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Original article

Sociodemographic and clinical characteristics and outcomes of patients with acute pancreatitis in an institution in Barranquilla (2020–2024)

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Abstract

Introduction: Acute pancreatitis (AP) is a gastrointestinal condition with a rising global incidence and a significant rate of severe complications. In Colombia, there is a lack of unified epidemiological data, and international prognostic scales lack local validation. To address this, the study describes the clinical characteristics, management, and outcomes of AP patients at an institution in Barranquilla, providing regional data to optimize clinical management. The principal objective is to describe the sociodemographic, clinical, etiological characteristics and hospital outcomes of patients with acute pancreatitis (AP) treated at an institution in Barranquilla between January 2020 and December 2024. **Methodology:** Observational, descriptive study based on the review of 92 medical records of patients older than 18 years who met the diagnostic criteria of the 2012 Atlanta consensus. The study analyzed sociodemographic, etiological, clinical, and paraclinical variables (blood urea nitrogen and hematocrit), findings on contrast-enhanced computed abdominal tomography (Balthazar classification), management, and hospital outcomes. **Results:** Mean age was 45.2 ± 20 years; 59.8% of patients were women. Low socioeconomic status predominated widely (strata 1 and 2), accounting for 88.0% of cases, followed by middle socioeconomic status (strata 3 and 4) with 12.0%, with no representation from high socioeconomic strata (5 and 6). Biliary etiology was the most frequent (64.5%), followed by idiopathic etiology (20.4%). Mild or moderate forms predominated, with conservative medical management in 93.5% of cases. Complications occurred in 5.8% of patients, and overall mortality was 1.1%. **Conclusions:** In the analyzed population, acute pancreatitis was mainly of biliary etiology and presented as mild or moderate forms of the disease. The results characterize the regional clinical and epidemiological profile and describe institutional practice based on a stepwise approach, providing local evidence to strengthen healthcare strategies and guide future validation of prognostic tools in the Colombian context.

Keywords

Acute pancreatitis, biliary lithiasis, Balthazar classification, epidemiological factors.

INTRODUCTION

Acute pancreatitis (AP) is a gastrointestinal condition whose prevalence and incidence have increased significantly worldwide. Its annual incidence ranges from 13 to 45 cases per 100,000 population, and more than 220,000 hospital admissions are reported annually in the United States[1,2]. Given that approximately 20%–30% of cases progress to severe disease[2], this increasing disease burden underscores the need to reassess and better understand the clinical course and most prevalent underlying etiologies of this condition.

In Colombia, the actual incidence of AP remains unknown. Existing studies are regionally fragmented, limiting their extrapolation and generalizability to the national population. In addition, published information on the

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clinical characteristics and predisposing factors associated with AP in the local setting remains scarce[3]. A descriptive study conducted in the department of Huila characterized the demographic profile and clinical course of patients with AP, including complications and their management[4].

Another study conducted at two hospitals in Bogotá, D.C., evaluated socioeconomic characteristics, sex, disease duration at the time of presentation, Marshall score, intensive care unit (ICU) length of stay, hospital length of stay, complications, surgical management, and mortality. The study identified an association between clinical outcomes and the need for percutaneous or endoscopic procedures in severe AP—specifically, intra-abdominal hypertension with abdominal compartment syndrome and infected acute necrotic collections—and socioeconomic strata classified as high (National Administrative Department of Statistics [DANE] strata 4, 5, and 6) and low-to-middle (DANE strata 1, 2, and 3)[5], with the risk being 10-fold higher among individuals in lower socioeconomic strata[5].

Although imaging-based scoring systems, such as the Balthazar score[6], and clinical scoring systems, including APACHE II, Ranson, and Marshall scores, are used to predict disease severity[7,8], a recent study indicated that these tools are neither clinically significant nor equivalent in the local setting[9]. The lack of representative epidemiological and clinical data limits the development of a comprehensive approach to the disease[10].

Early identification of patients at high risk for complications is essential to reduce morbidity and mortality. However, the lack of validation of prognostic scoring systems in the Colombian setting[9-11] highlights the need to generate local evidence to assess the actual utility of commonly used clinical and laboratory markers, such as hematocrit and blood urea nitrogen (BUN)[9]. Although both parameters have demonstrated prognostic value in international studies, their performance and applicability in the Colombian population have not been validated[9].

Although the present study is descriptive in nature and the analyses performed do not allow causal relationships to be established between the variables evaluated, its findings provide a starting point for prospective research aimed at validating clinical and laboratory variables and prognostic scoring systems that may enable more accurate identification of predictors of disease severity in the population under study. Such evidence could contribute to more precise prognostic assessment and optimization of individualized therapeutic strategies in patients with AP.

