



# REVISTA DE GASTROENTEROLOGÍA DE MÉXICO

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## EDITORIAL

### Editorial comment on factors associated with hospital stay in children with acute pancreatitis<sup>☆,☆☆</sup>



### Comentario editorial sobre factores asociados con estancia hospitalaria en niños con pancreatitis aguda

Acute pancreatitis (AP) is the most frequent pancreatic disease in pediatric patients and its incidence and prevalence has importantly increased in Mexico, as in other countries, over the past decades<sup>1,2</sup>.

Historically, one of the central concepts in the treatment of AP has been “pancreatic rest”, which was attained through oral fasting to decrease inflammation of the pancreas, by reducing or suppressing the stimulation of the hormones, secretin and cholecystokinin, that regulate pancreatic secretion. Current data show that early enteral feeding (oral, nasogastric, or nasojejunal), in mild or moderate cases of AP, can be started, without affecting the exocrine function of the pancreas. There is much evidence on adult populations, published in clinical trials, reviews, and meta-analyses, but very little on pediatric populations<sup>3–5</sup>. The mechanisms that have been proposed for the early start of enteral nutrition, compared with using parental nutrition, are based on modulation of the systemic inflammatory response, reduced cytokine secretion, the prevention of intestinal villous atrophy, less luminal stasis and intestinal permeability, and thus, a decreased risk for bacterial translocation and sepsis, preventing multiple organ failure<sup>6,7</sup>. Even lower rates of infectious complications, metabolic complications, and mortality have been shown in cases of severe AP<sup>8</sup>. Starting oral feeding as soon as possible is recommended (24–72 h), to reduce the risk for complications. Therefore, the primary treatment

goal in an acute event of pancreatitis should be early feeding (EF)<sup>9</sup>.

The administration routes of enteral nutrition are oral, gastric, and jejunal. Studies conducted on adult populations that compare the outcomes of patients utilizing those administration routes have identified no superiority or inferiority between the nasogastric route vs the nasojejunal route<sup>10</sup>. At present, no studies have been carried out that compare the gastric route vs the jejunal route in pediatric populations.

Furthermore, if the oral route is not tolerated or the patient does not ingest the recommended quantity of calories in the first 72 h, feeding should be started via the gastric or jejunal routes. With respect to the type of formula, no differences have been found in the comparison of elemental, semi-elemental, and polymeric formulas, signifying that any of them can be administered in cases of AP<sup>3–5</sup>.

The retrospective study “Factors associated with hospital length of stay in children with acute pancreatitis” by Rivera-Suazo and Vázquez-Frias appears in the present issue of the *Revista de Gastroenterología de México* and its aim was to evaluate the factors associated with the number of days of hospital stay in children with AP. In the study, 62.7% of the patients received EF, defined as feeding started within the first 72 h. The most frequently indicated diet was clear liquids (76.4%), followed by normal diet (15.6%), and the administration route was oral in 92.1% of the patients. Of the different variables analyzed, EF was associated with shorter hospital stay (OR 0.05; p=0.02). Comparing those findings with the results of the few other studies that have been conducted on children, in a retrospective study that included 201 children, those authors reported that 49.7% received enteral nutrition in the first 24 h, identifying that EF (the first 48 h) was the main variable that contributed to an improvement in patient outcome (shorter hospital stay, lower frequency of developing severe pancreatitis or transfer to intensive care), compared with the children that did

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<sup>☆☆</sup> See related content at DOI: <http://dx.doi.org/10.1016/j.rgmxen.2021.05.016>, Rivera-Suazo Y y Vazquez-Frias R. Factors associated with hospital length of stay in children with acute pancreatitis. *Rev Gastroenterol Méx.* 2023;88:4–11.

not have EF<sup>11</sup>. In another retrospective study, the clinical records of 38 children with mild AP were analyzed, and the aim was to evaluate the effect of oral feeding and dietary fat content on the number of days of hospital stay, severity of pain, and clinical course of pancreatitis. The results showed that early oral feeding and dietary fat content were not associated with an increase in the severity of pain or days of hospital stay, nor was there an increase in serum lipase values<sup>12</sup>.

