

IMPACT OF UNDESIRABLE EFFECTS OF THE PARENTERAL NUTRITION ON THE NUTRITIONAL SUPPORT AND THE DISEASE PROGRESSION

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ABSTRACT

We report the case of a 52-year old man with severe acute pancreatitis. In this case report we discuss the undesirable effects of parenteral nutrition and the importance of nutritional support at patients with severe necrotizing pancreatitis. Severe acute pancreatitis is usually accompanied by systemic inflammatory response syndrome, which results in hypermetabolism with prominent protein catabolism. Providing nutrition to these patients is of paramount importance. An adequate nutritional support is crucial in patients with severe and complicated pancreatitis. A negative energy balance has a negative impact on the nutritional status and the disease progression.

UDC CLASSIFICATION & KEYWORDS

■ 616-05 ■ 616-08 ■ Acute Pancreatitis ■ Nutritional Support ■ Undesirable Effects ■ Enteral Nutrition ■ Parenteral Nutrition ■

INTRODUCTION

Acute pancreatitis occurs in different clinical patterns ranging from a mild and mostly self-limiting to severe necrotizing disease with local and systemic complications [1]. Acute pancreatitis involves a systemic immuno-inflammatory response to a localized process of autodigestion of the pancreatic gland with variable involvement of the peri-pancreatic tissue and remote organ systems [2]. 75-80% has mild, edematous and about 20-25% severe necrotizing pancreatitis.

Specific and non-specific metabolic changes occur during acute pancreatitis. A variety of proinflammatory cytokines increase the basal metabolic rate [3]. Severe acute pancreatitis is a very catabolic state, with 80% of patients exhibiting increased energy expenditure and accelerated protein catabolism [4,5].

Patients with acute pancreatitis are at risk for malnutrition due to hypermetabolism and increased catabolism associated with acute pancreatitis. Those with acute pancreatitis may be unable to eat for a prolonged period of time because of abdominal pain, nausea and vomiting that are exacerbated upon eating [3]. Malnutrition can worsen, or if not already present, develop due to the increased catabolism [5,6]. Nutritional support in severe necrotizing pancreatitis is essential because these patients develop rapidly nutritional deficiencies. A prolonged negative nitrogen balance determines negative clinical outcome [4,7].

Case report

A 52-year old man with a history of chronic alcohol abuse was admitted to the hospital with acute abdominal pain, anorexia, nausea, vomiting and fever 39.2°C. According to CT (computed tomography), laboratory and clinical findings the diagnosis was severe acute pancreatitis, the Ranson-Score was 3 and APACHE II score (acute physiology and chronic health evaluation II) was 13. The patient had been treated in the intensive care unit (ICU) for 12 days, with fluid and electrolyte resuscitation, analgesics, antibiotics and human albumin 5% and 20%. The patient was fed by mouth in small amounts since the fifth day after admission in hospital.

On the 13th day the patient was transferred in the general surgical ward. In the general surgical ward continued the therapy with antibiotics, crystalloids and electrolytes, and the clinical situation was stabile.

On the 27th day of the hospitalization (the 14th day in the general surgical ward), the patient had syncope at the toilet, pulseless, and breathless. After Cardiopulmonary Resuscitation the patient was readmitted in the ICU. In the following days the patient had gastric stasis, edema in the lower limbs, altered consciousness, fever 39°C, shallow and polipneic respiration. The therapy continued with antibiotics, oxygen therapy, diuretics, fresh frozen plasma, blood transfusion, crystalloids and electrolytes. CT revealed the presence of pseudocyst, ascites and pleural versament sinister (severe acute pancreatitis with a Balthazar-Scale score of 6 points). The patient had reduction of food intake over the last few days, so it became immediate to start the nutritional support. Enteral feeding became difficult because of continuous distension of the abdomen and because of the high gastric residual volumes. The forth day after readmission in the ICU the patient was placed on the parenteral nutrition (All-in-One). During the infusion of parenteral formula, the patient complained for abdominal pain, nausea, vomiting and rise in body temperature, so we stopped it. This situation was repeated again the next day, when started the infusion of parenteral nutrition. Than we decided not to give parenteral nutrition, because of the undesirable effects and the patient didn't tolerate it. During the two consecutive weeks, the patient was without nutritional support. When the ileus passed, the patient was feed by mouth, supplemented with nutritional drink supplements. Was performed the percutaneous drainage of the fluid collections and the pseudocyst. The therapy continued with antibiotics, fluids, thrombosis prophylaxis and the medications of the pressure sores. After 11 weeks of hospitalization the patient loosed about 20% of his weight (15 kg), resulting in a deteriorating of the nutritional status. After 80 days of hospitalization the clinical situation was good and the patient discharged home.

