BRIEF COMMUNICATION

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Gastric and oral feeding in severe acute pancreatitis

Abel **ARROYO-SÁNCHEZ** and Rosa **AGUIRRE-MEJÍA**

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ABSTRACT – **Background** – There is controversy about the initiation of gastric or oral feeding in patients with severe acute pancreatitis (SAP) because they could increase pancreatic stimulation and exacerbate symptoms and complications. **Objective** – To describe the clinical characteristics and results of patients with SAP who underwent gastric tube or oral feeding versus parenteral or jejunal feeding. **Methods** – A retrospective study was carried out on patients over 18 years old with SAP diagnostic, who had been treated in critical care units. We excluded patients coming from other hospitals and those with incomplete medical records. **Results** – Thirty patients with SAP were included, fifty three percent of them tolerated the gastric tube or oral feeding, and most of them were females and older than patients who received parenteral or jejunal feeding. Other clinical characteristics and outcomes were similar in both groups. **Conclusion** – Gastric tube or oral feeding is no absolute contraindication for SAP.

Keywords – Acute necrotizing pancreatitis; enteral nutrition; parenteral nutrition.

INTRODUCTION

Severe acute pancreatitis (SAP), according to the Atlanta classification of 2012, is characterized by presenting at least one persistent organ failure (respiratory, renal, hemodynamic) 48 hours after the onset of the disease[1,2]. The SAP can have a mortality that ranges between 15–30%[1,3-5].

Treatment of these patients should be early and preferably in critical care areas for adequate monitoring of the response to the management and treatment of the complications they develop. Initial medical management includes fluid therapy, pain control, retrograde cholangiopancreatography, and individualized nutritional therapy[2-4].

Currently, there is controversy about the initiation of nutrition by the gastric or oral feeding in patients with SAP because they can increase pancreatic stimulation and exacerbate symptoms and complications[2-4,6-8].

The aim of this study was to describe the clinical characteristics and results of patients with SAP who underwent gastric tube or oral feeding and compared those with parenteral or jejunal feeding.

METHODS

A retrospective study was carried out of patients with a diagnosis of SAP who had been treated at the intensive and intermediate care unit (ICU–INCU) of the Hospital Víctor Lazarte Echegaray in Trujillo – Peru; during January 1st, 2016 – December 31st, 2018.

Medical records of patients aged 18 years and over were included, and patients transferred from other hospitals or those that were incomplete medical records were excluded.

The decision to initiate nutrition and route feeding was made by the attending physicians, according to clinical state. Gastric tube or oral feeding was made on the absence of abdominal pain or distention, nausea or vomiting on an individual basis for each case. If those not possible, they were to parenteral or jejunal feeding.

Operational definitions: acute pancreatitis, organ failure and SAP was made according to the Atlanta classification 2012[1]. Obesity: body mass index equal to over 30 kilograms/m^2. APACHE II score, SOFA scores and modified Marshall score. Computed tomography severity index (CTSI): sums of the Balthazar score plus grading the extent of pancreatic necrosis. APACHE II, SOFA, modified Marshall and CT Severity Index scores are available in: https://qxmd.com/calculate. Fasting days: days that the patient did not receive nutritional support since admission to the hospital. Length of stay: number of days the patient was hospitalized until discharge from the ICU–INCU and from the hospital. Condition of discharge: alive or deceased. The medical records were coded to maintain the anonymity of the data obtained and the protocol was approved by the institutional Ethics Committee.

All statistical data were processed using IBM SPSS Statistics for Windows, Version 25.0. (IBM Corp., Armonk, N.Y., USA). Categorical variables were summarized as the counts and percentages in each category. Continuous variables were expressed as the means and standard deviations. Categorical variables were compared using the chi-square test or Fischer's exact test, continuous variables were compared using student *t* test and we adopted a significance level of 5%.

RESULTS

Thirty patients with SAP were included, in 16 patients the gastric tube or oral feeding were used and in 14 patients the parenteral or jejunal tube feeding were used.

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Universidad Privada Antenor Orrego, Facultad de Medicina Humana, Trujillo, Perú. Hospital Víctor Lazarte Echegaray, Trujillo, Perú.
Corresponding author: Abel Arroyo-Sánchez. E-mail: abelsarroyos@gmail.com

The mean age was significantly higher, and the male sex was significantly lower in the patients with gastric tube or oral feeding versus parenteral or jejunal tube feeding (P=0.038 and P=0.033, respectively).

