRP	2.1/2.9	0.001
Ranson score	3.8/6.4	0.001
Glasgow score	3/5.4	0.001
CTSI/Balthazar	5.3/8.1	0.002
LDH	489/666	0.002
Amylase	449/810	0.007

Table 2: *Lab markers and Severity index.*

Among 40 patients with MODS, 16 patients died. Death was high in patients with MODS regardless of tolerable measures. 4 patients had hypotension, were administered with IV fluids and inotropes, 4 patients developed ARDS, were administered with ventilator support but there was no death.

The mean duration of hospital stay was 3.65 in mild pancreatitis (Ranson's score < 3), 8.35 in patients with complications who recovered (Ranson's score 3 - 5) and 10.55 in patients who died (Ranson's score > 5). Among the 50 patients who required intensive care the minimum duration of stay was 5 days and the maximum was 21 days. Admission values in patients who died had a high CRP value (1.6 minimum value and 4.3 maximum value), high LDH (minimum 350 IU and maximum 980 IU) and high lipase (minimum 667U/L and maximum 1100 U/L). Admission values of amylase (minimum 146 U/L and maximum 1200 U/L) and leucocyte count (minimum 4430/Cumm and maximum 18716/Cumm) did not correlate with mortality and morbidity.

Ranson score	Glasgow score		CTSI			P value
	Mild	Severe	0 - 3	4 - 6	7 - 10	
0-2	26	2	32	18	4	0.002
3-5	31	28	14	37	10	
>5	0	33	0	6	54	

Table 3: *Comparison of Ranson's score with Glasgow and CTSI.*

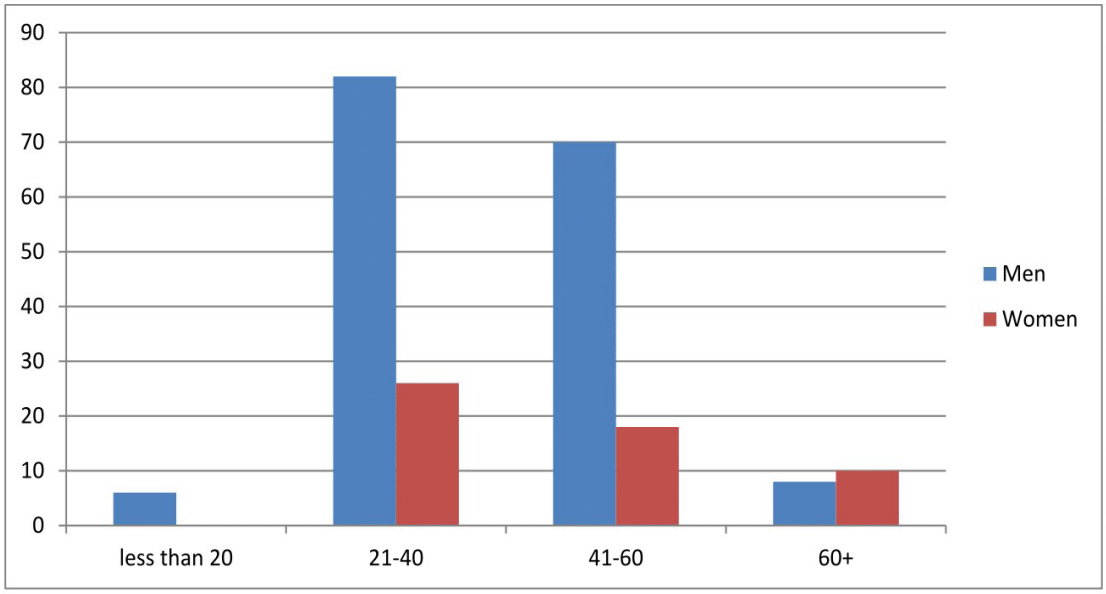

Figure 1: *Age in years for men and women.*

The mean period of stay in hospital was 3.8 in mild pancreatitis (Ranson score < 3), 8.4 in patients with complications who recovered (Ranson score 3 - 5) and 10.4 in patients who died (Ranson score > 5). Between the 100 patients who required intensive care the minimum period of stay was 6 days and the maximum was 22 days. Admission values in patients who died had a high CRP value (1.6 minimum

values and 4.3 maximum values), high LDH (minimum 350 IU and maximum 980 IU) and high lipase (minimum 667U/L and maximum 1100 U/L). Admission values of amylase (minimum 146 U/L and maximum 1200 U/L) and leucocyte count (minimum 4430/Cumm and maximum 18716/Cumm) did not correlate with mortality and morbidity.