A retrospective, multicenter cohort study, that collected information on pediatric AP from a database, included 5,507 unique patients and 7,693 discharges. Median hospital stay was 4 days and factors of prolonged stay were the presence of malignant entities or chronic gastrointestinal, metabolic, or neurologic conditions and the use of total parenteral nutrition<sup>13</sup>. In the Rivera-Suazo and Vázquez-Frias study described herein, the median hospital stay was twice as long (8 days) and the patients with the longest hospital stay presented with less recurrence or complications than the group with a shorter hospital stay. Those findings are somewhat contradictory, and the authors speculate that it could be due to the heterogeneity in the decision-making for the management of AP, underlining the importance of conducting controlled clinical trials, with rigorous selection criteria, to be able to extrapolate the results.

The first controlled clinical trial on children from 2 to 18 years of age with mild-moderate AP was recently published. The patients were randomly assigned to the study group (unrestricted early oral feeding) and the control group (fasting, intravenous fluids, and delayed feeding). The variables of hospital stay, clinical characteristics, biochemical characteristics, and the appearance of complications were analyzed. The patients that received early oral feeding had a nonsignificant trend toward shorter hospital stay, reduced lipase levels, and a lower risk for readmission. The study group had weight gain (1.3 kg), compared with weight loss (0.8 kg) in the control group, and the difference was significant. There were no significant differences regarding the presence of pain or its intensity and no patients from either group developed pancreatic complications<sup>14</sup>.

Total parenteral nutrition is the second-line option in the treatment of AP and its indications are the impossibility of carrying out enteral nutrition in the first 5–7 days due to the presence of ileus, fistula, or compartmental abdominal syndrome, or for reducing the catabolic status of the patient. Enteral nutrition combined with parenteral nutrition should be started as soon as possible<sup>5</sup>. In the Rivera-Suazo and Vázquez-Frias study, only 19.6% of the children received parenteral nutrition and its indications were prolonged fasting, pancreatic-cutaneous fistula, and severe pancreatitis.

Another critical and very important aspect in the treatment of AP in children is intravenous fluid resuscitation. The inflammatory process of the pancreas induces dilation of the pancreatic vasculature, increases vascular permeability, and causes extrapancreatic fluid extravasation, with an increased risk for ischemia and pancreatic necrosis. Therefore, aggressive fluid therapy with crystalloid solutions is recommended in the first 24 h of hospitalization, to reduce the risk for complications<sup>15</sup>. In other studies, aggressive fluid therapy has been described to reduce the systemic inflammatory response, organ failure, hospital stay, and

mortality<sup>11</sup>. In their article, Rivera-Suazo and Vázquez-Frias reported that fewer than one-fourth of the patients received aggressive fluid resuscitation, which is why it is essential to emphasize to pediatricians the importance of adequate fluid resuscitation in the first hours of hospitalization of the patient with AP.

Regarding the use of antibiotics in pancreatitis, routine use as prophylaxis is not recommended and they are indicated in cases of systemic infectious complications, cholangitis, and infected pancreatic necrosis<sup>5</sup>. In their study, Rivera-Suazo and Vázquez-Frias found that antibiotic use was significantly associated with prolonged hospital stay (defined as >7 days) (OR 31.71, 95% CI 2.71–370.65;  $p=0.006$ ), without specifically stating the indications for their use, only that they were indicated by the infectious diseases service.

The authors correctly recognize certain limitations of their study, such as its retrospective design and the small sample size. An important gap still remains, with respect to the treatment of AP in the pediatric population, given that the majority of recommendations follow the model of studies conducted on adult populations. The performance of studies on children must be continued, with adequate methodologic designs and sample sizes that enable optimum treatment guidelines to be established (feeding route and dietary macronutrient content, among others) to improve the outcome in those patients, given that AP is an entity whose trend is on the rise, not all cases are benign, and there is a risk for recurrence and/or chronicity.

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## Conflict of interest

The authors declare that there is no conflict of interest.

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