The etiology of SAP, the presence of previous comorbidity, obesity, APACHE II score, SOFA score, modified Marshall score, CTSI, the organ failure, the presence of pancreatic or peripancreatic necrosis, length of stay in the ICU–INCU or hospital, and mortality in the ICU–INCU or the hospital were not different (TABLE 1).

DISCUSSION

Fear about the exacerbation of abdominal symptoms or aspiration pneumonia has been present in the justification for not delivering nutrients by gastric tube or oral feeding in patients with SAP[5]. But already from the acute pancreatitis management guideline by the American College of Gastroenterology in 2013, the possibility of nutrition with gastric tube feeding was open[1] and later Bakker et al.[9] based on the results of the PHYTON protocol were open the probability of oral feeding from 72 hours after admission of patients with SAP.

Twenty percent of all (6 of 30 patients) tolerated oral feeding. They were less APACHE II, SOFA, modified Marshall, necrosis, CTSI, length of stay and mortality than other routes of feeding but were non significative. Bakker et al.[9] in SAP and Stimac et al.[10] in a subgroup of SAP using oral diet on-demand after 72 hours showed no differences to early nasojejunal tube feeding regarding infection, dead or systemic inflammatory response syndrome. Advantages of oral diet are it is cheaper, physiological, prevent to ileus and help to enhance recovery of gastrointestinal function.

Ten of all patients (33.3%) tolerated gastric tube feeding and they were older, less severity and organic failure scores than parenteral or jejunal feeding. Three small, randomized trials[11-13] using gastric tube showed no differences to nasojejunal tube regarding tolerance, infectious complications, inflammatory markers, mortality, and pain. Moreover, gastric tube is much easier to place, cheaper, more convenient and easer to maintain.

The trials differed in the criteria used to rate the severity of acute pancreatitis, previous studies with gastric tube feeding[11-13] and Bakker et al.[9] (oral on-demand feeding) used different severity criteria to Atlanta classification 2012, while Stimac et al.[10] used these last criteria in a subgroup of them study.

In our case series with SAP, more than half of them tolerated gastric tube or oral feeding. The possibility of gastric tube or oral feeding tolerance should be considered an option in patients without nausea or vomiting, without persistent abdominal distension or pain, who have compensated organ failure.

TABLE 1. Characteristics of patients with severe acute pancreatitis according to the route of delivery of nutritional support.

Characteristics	Total (30 p)	Severe acute pancreatitis					
		Oral or gastric feeding			Jejunal or parenteral feeding		
		Oral (6 p)	Gastric (10 p)	Total (16 p)	Jejunal (10 p)	Parenteral (4 p)	Total (14 p)
Age, year (SD)	63.4 (17.1)	65.3 (14.5)	71.9 (16.3)	69.4 (16.8) *[a]	53 (16.2)	65 (8.4)	56.6 (15.2)
Male sex, n (%)	15 (50)	3 (50)	2 (20)	5 (31.3) *[b]	6 (60)	4 (100)	10 (71.4)
Biliary etiology, n (%)	25 (83.3)	5 (83.3)	9 (90)	14 (87.5)	8 (80)	3 (75)	11 (78.6)
Comorbidities, n (%)	18 (60.0)	4 (66.7)	7 (70)	11 (68.8)	3 (30)	4 (100)	7 (50)
Obesity, n (%)	10 (33.3)	3 (50)	2 (20)	5 (31.3)	4 (40)	1 (25)	5 (35.7)
APACHE II score, m ±SD points	15.8 (8.0)	10.7 (2.3)	17.6 (6.6)	15 (6.3)	13.7 (7.2)	24.3 (13.4)	16.7 (9.8)
SOFA score, m ±SD points	7.6 (4.0)	5.2 (1.8)	7.2 (4.2)	6.4 (3.6)	8 (3.7)	11 (5.0)	8.9 (4.1)
Marshall score, m ±SD points	4.1 (2.3)	2.8 (0.8)	3.7 (1.5)	3.4 (1.3)	4.4 (2.8)	6.3 (2.9)	4.9 (2.9)
Respiratory failure, n (%)	27 (90)	4 (66.7)	9 (90)	13 (813)	10 (100)	4 (100)	14 (100)
Renal failure, n (%)	11 (36.7)	3 (50)	2 (20)	5 (31.3)	3 (30)	3 (75)	6 (42.9)
Hemodynamic failure, n (%)	9 (30)	0 (0)	3 (30)	3 (18.8)	3 (30)	3 (75)	6 (42.9)
Peri/pancreatic necrosis, n (%)	14 (46.7)	2 (33.3)	4 (40)	6 (37.5)	6 (60)	2 (50)	8 (57.1)
CTSI, mean (SD)	6.5 (3.1)	5.5 (4.4)	5.9 (3.1)	5.7 (3.4)	7.4 (2.8)	6.7 (3.1)	7.4 (2.5)
Fasting days, mean (SD)	3.7 (3.0)	2.5 (1.0)	3.3 (1.3)	3 (1.2)	3.2 (1.8)	7.5 (6.7)	4.4 (4.1)
Length of stay, days (SD)							
ICU and/or INCU	20.2 (22.6	7.5 (5.4)	20.9 (18.5)	15.9 (16.1)	18.6 (13.6)	41.3 (48.6)	25.1 (28.1)
Hospital	31.0 (23.8)	17 (5.1)	37.5 (24.9)	29.8 (22.0)	28 (13.6)	43.5 (47.1)	32.4 (26.4)
Mortality, n (%)							
ICU and/or INCU	5 (16.7)	0 (0)	1 (10)	1 (6.3)	1 (10)	3 (75)	4 (28.6)
Hospital	6 (20)	0 (0)	2 (20)	2 (12.5)	1 (10)	3 (75)	4 (28.6)

