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Research Article

Evaluation of Role of enteral nutrition in mild and moderate acute pancreatitis

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Abstract

Introduction: Acute pancreatitis creates a catabolic stress state promoting a systemic inflammatory response and nutritional deterioration. In accordance with this wide variation in clinical presentation, the treatment of acute pancreatitis requires a multidisciplinary approach. Early oral feeding is deemed to be detrimental in the early phase of Acute Pancreatitis. However, recent data suggest that enteral nutrition (EN) is not only feasible, but safer and more effective.

Aim and Objectives: The aim of this study was to assess the safety , effectiveness and clinical outcome of Enteral nutrition in the treatment of Acute Pancreatitis.

Materials and Method: This is a prospective study conducted on patients with symptoms suggestive of acute pancreatitis from October 2011 to april 2013. Patients with a clinical picture consistent with the diagnosis of acute pancreatitis, along with more than 3 fold elevation of serum amylase and elevated serum lipase were considered to have acute pancreatitis. After initial diagnosis and assessment, patients were duly informed regarding the study and consent was obtained. The feeding patterns were initiated depending upon the severity of acute pancreatitis.

Results: Analysis of the data obtained from the study revealed the following results: The study population included in the present study is comprised mostly of males (88%). Alcohol was found to be the most common etiological agent in our study. The mean duration of hospital stay in our study for patients was 9.08 ± 3.07 days. Target nutritional delivery by the enteral route was achieved in 88% of the cases included in our study. The average time required to initiate oral feeding in our study was 7.5 ± 2.22 days. The incidence of infective complications in our study was 5% with none of the infections involving the pancreas itself. The incidence of non infective complications in our study was 10% .

Conclusion: In patients with acute pancreatitis, enteral nutrition significantly reduced mortality, multiple organ failure, systemic infections, and the need for operative interventions. In addition, there was a trend towards a reduction in length of hospital stay. Enteral nutrition should be the preferred route of nutritional support in patients with acute pancreatitis.

Keywords: nasogastric feeding, enteral feeding, acute pancreatitis

1. Introduction

Acute pancreatitis results in a hypermetabolic, hyperdynamic, inflammatory response syndrome that creates a highly catabolic stress state. Nutritional support has become increasing recognized as an essential component of the management of critically ill patients. The benefits of the early initiation of enteral nutrition in surgical patients have now been clearly established [1–3]. Acute pancreatitis is related to alcohol or biliary tract stone disease in 80% of cases. The remaining 10% is related to metabolic factors, drugs and other conditions and 10% are idiopathic [5, 6]. In accordance with this wide variation in clinical presentation, the treatment of acute pancreatitis requires a multidisciplinary approach. But even today with technical advances in medical and surgical fields' acute pancreatitis remains a major cause of morbidity and mortality [4, 5]. Mild acute pancreatitis is defined as inflammation of the pancreas with minimal remote organ involvement [7]. Since the disturbance in the homeostatic mechanism of the body is minimal, the treatment is aimed at supporting the native reparative processes of the body. One of the main supportive mechanisms is adequate and safe nutritional supplementation.

Nutritional supplementation in acute pancreatitis is complicated by these diverse pathophysiologic derangements associated with the disease. In the past, patients with acute pancreatitis were not given any form of enteral nutrition, because it was believed that any stimulation of the exocrine pancreas would affect the disease course negatively. Now it is known that the pancreas is already at rest during pancreatitis, and restoring secretion would be a much more physiological strategy than resting the organ. Increasing evidence suggests that enteral feeding maintains the intestinal barrier function and prevents or reduces bacterial translocation from the gut. The risk of adversely affecting humoral immunity, as seen with TPN, is not seen with enteral nutrition. These findings along with the fact that enteral nutrition is clearly not harmful in pancreatitis make it an increasingly accepted treatment modality. The aim of this study was to assess the safety , effectiveness and clinical outcome of Enteral nutrition in the treatment of Acute Pancreatitis.

2. Materials and methods

Sixty patients admitted to hospital over a 18-month period between oct 2011 and April 2013 with acute pancreatitis were prospectively included in the study. **Inclusion criteria: A**ge < 70 yrs, cases of mild (ranson score ≤1) and moderate (ranson score 2-3) acute Pancreatitis, systolic blood pressure > 90 mmhg, serum creatinine ≤ 2 mg/dl.**Exclusion criteria: A**ge > 70 yrs, cases of severe acute pancreatitis (ranson's score > 3), serum creatinine > 2mg/dl, signs of shock at time of presentation, complications of acute pancreatitis like: Peri-pancreatic abscess, Pancreatic necrosis, Drug induced pancreatitis, Post ERCP pancreatitis.

The severity of acute pancreatitis on admission was calculated using the Ranson's criteria. 60 patients with mild and moderate acute pancreatitis were included for the study. The patients were started on enteral feeding using nasogastric feeding and subsequently shifted to oral feeding. The duration of hospital stay, need for surgical intervention, incidence of infective and non infective complications and time taken for initiation of oral feeding were calculated.

3. Results

The data gathered from the study population comprising of 60 patients was analyzed with particular reference to the objectives of the study. The mean age was 37.90 ± 10.04 years (range 20-66 years). The study population was predominantly male , with males constituting 88% of the cases. This male predominance can be attributed to alcohol being the most common etiology. Most common etiology was alcohol in 48(80%) patients, gallstones in 6 (10%) patients, while no cause could be ascertained in 6 (10%) patients.

