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Case Report

Efficacy of Enzotein in post-operative recovery and morbidity reduction in acute necrotizing pancreatitis: a case report

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ABSTRACT

Acute pancreatitis (AP) is a clinical syndrome defined by a discrete episode of abdominal pain and elevations in serum enzyme levels. A 40-year-old male driver from a lower socioeconomic background presented with epigastric and umbilical pain, weighing 60 kg and measuring 157 cm. A detailed case history followed by investigations confirmed acute necrotizing pancreatitis with fluid collection. Management involved a Malecot catheter insertion, draining fluid with high amylase. Follow-up showed increasing fluid collection, necessitating necrosectomy, NJ tube insertion, and laparostomy after seven weeks. Post-surgery, recovery involved dressings, physiotherapy, and a high-protein diet with Proteinace 98. By two years, the patient achieved 75 kg weight, BMI 24 kg/m², improved muscle mass, controlled diabetes and hypertension, alcohol abstinence for three years and had resumed his work.

Keywords: AP, Nutrition management, Enzotein Proteinace 98, Proteinase and protein supplement

INTRODUCTION

Acute pancreatitis (AP) consists of four main entities: interstitial edematous pancreatitis and necrotizing pancreatitis, which are common initial manifestations, and pancreatic pseudocyst and abscess, developing 3-5 weeks post-onset. Its course is shaped by pancreatic parenchymal necrosis, extrapancreatic fatty tissue necrosis, biologically active pancreatic ascites compounds, and necrosis infection. Early stages often lead to multiple organ failure due to inflammatory mediators and activated leukocytes, while septic complications, responsible for 80% of deaths, dominate from second week.¹

Infection of pancreatic necrosis occurs in 8-12% of AP and 30-40% of necrotizing cases, primarily involving gram-negative bacteria from the intestine (e.g., *Escherichia coli*), significantly increasing mortality. Long-term complications include persistent exocrine and endocrine

insufficiency.¹ Infected pancreatic necrosis typically requires surgery, while sterile necrosis management is debated, with current trends favoring conservative treatment unless deterioration occurs. Optimal surgical timing is the second or third week, with techniques like closed continuous lavage, planned staged re-laparotomy, and open packing.²

Surgical indications include establishing differential diagnosis, persistent severe biliary pancreatitis, infected pancreatic necrosis, and ineffective percutaneous abscess drainage.^{3,4} Nutritional supplementation is crucial for protein-energy malnutrition (PEM), especially in lower socioeconomic populations. PEM, resulting from poor appetite, dietary restrictions, metabolic acidosis, and hemodialysis-related amino acid loss, leads to increased infection risk, immune dysfunction, sarcopenia, cachexia, cardiovascular complications, and higher mortality.⁵ Protein malabsorption due to pancreatic inflammation

exacerbates systemic inflammation.⁶ This case underscores the significance of a high-protein diet and proteolytic enzyme supplementation in managing acute necrotizing pancreatitis.

CASE REPORT

A 40-year-old male from a lower socioeconomic background, employed as a driver, presented with epigastric and umbilical pain. The patient, weighing 60 kg and measuring approximately 157 cm in height, has a history of diabetes and hypertension but was not undergoing regular follow-up.

Initial presentation

The patient reported dull, aching pain in the epigastrium and umbilical regions. Examination revealed a pulse of 82/min and blood pressure of 130/80 mmHg. Abdominal tenderness was noted in the upper abdomen without guarding or rigidity. An ultrasound suggested AP.

Laboratory findings

Hemoglobin: 14.1 g/dl, total white blood cell count: 18,800/mm³, serum creatinine: 0.7 mg/dl, serum amylase: 521 U/l, serum lipase: 713 U/l, total/direct bilirubin: 0.8/0.4 mg/dl and SGOT/SGPT: 120/90 U/l.