Discussion

Patients with severe acute pancreatitis are hypermetabolic. There is increased protein catabolism, characterized by an inability of exogenous glucose to inhibit gluconeogenesis, increased energy expenditure, increased insulin resistance and increased dependence on fatty acid oxidation to provide energy substrates [8]. The more severe acute pancreatitis is, the more excessive is hypermetabolism. If the disease is complicated by sepsis or multiorgan failure, the resting energy expenditure is significantly increased.

For nutritional support, it is therefore necessary to assess the severity of acute pancreatitis and the nutritional status at the time of admission and during the course of the disease. Both factors are necessary to plan nutrition interventions in patients with acute pancreatitis. This patient had severe acute pancreatitis, which worsened, so we established a plan for nutritional support. In the last decade, the nutritional strategy in acute pancreatitis has changed. The nutritional management has shifted from parenteral to enteral nutrition [2,4]. Enteral feeding in acute pancreatitis have shown to reduce catabolism and loss of lean body mass, modulation of the acute phase response, with the potential to down regulate the splanchnic cytokine response [9]. Failure to use the gastrointestinal tract in patients with acute pancreatitis may exacerbate the stress response and disease severity, leading to greater incidence of complications and prolonged hospitalization [10]. In patients with severe necrotizing pancreatitis, the full amount of nutrient delivery by the enteral route is not always possible. If complete enteral nutrition is not possible, the nutritional support should be combined with parenteral nutrition [4,9]. Usually, the combined nutritional support allows that the patient reach the nutritional goals. Complications of acute pancreatitis such as persisting ileus, large pseudocysts, intestinal and pancreatic fistula, intestinal edema, retroperitoneal edema, pancreatic ascites, pancreatic or peripancreatic collections and infected necrosis may sometimes make enteral feeding difficult to conduct and tolerate, and parenteral nutrition should be instituted along with appropriate treatment for these conditions [9]. Our patient had some of the complications mentioned above, like: persisting ileus, large pseudocysts, pancreatic ascites, pancreatic and peripancreatic collections. These complications made impossible the administration of enteral nutrition, so the patient was placed on total parenteral nutrition. The patient didn't tolerate the parenteral nutrition because of undesirable effects. In the literature are mentioned these undesirable effects with the incidence of 3% for rise in body temperature and 1% for abdominal pain, nausea and vomiting. We do not have other formulas of parenteral nutrition available in our clinic. Considering the high cost of the parenteral nutrition, it was impossible for us to shift to another formula. For these reasons, the patient had an insufficient amount of calories and a negative balance of nitrogen.

This case illustrated that an adequate nutritional support is crucial in patients with severe and complicated pancreatitis. A negative energy balance has a negative impact on the nutritional status and the disease progression [2]. In this case, the hospitalization period was prolonged, because of the severity of disease, complications and poor nutritional status. In conclusion, we can say that despite of the severity of the disease, nutritional support is expected to positively affect the course of the disease, and improves the outcome. Any nutritional therapy for patients admitted for severe acute pancreatitis is better than no artificial nutrition support.

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