Against this background, the objective of the present study was to describe the sociodemographic characteristics, clinical course, management, and in-hospital outcomes of patients diagnosed with AP who were treated at an institution in Barranquilla, with the aim of providing epidemiological data to inform a clinical approach tailored to the regional context.

METHODS

An observational, descriptive, retrospective, cross-sectional study was conducted based on a review of the medical records of patients hospitalized with a diagnosis of AP in Barranquilla, Colombia.

The review period extended from January 2020 through December 2024. Records of patients older than 18 years who required hospitalization in a general ward or intensive care unit and had AP severity classified according to the Atlanta criteria were included: mild AP (absence of organ failure and local complications), moderately severe AP (presence of acute local complications), and severe AP (presence of organ failure)[12]. Only patients with complete laboratory data—including BUN, creatinine, complete blood count, and pancreatic enzymes—and a contrast-enhanced abdominal computed tomography (CT) scan documented in the medical imaging record were included.

Records corresponding to pregnant patients, patients with a previous diagnosis of chronic pancreatitis, records with incomplete information for the primary variables, and patients with pancreatic cancer confirmed by histopathological examination were excluded (**Figure 1**).

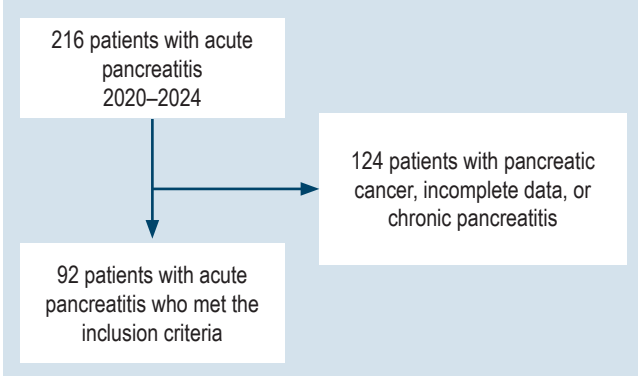


Figure 1. Patient inclusion flowchart. Image courtesy of the authors.

The variables analyzed included sociodemographic characteristics (age, sex, place of origin, and participants' socioeconomic classification). Socioeconomic classification was determined using the Colombian adaptation of the methodology proposed by López-Calva and Ortiz-Juárez (2011). Socioeconomic stratification is a classification of residential properties based on physical characteristics of the dwelling and its urban surroundings, designed primarily to determine differential allocation of subsidies and contributions for public utilities; therefore, it does not constitute a direct measure of income or social class.

Nevertheless, for analytical purposes, strata 1 and 2 were considered indicators of low socioeconomic conditions; strata 3 and 4, of intermediate socioeconomic conditions; and strata 5 and 6, of high socioeconomic conditions, recognizing the approximate nature of this categorization within the Colombian context.

Imaging findings were classified according to the Balthazar CT criteria as A–C, D, and E, corresponding to mild, moderate, and severe AP, respectively[13].

Etiologic classification

Etiologic diagnoses were established based on clinical, biochemical, and imaging criteria documented in the medical record, in accordance with international recommendations for the etiologic classification of AP:

- Biliary lithiasis: defined as the presence of cholelithiasis or choledocholithiasis confirmed by imaging studies.
- Alcohol: alcohol consumption of approximately 80 g/day[14], in the absence of other causes of AP.
- Drug-induced: AP associated with the use of azathioprine, 6-mercaptopurine, valproic acid, didanosine, mesalamine, or angiotensin-converting enzyme inhibitors.
- Hypertriglyceridemia: serum triglyceride levels ≥1,000 mg/dL within the first 24 hours after admission, with no other etiology identified (biliary, alcohol-related, or drug-induced)[15].
- Post-endoscopic retrograde cholangiopancreatography: an episode of AP occurring within 48 hours after an endoscopic retrograde cholangiopancreatography procedure.
- Idiopathic: absence of another identifiable cause of AP.

BUN and hematocrit levels at admission and 48 hours were also assessed.

Outcomes included the occurrence of complications (multiorgan failure, associated morbidity, and mortality) and the type of management received (medical or surgical/endoscopic, including laparoscopic necrosectomy, necrosectomy by laparotomy, or transgastric collection drainage).