Imaging

Early contrast-enhanced computed tomography indicated acute necrotizing pancreatitis with ill-defined fluid collection extending along the anterior and posterior pararenal space, reaching the pelvic brim.

Initial management

The patient developed a fever, and an ultrasound-guided Malecot catheter was inserted to drain the fluid. The amylase level in the drained fluid was 1302 U/l. After two weeks, the patient was discharged with the catheter in situ.

Follow-up and progression

The patient was reviewed every two weeks for four weeks and then monthly. Fluid collection increased to 6x6x4 cm. Magnetic resonance cholangiopancreatography showed residual changes of pancreatitis, a prominent pancreatic duct, and inflammation. After seven weeks, the patient underwent necrosectomy, NJ tube insertion, retroperitoneal drainage, and laparostomy. The patient remained hospitalized for one month, receiving regular dressings, alimentation with a high-protein diet, and supplementation with Proteinase 98.

Post-operative course

In 2021, the patient's recovery included regular dressings, physiotherapy, and ambulation, leading to noticeable

improvement. The patient experienced four additional admissions for drainage procedures and management of cachexia with purulent drainage.

Long-term outcome

Four months post-surgery, the wound showed healthy granulation tissue, and local applications and alimentary protein supplementation were initiated. Six months post-surgery, the patient's weight increased from 25 kg to 50 kg. After one year, the patient weighed 65 kg and resumed work. Two years post-surgery, the patient achieved a weight of 75 kg with a lean BMI of 24 kg/m² and good muscle mass. The patient-maintained control over diabetes and hypertension and abstained from alcohol for three years.



Figure 1: CT scan image of extensive necrosis of pancreas and fluid collection with perinephric extensions.

DISCUSSION

Acute necrotizing pancreatitis is a common gastrointestinal disease with varying degree of disease severity ranging from self-limiting mild to devastating and severe fatal state.⁷ At present, disease-specific treatment remains obscure and supportive care, including nutrition intervention, are crucial. Nutrition treatment not only helps prevent malnutrition, but it is also a key to reduce systemic inflammation, complications, and death. Furthermore, it might contribute to mitigating the systemic inflammatory response syndrome and altering disease trajectory.⁸

In this patient, who also had diabetes and hypertension, a low-dose protein supplement based on proteolytic enzymes was administered, leading to significant improvement in the patient's nutritional status, thereby reducing morbidity and enhancing quality of life.

The findings of this study suggest that Enzotein supplementation may offer significant benefits in the post-operative management of acute necrotizing pancreatitis

(ANP) patients undergoing necrosectomy and laparotomy. The discussion will focus on the implications of these results, potential mechanisms underlying the observed effects, limitations of the study, and avenues for future research.

Firstly, the Enzotein supplemented group's reported shortened hospital stays and faster recovery times highlight the possible clinical utility of Whey protein concentrate supplementation in improving post-operative recovery. These results are consistent with earlier studies showing the advantages of protein supplementation for immunological response, wound healing, and muscle protein synthesis. Enzotein's high protein content and bioavailability, likely provided the essential amino acids needed for tissue regeneration and repair, speeding up the recovery process for ANP patients.

Limitations

The sample size was relatively small, and the study duration may not have been sufficient to capture long-term outcomes and potential adverse effects associated with Enzotein supplementation.

Additionally, while efforts were made to standardize care protocols between the two groups, variations in patient characteristics and clinical management may have influenced the outcomes.

Future research should aim to address these limitations by conducting larger multicenter trials with longer follow-up periods to validate the findings of this study.

CONCLUSION

This case report demonstrates the efficacy of a high-protein diet and proteolytic enzyme supplementation in recovery from acute necrotizing pancreatitis. Enzotein supplementation shows promise as an adjunct therapy in enhancing post-operative recovery and reducing morbidity in ANP patients undergoing necrosectomy and laparotomy. Further randomized and cross-sectional

studies are required to provide statistically significant data to support these findings.

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