COMPARISON OF OUTCOME BETWEEN EARLY ENTERAL FEEDING AND CONVENTIONAL DELAYED ENTERAL FEEDING IN ACUTE SEVERE PANCREATITIS

Mudassar Noor, Nouman Iqbal*, Muhammad Tanveer Sajid, Muhammad Ahmed***, Kanwal Afreen, Farhan Qaiser******

Combined Military Hospital Dera Nawab Sahib Pakistan,* 68 Med Bn Pakistan, **78 Med Bn Pakistan, ***General Headquarters Medical Directorate Rawalpindi, Pakistan, ****Punjab Rural Support Program Sahiwal Pakistan

ABSTRACT

Objective: To compare the duration of hospital stay in patients with acute severe pancreatitis having early enteral feeding with that of conventional delayed enteral feeding.

Study Design: Randomized controlled trial (RCT).

Place and Duration of Study: Surgical Departments of Combined Military Hospital Rawalpindi from 1 Jan 2010 to 31 Dec 2010 for a time period of 1 year.

Material and Methods: Sixty patients admitted with acute severe pancreatitis were included in study and randomly divided into two groups using random number tables. Patients in group A were allowed early enteral feeding while Group B patients followed delayed enteral feeding schedule. Clinical and biochemical follow up was carried out on daily basis. Patients were discharged when they were clinically asymptomatic (no pain or nausea, vomiting) and when serum amylase level fell to <100 IU/L. The outcome was assessed in terms of duration of hospital stay in both groups.

Results: In group A, 24 (80.0%) patients and in group B, 26 (86.7%) patients were male, groups being comparable (p= 0.49). Mean age of the patients in two groups was 39.71 ± 5.4 and 39.1 ± 4.9 years respectively (p=0.65). Median hospital stay in group A was 10.8 days while in Group B, it was 16.4 days, difference being statistically significant (p<0.001).

Conclusion: Early enteral feeding is effective nutritional support in acute severe pancreatitis when compared with delayed enteral feeding in terms of hospital stay.

Keywords: Acute severe pancreatitis, Delayed enteral feeding, Early enteral feeding, Hospital stay.

INTRODUCTION

Failure to use the gastrointestinal (GI) tract in patients with acute pancreatitis may exacerbate the stress response and disease severity, leading to greater incidence of complications and prolonged hospitalization[1]. Patients with acute pancreatitis have traditionally been treated with 'bowel rest'. Recent data, however, suggest that this approach may be associated with increased morbidity and mortality. Both experimental and clinical data strongly support the concept that enteral nutrition started within 24 hours of admission to hospital reduces complications and length of hospital stay in patients with acute pancreatitis[2,3].

Nutrition therapy in acute pancreatitis has now, emerged from supportive adjunctive therapy to a proactive primary intervention. Large multicentre studies are needed to confirm the safety and effectiveness of nasogastric feeding and to investigate the role of early nutrition support[4]. Current recommended principles in the management of acute pancreatitis are based on identification of patients having severe disease and the group at risk for the development of complications[5]. Nasogastric enteral nutrition is safe and well tolerated in patients with severe acute pancreatitis (SAP) and it is an alternative to others nutritional routes[6]. Early start of enteral

Correspondence: Dr Mudassar Noor, Surgical Specialist, CMH, Dera Nawab Sahib, Pakistan (*Email:mudassarnoor82@gmail.com)*
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feeding reduces the mortality or infection as compared to current practice of an oral diet and enteral feeding in SAP[7]. In one of the study conducted, the median duration of hospital stay was shorter in patients of SAP having early enteral feeding as compared to those receiving conventional delayed enteral feeding[8].

The rationale of this study was to assess the length of hospital stay associated with early enteral feeding in patients of SAP , if found to be shorter than conventional delayed enteral feeding, then the surgeons may be encouraged to adopt the early enteral feeding which would ultimately reduce the burden of hospital stay.

MATERIAL AND METHODS

These randomized controlled trials were carried out in the Combined Military Hospital, Rawalpindi, which is a tertiary care hospital, over a period of 01 year starting from 1 Jan 2010 to 31 Dec 2010. Patients diagnosed as acute severe pancreatitis were included while patients with pancreatic malignancy, bleeding disorders, debilitating medical illness like tuberculosis, cirrhosis and associated traumatic visceral injuries (on the basis of exploratory laparotomy) were excluded from the study. Sixty patients were included in the study through non-probability convenience sampling and randomly divided into two groups of 30 each using random numbers table.

Approval from hospital ethical committee was sought. A detailed explanation was given to patients about participation in the study and written consent obtained. Group 'A' was subjected to early enteral feeding started at 48 hours after admission and group 'B' was offered delayed enteral feeding allowed on the start of 6th day after admission. Follow up investigations (serum amylase level, blood sugar level, TLC and serum calcium level) were carried out on regular basis. Patients were reviewed in ward / ICU daily and were discharged when they became clinically asymptomatic (no pain or nausea, vomiting) and when serum amylase level fell to <100 IU/L. The outcome was assessed in terms of length of hospital stay (days) in both groups.