Statistical analysis

The statistical analysis consisted of a descriptive assessment of the sociodemographic and clinical characteristics and management of patients with AP. Categorical variables were expressed as absolute and relative frequencies, whereas quantitative variables were summarized using measures of central tendency (mean or median) and dispersion (standard deviation or interquartile range), according to their distribution.

AP severity, as determined according to the Balthazar CT criteria, was compared with clinical outcomes (complications, in-hospital mortality, and type of management) using contingency tables. Data processing and analysis were performed using IBM SPSS Statistics, version 26.0, with procedures implemented to ensure data consistency and quality for interpretation of the results.

RESULTS

Sociodemographic characteristics

Among the 92 patients included in the analysis, the mean age was 45.2 ± 20.0 years. The distribution was predominantly composed of middle-aged adults. Female sex was more frequent (59.8%), with no relevant differences across disease-severity groups. Regarding socioeconomic status, low socioeconomic strata (strata 1 and 2) predominated substantially, accounting for 88.0% of cases, followed by intermediate strata (strata 3 and 4), accounting for 12.0%; no patients from high socioeconomic strata were represented. With respect to geographic origin, most patients were from the department of Atlántico (65.6%), followed by La Guajira (23.7%) and, to a lesser extent, the departments of Cesar, Bolívar, and Sucre. No statistically significant differences were observed according to disease severity. Detailed sociodemographic characteristics are summarized in **Table 1**.

Etiologic and clinical profile

Biliary etiology was the most common cause of AP, accounting for 64.5% of cases, followed by idiopathic etiology (20.4%), alcohol consumption (5.4%), and less frequent causes, including drug-induced AP (4.3%), dyslipidemia (3.2%), and post-ERCP pancreatitis (1.1%). The clinical and etiologic characteristics of the patients are presented in **Table 2**. More severe forms showed a higher proportion of biliary etiology (80.0%), with no relevant increase in alcohol-related or idiopathic etiology. Regarding early markers of disease severity, a hematocrit change >35% was observed in 4.3% of patients, whereas a >5% change in blood urea nitrogen (BUN) occurred in 43.0% and was more frequent in moderate (62.5%) and severe (40.0%) cases, suggesting a stronger association with greater clinical disease severity.

Severity classification

According to the severity classification assessed, most patients had mild AP, followed by a smaller proportion of moderate cases and an even smaller proportion of severe cases. This distribution reflects the usual epidemiologic

pattern of the disease, characterized by a predominance of mild presentations with favorable clinical courses and a lower frequency of severe presentations associated with greater systemic involvement.

Hospital management and outcomes

Conservative medical management was the predominant therapeutic strategy, administered to 93.5% of patients, primarily those with mild and moderate pancreatitis, and a favorable clinical course was observed in most cases. Invasive interventions were infrequent and were reserved for patients with severe disease or local complications; transgastric drainage of collections was performed in 2.2% of cases, whereas surgical necrosectomy was performed in 4.4%, exclusively in patients with severe pancreatitis and associated complications. Regarding in-hospital outcomes, 88.2% of patients experienced no complications. Multiorgan failure was documented in 2.2% of patients, and the in-hospital case-fatality rate was low (1.1%), occurring exclusively in patients with severe disease. These findings confirm that severe forms, although less frequent, are associated with a greater need for interventional management and a higher risk of adverse outcomes. Clinical outcomes and management according to disease severity are detailed in **Table 3**.

DISCUSSION

The results indicate that AP primarily affected middle-aged women from low socioeconomic strata, most of whom were from the department of Atlántico. This finding suggests a distinct population profile within the regional context, with no relevant sociodemographic differences observed according to disease severity, consistent with the findings reported by Cabrera et al.[5].

The findings demonstrate an AP profile characterized by a predominance of biliary etiology (64.5%), a high proportion of mild-to-moderate cases managed conservatively, and a low overall mortality rate (1.1%). These results are consistent with the Colombian literature, which likewise identifies biliary lithiasis as the most common cause of AP, although quantitative variations have been reported across national series—for example, estimates ranging from 52% to 83% for biliary etiology—suggesting regional differences in epidemiologic profiles or referral patterns across centers[3].

