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A RETROSPECTIVE OBSERVATIONAL STUDY TO COMPARE THE EFFECT OF AGGRESSIVE VS MODERATE FLUID RESUSCITATION IN PATIENTS PRESENTING TO BMC SAGAR WITH ACUTE PANCREATITIS

Surgery

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ABSTRACT

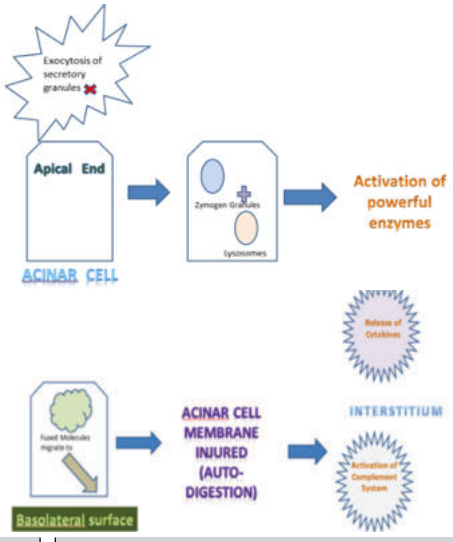
Introduction : Acute pancreatitis is one of the most common causes of acute abdomen. Increased rates of hospitalization pose a significant burden on health care costs and resource utilization. **Objective :** Our aim in this study is to assess whether moderate fluid resuscitation instead of aggressive approach would benefit in the management of acute pancreatitis. **Methods** :A total of 100 patients suffering from acute abdomen due to acute pancreatitis were recruited and studied in two groups. One group was managed via moderate fluid resuscitation whereas the other group was managed aggressively in terms of fluid therapy. The outcomes were measured as primary and secondary. Primary included the development of moderately severe or severe acute pancreatitis (according to the Revised Atlanta Classification) during the hospitalization whereas secondary compared the duration of hospital stay; intensive care unit (ICU) admission; the number of days in the ICU; the use of nutritional support and death. **Results** :Out of 100 subjects enrolled, 68 were males and 32females. There was no significant between-group difference in the development of moderately severe or severe acute pancreatitis (primary outcome), which occurred in 22% of the patients in the aggressive-resuscitation group and in 19% of those in the moderate-resuscitation group. Organ failure occurred in 8% of the patients in the aggressive-resuscitation group and in 4% of those in the moderate-resuscitation group. A total of 9% of the patients in the aggressive-resuscitation group and 2% of those in the moderate-resuscitation group were admitted to the ICU. **Conclusion** : Aggressive fluid resuscitation increased the risk of volume overload. Aggressive fluid resuscitation was associated with a tendency toward a higher intensity of symptoms and a longer duration of hospital stay and a higher incidence of necrotizing pancreatitis than moderate fluid resuscitation.

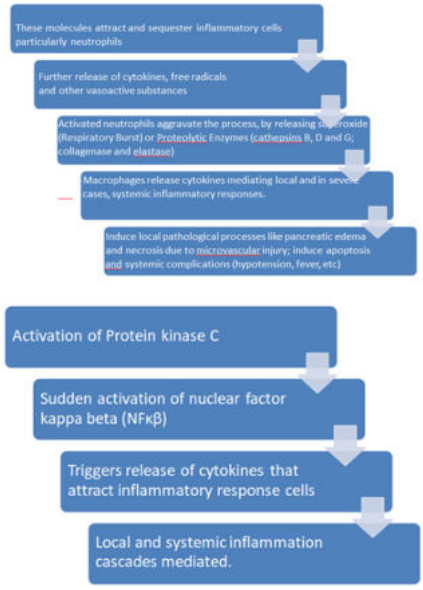
KEYWORDS

INTRODUCTION

Acute pancreatitis is one of the most common inpatient principal gastrointestinal diagnosis. The annual incidence is in the range of 13 to 45 cases per 1,00,000 persons. Gallstones and alcohol are the most common etiologies for the same. It may also occur post ERCP. Hypertriglyceridemia and drugs are some of the other causes.

It is acute inflammatory process of the pancreas characterized by edema and necrosis (in severe cases), often involving peripancreatic tissue and other remote organ systems or both. It may be a solitary episode or may recur with histology of pancreas returning to normal after or in between attacks. It ranges from MILD disease to SEVERE disease *characterized by infected pancreatic necrosis* and *multiple organ failure.* Most common cause of death is MODS. Mortality has a BIMODAL distribution; within 2 weeks – due to MODS and after 2 weeks – due to sepsis.





The patient is usually distressed and anxious with severe epigastric/ periumbilical pain, radiating to back, refractory to analgesics, partly relieved by leaning forwards. (CARDINAL SYMPTOM). Nausea, Vomiting and high fever may be associated features. Physical examination usually reveals dehydration, poor skin turgidity, dry mucus membranes, tachycardia andtachypnoea. Diffuse abdominal tenderness, rebound tenderness, guarding andrigidity may be present. Jaundice may be seen in Gallstone pancreatitis. Various scoring systems have been devised to assess the severity. It is best diagnosed by CT scan and MRCP.

It is usually managed conservatively.

- i.v. fluids (Ringer lactate, Normal saline)

- Analgesics, Antiemetics
- No Antibiotics
- Brief period of NBM if patient has Nausea and is in pain.
- if patient is deteriorating – icu admission and invasive monitoring.