Data Analysis

Data had been analyzed in SPSS version 16. Mean (standard deviations) and median (Inter-quartile range) were calculated for quantitative variables like age, hospital stay (in days) and serum amylase level on admission where appropriate. Frequency and percentage were calculated for qualitative variable like gender. Independent samples' t-test was applied to compare age. Chi-square test was applied to compare gender. Non-parametric Mann Whitney U test was used to compare serum amylase level on admission and length of hospital stay (days) in both the groups. A *p*-value of < 0.05 was considered as significant.

RESULTS

Sixty patients were included in this study (conducted over a span of 1 year) and randomized into two groups. The age of the patients varied from 20 to 70 years. Mean age of patients in group A was 39.71 ± 5.4 while in group B, it was 39.1 ± 4.9 years (*p*=0.65). In group A, 24 (80.0%) patients and in group B, 26 (86.7%) patients were male (*p*=0.49).

Serum amylase (IU/l) level on admission was higher in group-A as compared to group-B but the difference was statistically insignificant (*p*=0.648). Comparison of hospital stay (days)

Table-1: Comparison of Serum amylase (IU/l) level on admission & hospital stay between the groups.

Groups	Serum amylase level on admission	Hospital Stay
Group-A	1479.61 (IQR: 952 – 1786)	10.8 (IQR: 7 – 15)
Group-B	1403.01 (IQR: 998 – 1684)	16.4 (IQR: 12 – 18)
p-value	0.648	< 0.001

revealed significantly higher hospital stay in group-B as compared to group-B ($p < 0.001$).

DISCUSSION

Acute pancreatitis (AP) is an inflammatory disorder of variable severity leading to multiorgan failure (MOF) and high mortality in severe cases (15%-40%). In initial phase of the disease, local inflammatory process in the pancreas leads to cytokine release and subsequent systemic inflammatory response syndrome (SIRS)[9]. Severe attacks of acute pancreatitis are strongly associated with priming and subsequent over-activation of leukocytes, which contribute to the production of inflammatory mediators and the induction of distant organ failure[10]. The degree of oxidative stress and neutrophil activation are also of great importance for outcomes[11]. Severe AP patients have a documented deficit in antioxidants flora and the supply of fiber and nutrients especially micronutrients, which should be compensated for[12].

The standard therapeutic approach to the management of AP involves the reduction of pancreatic exocrine secretion by pancreatic rest achieved via cessation of oral feeding. This has evolved since the last decade and nutrients given beyond Treitz ligament, the post-pyloric feeding, decrease pancreatic stimulation, thus improving the overall outcome[13].

Controlled trials comparing total parenteral nutrition (TPN) versus enteral nutrition (EN) in acute pancreatitis have revealed a significant benefit for the enteral nutrition as for as the length of hospital stay, morbidity, complications and in some studies mortality[14] is concerned. The logic behind the EN in SAP is restoration of commensal bacterial flora, which dramatically alters early in the disease process[15]. Advantages of enteral nutrition primarily seem to consist in the lack of complications associated with total parenteral nutrition.

In a randomized controlled trial comparing early TPN to no nutritional support, Sax et al[16] found no benefit of TPN regarding hospital stay or complications, but a high rate of catheter-related infections.

In this study, the total numbers of patients included were sixty. Thirty patients were in the early enteral feeding (Group A) while thirty patients were in the delayed enteral feeding (Group B). The mean age was 39.71 ± 5.4 years and 39.1 ± 4.9 years in group A and B, respectively indicating a younger age group being affected with SAP. The mean age is lesser compared to that reported by Petrov et al[17]. Another prospective series from Edinburgh University, U.K. showed an overall mean age 58 years[18].

In the present study, acute pancreatitis was found to be more common in males than females. A prospective audit in 7 hospitals from South England also showed males more commonly affected[19]. Similar results are seen in study conducted by Kumar, et al[20].

The demographical profile was statistically studied and found comparable with no significant difference between the groups. Mean serum amylase level on admission was also similar in both groups with insignificant difference. In group A, the median hospital stay was 10.8 days while it was 16.4 days in group B, which is statistically significant. In a study by Woo et al,[21] duration of hospital stay was shorter in the early enteral group as compared to delayed group (10.4 ± 6.9 vs. 16.9 ± 1.5 days).

The cost of treatment is higher in ICU per day, which is significantly reduced in patients receiving early enteral nutrition in severe acute pancreatitis as compared to those having delayed enteral feedings due to the reduced stay in hospital. Therefore, it is cost-effective to initiate early enteral feeding in AP.

CONCLUSION

Nutritional therapy is a part of proactive management in acute pancreatitis. Our study has revealed that early enteral feeding is an effective nutritional support in patients with severe acute

pancreatitis when compared with delayed enteral feeding in terms of hospital stay.

CONFLICT OF INTEREST

This study has no conflict of interest to declare by any author.

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