p: patients. SD: standard deviation; n: number of cases; m: mean; APACHE II: acute physiology and chronic health evaluation II; SOFA: Sequential Organ Failure Assessment; Marshall: modified Marshall score; CTSI: computed tomography severity index; ICU: intensive care unit; INCU: intermediate care unit.

*P<0.05 between gastric or oral feeding versus parenteral or jejunal tube feeding. [a]Student t test and [b]chi-square test.

The appropriate time to start this measure should not be more than 5 to 7 days after the onset of acute pancreatitis symptoms and in case of intolerance, the parenteral or jejunal tube feeding should be switched.

Limitations of this study include the retrospective design and the small study population. Data were collected from medical records which could reduce reliability. Therefore, a longer prospective, controlled and multicentric study may be necessary to overcome these limitations.

We think oral and gastric tube feeding are not absolute contraindication in SAP, especially, if these patients are not having previous malnutrition, are stabilize, and they have not symptoms and signs from ileus.

CONCLUSION

Oral or gastric tube feeding is a potential route for nutrition support in selective patients with SAP, where these feeding methods are accessible, cheaper and physiological.

Authors' contribution

All the authors were equally involved in study design, data collection, analysis, manuscript writing and review.

Orcid

Abel Arroyo-Sánchez: 0000-0001-6022-6894
Rosa Aguirre-Mejía: 0000-0002-2283-1935.

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RESUMO – **Contexto** – Há controvérsias sobre o início da alimentação gástrica ou oral em pacientes com pancreatite aguda grave (PAG), pois elas podem aumentar a estimulação pancreática e exacerbar os sintomas e complicações. **Objetivo** – Descrever as características clínicas e os resultados de pacientes com PAG submetidos à alimentação por sonda gástrica ou via oral versus alimentação parenteral ou jejunal. **Métodos** – Foi realizado um estudo retrospectivo em pacientes maiores de 18 anos com diagnóstico de PAG, atendidos em unidades de terapia intensiva. Excluímos pacientes procedentes de outros hospitais e aqueles com prontuário incompleto. **Resultados** – Trinta pacientes com PAG foram incluídos, 53% deles toleravam a sonda gástrica ou alimentação via oral, e a maioria era do sexo feminino e tinha mais idade do que os pacientes que receberam alimentação parenteral ou jejunal. Outras características clínicas e resultados foram semelhantes em ambos os grupos. **Conclusão** – A sonda gástrica ou alimentação oral não é contra-indicação absoluta para PAG.

Palavras-chave – Pancreatite necrosante aguda; nutrição enteral; nutrição parenteral.

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