Fluid therapy/resuscitation is mandatory in acute pancreatitis due to the pathophysiology of fluid loss as a consequence of the inflammatory process. For many years, early and aggressive fluid resuscitation with crystalloid solutions (normal saline solution or Ringer lactate solution) was recommended. Recently, many randomized control trials and meta-analyses on fluid therapy have revealed that high fluid rate infusion is associated with increased mortality and severe adverse events compared to those resulting from moderate fluid rates, and this has triggered a paradigm shift in fluid management strategies. Meanwhile, there is evidence to show that Ringer lactate solution is superior to normal saline solutions in this context. The purpose of this study is to provide an update on the strategies for intravenous fluid treatment in acute pancreatitis.

MATERIALS AND METHODS

In this retrospective, observational, single-centerstudy undertaken at General Surgery Department of Bundelkhand Medical College, Sagar, a total of 100 patients suffering from acute abdomen due to acute pancreatitis were recruited, out of which 32 were females and 68 males. This study was performed in Bundelkhand Medical College, Sagar, from June 2022 to May 2023.Ethical approval was obtained from the hospital review committee before conducting the study.

Inclusion criteria was patients who presented to the emergency department no more than 24 hours after pain onset and who had received a diagnosis no more than 8 hours before enrolment following which fluid therapy was given for resuscitation. Following counselling with a member of the research team and provision of written patient information relating to the study prospective, signed informed consent was obtained from each patient before inclusion.

Exclusion criteria included: Patients who met the criteria for moderately severe or severe disease at baseline (shock, respiratory failure, and renal failure) or who had baseline heart failure (New York Heart Association functional class II, III, or IV), uncontrolled arterial hypertension, hypernatremia, hyponatremia, hyperkalemia, hypercalcemia, an estimated life expectancy of less than 1 year, chronic pancreatitis, chronic renal failure, or decompensated cirrhosis , any patient incapable of providing informed consent, and those unable to commit to the medical follow-up of the study for geographical, social, or psychological reasons.

The patients were studied into aggressive-resuscitation group and moderate-resuscitationgroup, each group consisting of 50 patients. Group A (control): Bolus 20 ml/kg, then infusion 3 ml/kg/hr and group B (experimental): Infusion 1.5 ml/kg/hr, preceded by bolus 10 ml/kg only if patient has hypovolemia.

The outcomes were measured as primary and secondary.

- Primary included the development of moderately severe or severe acute pancreatitis (according to the Revised Atlanta Classification) during the hospitalization.
- Secondarycompared the duration of hospital stay; intensive care unit (ICU) admission; the number of days in the ICU; the use of nutritional support and death.

Data was entered in password-protected Microsoft Excel software and the outcome in terms of duration of hospital stay; intensive care unit (ICU) admission; the number of days in the ICU; the use of nutritional support and deathwas calculated and compared.

RESULTS AND DISCUSSION

Study to compare the efficacy of moderate fluid resuscitation over aggressive fluid resuscitation was carried out for 100 subjects. There were 68 men and 32 women. Fluid resuscitation via moderate approach yielded significant between-group difference in the development of moderately severe or severe acute pancreatitis (primary outcome), which occurred in 22% of the patients in the aggressive-resuscitation group and in 19% of those in the moderate-resuscitation group. Organ failure occurred in 8% of the patients in the aggressive-resuscitation group and in 4% of those in the moderate-resuscitation group.

Table 1: Requirement Of Nutritional Support In Study Subjects

NO. OF TPNs REQUIRED	AGGRESSIVE FLUID RESUSCITATION THERAPY			MODERATE FLUID RESUSCITATION THERAPY		
	Males	Females		Males	Females	
1	11 (11%)	4 (4%)	15 (15%)	9 (9%)	3 (3%)	12 (12%)
2	7 (7%)	1 (1%)	8 (8%)	4 (4%)	0 (0%)	4 (4%)
>2	5 (5%)	0 (0%)	5 (5%)	2 (2%)	0 (0%)	2 (2%)
	22 (22%)	5 (5%)	27 (27%)	15 (15%)	3 (3%)	18 (18%)

A total of 9% of the patients in the aggressive-resuscitation group and 2% of those in the moderate-resuscitation group were admitted to the ICU with an average ICU stay period of 5 days in aggressive group compared to 3.5 days average in moderate group.

Table 2: Comparison Of Duration Of Hospital Stay In Study Subjects

Duration of Hospital Stay	AGGRESSIVE FLUID RESUSCITATION			MODERATE FLUID RESUSCITATION		
Days	Males	Females		Males	Females	
7-9	9 (9%)	7 (7%)	16 (16%)	16 (16%)	10 (10%)	26 (26%)
10-14	23 (23%)	9 (9%)	32 (32%)	17 (17%)	6 (6%)	23 (23%)
>14	2 (2%)	0 (0%)	2 (2%)	1 (1%)	0 (0%)	1 (1%)
	34 (34%)	16 (16%)	50 (50%)	34 (34%)	16 (16%)	50 (50%)

Average duration of Hospital Stay was maximum during 10-14 days period in both cases. The percentage of patients being discharged within 9 days was higher in moderate fluid resuscitation approach (26%) than in standard pressure ones (16%).

Thus, in terms of outcome, moderate fluid resuscitation seems to be a promising alternative in acute pancreatitis.

CONCLUSION

Aggressive fluid resuscitation increased the risk of volume overload. Pancreatitis is associated with increasedintraabdominal pressure, which may be worsened by excessive intravenous fluids. Aggressive fluid resuscitation was associated with a tendency towards a higher intensity of symptoms and a longer duration of hospital stay and a higher incidence of necrotizing pancreatitis than moderate fluid resuscitation. Thus, in cases presenting with acute pancreatitis, the current study suggests the employment of moderate fluid resuscitation in order to improve the patient outcome.

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