Table 1. Sociodemographic characteristics of patients

Variable	Total (n = 92)	Imaging-based severity Balthazar scale		
		Mild (A–C)	Moderate (D)	Severe (E)
Age (years), mean ± SD	45.2 ± 20.0	44.6 ± 20.6	46.9 ± 19.1	49.0 ± 17.3
Sex				
Male, n (%)	37 (40.2%)	25 (67.56%)	6 (16.21%)	6 (16.21%)
Female, n (%)	55 (59.8%)	49 (89.09%)	2 (3.63%)	4 (7.27%)
Socioeconomic status				
Strata 1–2 (low)	81 (88.0%)	65 (80.2%)	7 (8.64%)	9 (11.11%)
Strata 3–4 (intermediate)	11 (12.0%)	9 (81.81%)	1 (9.09%)	1 (9.09%)
Strata 5–6 (high)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Place of origin				
Atlántico, n (%)	61 (65.6%)	51 (83.60%)	4 (6.55%)	6 (9.83%)
Cesar, n (%)	4 (4.3%)	4 (100%)	0 (0.0%)	0 (0.0%)
La Guajira, n (%)	22 (23.7%)	16 (72.72%)	3 (13.63%)	3 (13.63%)
Sucre, n (%)	1 (1.1%)	1 (100%)	0 (0.0%)	0 (0.0%)
Bolívar, n (%)	4 (4.3%)	2 (50%)	1 (25%)	1 (25%)

Table prepared by the authors.

Regarding disease severity and outcomes, most national studies confirm that the majority of patients present with non-necrotizing forms of the disease[3,4,9]. Severe complications, including infected necrosis and multiorgan failure, are concentrated in a small subgroup requiring invasive management. Colombian case series and local imaging-based analyses similarly indicate that higher Balthazar scores are associated with a greater need for interventions and a poorer prognosis. The low overall mortality observed in the present study may be related to the small proportion of severe cases (Balthazar D–E) in the sample and the timely medical management received by most patients. This finding is consistent with reports from high-complexity centers in Colombia[4].

Medical management was sufficient in the vast majority of cases (93.5%), whereas invasive interventions were primarily reserved for patients with more advanced tomographic stages. This practice is consistent with current recommendations from guidelines such as those issued by the World Society of Emergency Surgery (WSES) in 2019[16], which recommend an approach in which severe pancreatitis with

Table 2. Clinical characteristics of patients

Variable	Total (n = 92)	Imaging-based severity Balthazar scale		
		Mild (A–C)	Moderate (D)	Severe (E)
Etiology				
Biliary lithiasis, n (%)	60 (64.5%)	47 (78.33%)	5 (8.33%)	8 (13.33%)
Idiopathic, n (%)	19 (20.4%)	15 (78.94%)	2 (10.52%)	2 (10.52%)
Hypertriglyceridemia (≥1,000 mg/dL), n (%)	3 (3.2%)	3 (100%)	0 (0.0%)	0 (0.0%)
Alcohol, n (%)	5 (5.4%)	4 (80%)	1 (20%)	0 (0.0%)
Drug-induced, n (%)	4 (4.3%)	4 (100%)	0 (0.0%)	0 (0.0%)
Post-ERCP, n (%)	1 (1.1%)	1 (100%)	0 (0.0%)	0 (0.0%)
Hematocrit change				
>35%, n (%)	4 (4.3%)	3 (75%)	1 (25%)	0 (0.0%)
BUN change				
>5%, n (%)	40 (43.0%)	31 (77.5%)	5 (12.5%)	4 (10%)
Management received				
Medical, n (%)	86 (92.5%)	73 (84.8%)	8 (9.3%)	5 (5.81%)
Transgastric collection drainage, n (%)	2 (2.2%)	1 (50%)	0 (0.0%)	1 (50%)
Necrosectomy by laparotomy, n (%)	2 (2.2%)	0 (0.0%)	0 (0.0%)	2 (20.0%)
Laparoscopic necrosectomy, n (%)	2 (2.2%)	0 (0.0%)	0 (0.0%)	2 (20.0%)
Complication				
Multiorgan failure, n (%)	2 (2.2%)	2 (100%)	0 (0.0%)	0 (0.0%)
None, n (%)	82 (88.2%)	71 (86.58%)	8 (9.7%)	3 (3.65%)
Mortality, n (%)	1 (1.1%)	1 (100%)	0 (0.0%)	0 (0.0%)
Balthazar D, n (%)	3 (3.2%)	0 (0.0%)	0 (0.0%)	3 (100.0%)
Balthazar E, n (%)	4 (4.3%)	0 (0.0%)	0 (0.0%)	4 (100.0%)

BUN: blood urea nitrogen; ERCP: endoscopic retrograde cholangiopancreatography; SD: standard deviation. Table prepared by the authors.

infected necrosis requires intervention, whereas sterile necrotic collections may be managed conservatively[17].