Discussion

Ranson's score is composed of 11 measures that are verified as binary values on admission and at 48 hours, and its primary goal was to assess the function of prompt operative intervention in patients with acute pancreatitis. A composite score of 3 or more is generally used to categorise a patient as having severe disease. Studies confirmed sensitivity from 40% to 90% [10]. Glasgow score proposed by Imrie for biliary acute pancreatitis appears to be more specific than that of Ranson, with sensitivity for the evaluation of severe acute pancreatitis of 56% - 85% [11] utilising 8 laboratory factors within the first 48 hours of treatment to calculate it [12], and more than three positive criteria specify severe acute pancreatitis. Nonetheless fewer markers are taken into consideration, this score in addition to the Ranson score forecasts severe acute pancreatitis. Another regularly used severity index is the APACHE II index [13]. This clinical tool measures the physiological reaction to injury and inflammation-driven stress and was originally designed to forecast prolonged intensive care unit treatment and mortality. Papachristou., et al. found sensitivity, specificity, and accuracy of 84.2%, 89.8%, and 94% of Ranson criteria for prediction of SAP and 70.3%, 71.9% and 78% for APACHE II score [14]. The serious necrotizing type of acute pancreatitis is a perilous condition with high dreariness. Mortality may increment, particularly if bacterial defilement of the pancreatic putrefaction happens. An enhanced result in the extreme type of the illness depends on early recognizable proof of ailment seriousness and consequent centered administration of these high-chance patients. Regardless of the accessibility of a few clinical (Ranson's criteria, APACHE II score, Glasgow scoring framework) and radiological scoring frameworks (CTSI/Balthazar scoring framework), exact expectation of the best treatment procedures and result after intense necrotizing pancreatitis stays perplexing. These scoring frameworks could be utilized as triaging instruments for proper administration.

Scoring system in acute pancreatitis increases accurateness of prognosis, mortality and morbidity increases with increasing scores. Mean Amylase was 449 for discharged patients and 810 in patients who had death. Mean lipase was 527 for discharged patients and 938 in patients who died. Mean Ranson's score was 3.8 in discharged patients and was 6.4 in patients who had death. Mean Glasgow score was 3 in discharged patients and 5.4 in patients who had death. Ranson's score and Glasgow score can be utilized for triaging patients to ICU and strong treatment. Studies prepared for comparison of numerous scores have found out that no single scoring index can correctly expect the result however they were valuable in initial triaging of patients [15,16]. The current study highlights that Ransons score might be still valuable in initial triage of patients and subsequent treatment. Assessment of Blood urea nitrogen and serum creatinine on admission had no substantial prediction of morbidity and mortality but fluid replacement in the initial 24 hours was critical for early recovery. In a study by Wu Bu., *et al*. blood urea nitrogen more than 20meq/dL on admission or any increase in Blood urea nitrogen in the first 24 hours was related with high risk of mortality [17]. Lankisch PG., *et al*. observed that normal creatinine on admission had a negative predictive value for severity [18].

As of late, treatment of acute severe pancreatitis has moved far from early surgical treatment to forceful ICU administration. Surgery in extreme intense pancreatitis is a dreary strategy related with confusions in the greater part of the patients. Surgery is additionally known to prompt long haul pancreatic inadequacy. The high mortality experienced with surgery basically mirrors the risk of working on fundamentally sick, septic patients with multi organ failure. Postponed surgery is dependably a superior choice particularly in patients with clean putrefaction and who demonstrate clinical change with serious care. High grimness and mortality is engaged with agent necrosectomy, consequently negligibly obtrusive methodologies are progressively investigated by gastrointestinal specialists, radiologists and gastroenterologists. Percutaneous drainage, endoscopic transgastric strategies and insignificantly obtrusive techniques have all been proposed as contrasting options to open necrosectomy. It has been accounted for that an inversion of sepsis alongside an inversion in organ disappointment (26%) is found in patients oversaw by advance up approach utilizing percutaneous drainage alone or alongside numer-

ous seepage addition and high volume lavage [19-21]. Procalcitonin (PCT) is a propeptide of the hormone calcitonin, which is unrestricted by hepatocytes, peripheral monocytes, and G-cells of the thyroid gland. PCT level may be measured by a semi quantitative strip test for fast outcomes or by a fully automated assess to acquire a more precise measurement. An increased PCT level has been establish to be an early predictor of severity [22], pancreatic necrosis, and organ failure [23] in patients with AP. In a modern meta-analysis a subgroup of 8 studies utilizing PCT cut-off values of 0.5 ng/mL as a discriminator found that the sensitivity and specificity of PCT for improvement of SAP were 73% and 87%, respectively, with an overall AUC of 0.88 [24]. In the current study 170 patients (77.3%) did not experience any intercession, 30 patients (13.6%) experienced open necrosectomy surgery, 6 patients (2.7%) experienced laparoscopic necrosectomy and 14 patients (6.4%) were attempted step up approach however couldn't stay away from surgery. The patients who were selected for venture up approach were checked all the more intently for any crumbling in their clinical condition to choose about surgery.

Conclusion

The current study again emphasizes the importance of early assessment of severity and intensive care administration in acute pancreatitis. Lab markers with high values of lipase, CRP and LDH associated well with the mortality and morbidity. CRP and LDH at admission might be significant prognostic markers for predicting morbidity and mortality in acute pancreatitis.

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