Table 1: Severity of acute pancreatitis

Severity of acute pancreatitis	No. of patients	Percentage
Mild (Ranson's score </= 1)	26	43.3%
Moderate (Ranson's score 2-3)	34	56.6%

Table 2: Duration of hospital stay in study population

Severity of acute pancreatitis	Minimum LOHS*	Maximum LOHS*	Mean LOHS*	Standard Deviation
Mild pancreatitiss	6 days	15 days	7.62 days	± 2.397
Moderate pancreatitis	7 days	19 days	10.18 days	± 3.113
In total study population	6 days	19 days	9.08 days	±3.076

(LOHS* – Length of hospital stay)

In the study, the mean duration of hospital stay was **9.08 days** with the minimum of 6 days and a maximum of 19 days. The standard deviation was ±3.076.

Table 3: Time taken to nutritional delivery achieve target

Severity of acute pancreatitis	Range	Mean	Standard Deviation
Mild pancreatitis	4 – 8 days	4.95 days	±1.16
Moderate pancreatitis	5 – 12 days	7.34 days	±1.82
In total study population	4 – 12 days	6.34 days	±1.97

Table 4: Time taken to initiate oral feeding

Severity of acute pancreatitis	Range	Mean	Standard Deviation
Mild pancreatitis	5 – 9 days	6.05 days	±1.28
Moderate pancreatitis	6 – 15 days	8.55 days	±2.16
In total study population	5 – 15 days	7.5 days	±2.22

The total incidence of infective complications in the study population was 5%. However, there were no infective complications of the pancreas proper. The complications were 2 cases of IV canula induced thrombophlebitis and one case of lower respiratory tract infection.

Non-infective complications occurred in 10% of the cases. 2 cases developed pancreatic pseudocyst which was managed with percutaneous drainage and 1case of acute fluid collection which was managed conservatively. 3 cases had diarrhoea on starting enteral feeding which subsided after reducing the amount of feeds given per day.

Surgical intervention in study population: The need for surgical intervention was minimal as the cases included in the study belonged to mild and moderate group of acute pancreatitis. The only instance of surgical intervention was in the form of a percutaneous drainage of an enlarging symptomatic pseudocyst in 2 cases only, accounting for 3% of cases. Patient was put back on enteral feeding the day after the procedure.

4. Discussion

Extensive research has revealed the important role of nutritional support in the multidisciplinary treatment of acute pancreatitis. However, the logistics of enteral feeding are still controversial and have become the subject of multitude of trials and research. One of the first trials to employ enteral nutrition in acute pancreatitis was conducted by Windsor *et al*[8], which utilized nasojejunal feeding in acute pancreatitis. The significant improvements noted in this study prompted other researchers to use enteral nutrition in more grave scenarios like severe acute pancreatitis with good results.

Eatock *et al*[9] tested the feasibility of nasogastric feeding in acute pancreatitis, the results of which were comparable to that of nasojejunal feeding.

Table 5: Comparison of demographic data and results of present study with other published studies

	Present study	**Windsor *et al*[8]**	**Mc clave *et al*[10]**	**Kalfarentzos *et al*[11]**
No of patients recruited	n = 60	n = 16	n = 16	n = 18
Mean age (Range)	37.90 years (20 – 66 years)	63 years (47 – 76 years)	47.6 years	63 years
Sex (Male : Female)	44 : 6 88% males : 12% females	7 : 9 44% males : 56% females	68.7% males : 31.3% females	8 : 10 42.2% males : 57.85 females
Etiology	Alcohol – 80% Other – 10% Gall Stone-10%	Gall Stone-56% Alcohol- 12.5% Other- 31.5%	Alcohol- 75% Other-25%	GallStone-77.7% Alcohol- 16.6% Other-5.7%
Mean Ranson's Score	1.4	-	1.3	-
Mean Duration of Hospital Stay	9.08 days	12.5 days	9.7 days	40 days

Target nutritional delivery by the enteral route was achieved in 88% of the cases included in our study. In the remaining 12%, enteral feeding had to be restricted and then gradually reinstituted due to intolerable pain during feeding. The process of oral refeeding in acute pancreatitis has been studied by Levy *et al* [13] in a multivariate multicentric prospective study involving 116 patients. The incidence of oral feeding pain severe enough to stop feeding was 21% in the above-mentioned study. The average time required to initiate oral feeding in our study was 7.5 ± 2.22 days. Abou-Assi *et al* [12] concluded that early initiation of enteral feeding facilitated the return to oral feeding and hence reduced the morbidity of the patient, a finding which was reiterated in our study. The incidence of infective complications in our study was 5% with none of the infections involving the pancreas itself. This is in comparison to published data by Abou-Assi *et al*[12] and Kalferentzos *et al*[11] who described infective complication rates of 11.1% and 27.7% respectively. The lack of pancreatic infections in our study can be attributed to the selection criteria which included mild and moderate degree pancreatitis only. The incidence of non infective complications in our study was 10% with 5% involving the pancreas proper and the rest being instances of diarrhea. The incidence of non infective complications extracted from published data vary widely from 0% in the study by Windsor *et al* [8] to 74.4% in the study by
Abou-Assi *et al*[12]. Amongst the 50 cases included in the study, 3 patients (6%) had diarrhea which resolved by reducing the amount of feed. In the study conducted by Kalfarentzos *et al*[11], 33% of the cases randomized to enteral feeding had diarrhea.

Table 6: Comparison of present study with published data on nasojejunal feeding

	Present study	**Windsor *et al*[8]**	**Abou-assi *et al*[12]**
Length of hospital stay	9.08 days	12.5 days	14.2 days
Infective complications	5 %	Nil	11.1 %
Non infective complications	10%	Nil	74.4%

5. Conclusion

Enteral feeding does not influence the incidence of infective and non-infective complications in mild and moderate acute pancreatitis. Enteral feeding does not increase the need for surgical intervention in cases of mild and moderate acute pancreatitis. It reduces the duration of hospital stay.

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