The recommendations outlined in national guidelines support the approach observed in this population: initial medical management for most patients, with drainage or necrosectomy reserved for complicated necrosis or symptomatic collections. This clinical practice is consistent with national evidence-based recommendations[16,18].

The quantitative differences observed between this sample and other national publications, such as variations in the proportion of etiologies or intervention rates, may be explained by sample size, regional demographic characteristics—including a higher prevalence of biliary lithiasis—and differences in referral criteria or tomographic interpretation across centers. An additional limitation is the small number of severe cases in the sample, which may reduce the precision of mortality estimates and statistical associations within this subgroup.

The principal general limitations of the study include the inability to establish causal relationships, inherent to its cross-sectional design; potential information bias arising from the retrospective nature of the clinical records; and limited generalizability of the findings because the study was conducted at a single institution. Furthermore, the cross-sectional design precludes the establishment of temporal or prognostic relationships between clinical variables and outcomes.

CONCLUSIONS

The sociodemographic findings indicate that AP in the study population predominantly affected middle-aged women from low socioeconomic strata, primarily from the department of Atlántico, thereby defining an epidemiologic profile specific to the institution evaluated. Nevertheless, these findings do not permit a representative characterization at the regional or national level; rather, they provide preliminary information that underscores the need to strengthen standardized systems for collecting clinical and epidemiologic data to facilitate comparable analyses in future research.

From an etiologic and clinical perspective, biliary etiology was confirmed as the leading cause of AP, particularly among patients with more severe disease, in accordance with the international literature. Likewise, the greater frequency of BUN changes among patients with moderate and severe disease supports its potential utility as an early marker of clinical severity, whereas hematocrit changes demonstrated lower performance as an isolated indicator. These findings should be regarded as preliminary evidence to guide the identification of relevant variables for incorporation into future systematic clinical assessment tools.

With respect to severity classification, the predominance of mild and moderately severe forms reflects the usual clinical course of the disease; however, the presence of a smaller subgroup of patients with severe pancreatitis and an associated higher risk of organ dysfunction underscores the importance of implementing prospective tools capable of enabling early and standardized risk stratification across different care settings.

Finally, conservative medical management was sufficient for most patients, whereas invasive interventions were reserved for severe cases with local or systemic complications. The low frequency of complications and in-hospital mortality suggests favorable clinical outcomes within the institutional setting. However, rather than supporting broadly generalizable conclusions, these findings underscore the need to develop standardized data collection and follow-up instruments that can, in the future, generate robust evidence to inform the design of prevention strategies, optimization of clinical management, and development of health policies based on local and multicenter data.

Table 3. Patient outcomes and management received

Variable	Total	Imaging-based severity Balthazar scale			Patients with any complication	Mortality
		Mild (A–C)	Moderate (D)	Severe (E)		
Medical management	86 (93.5%)	73 (84.9%)	8 (9.3%)	5 (5.8%)	5 (5.8%)	1 (1.2%)
Transgastric collection drainage	2 (2.2%)	1 (50.0%)	0 (0.0%)	1 (50.0%)	1 (50.0%)	0 (0.0%)
Necrosectomy by laparotomy	2 (2.2%)	0 (0.0%)	0 (0.0%)	2 (100.0%)	2 (100.0%)	0 (0.0%)

Table prepared by the authors.

Ethical considerations

The study was approved by the Research Ethics Committee of Clínica de la Costa and classified as a study involving no more than minimal risk, in accordance with Resolution 008430 of 1993 issued by the Colombian Ministry of Health. The research was conducted in accordance with the ethical principles of the Declaration of Helsinki (2024 version), with measures in place to ensure the confidentiality, anonymity, and protection of the information collected.

Informed consent

Data processing was performed upon admission to the institution for the creation of an anonymized database within an observational, noninterventional study design.

Conflicts of interest

The investigators declare that they have no financial, personal, or professional conflicts of interest that could have introduced bias into the design, conduct, or interpretation of the results obtained in this study.

Use of artificial intelligence

Artificial intelligence was used exclusively as a technological support tool for the preparation and drafting of the executive summary of this document. Human oversight was maintained throughout the process to ensure the accuracy of the scientific information presented.

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Author contributions

- Study conception and design: María José Viera-Contreras and Ricardo López-Lara.
- Data acquisition: Ricardo López-Lara and Eduardo José Cuello-Navarro.
- Data analysis and interpretation: Luisa María Gómez-Giraldo.
- Manuscript drafting: María José Viera-Contreras.
- Critical revision of the manuscript: Eduardo Cuello-Lacouture and Leonardo Brochado-Fontalvo.

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