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Clinical characteristics of patients with acute pancreatitis treated in a tertiary referral hospital in Cali

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Abstract

Introduction: Acute pancreatitis (AP) is a disease with a high degree of clinical complexity, and depending on its severity, it can have high morbidity and mortality rates, resulting in substantial health-care costs, particularly at the hospital level. **Materials and methods:** A descriptive study was developed based on the medical records of a tertiary referral university hospital. The records that included an ICD 10 diagnosis of acute pancreatitis between January 2011 and December 2018 were reviewed. All patients over the age of 18, of both sexes, with an AP diagnosis who met at least two of the 2012 Atlanta criteria were included in the study. **Results:** 1 353 records were reviewed, of which 386 met the criteria for AP. There were 205 women (53%) and 181 males (47%) among them, and comorbidities were found in less than 10% of the participants. 38% of cases of pancreatitis occurred in people between 50 and 70 years of age. Regarding the etiology of AP, biliary origin was the most frequent with 200 cases (52%), followed by idiopathic (19.7%) and post-endoscopic retrograde cholangiopancreatography (ERCP) in 33 patients (8.5%). **Conclusions:** AP is a common condition that affects adults of all ages and results in a high number of emergency room visits. Previous data in Colombia was only available for individuals with severe pancreatitis, and nothing was known about the sociodemographic and clinical characteristics of acute pancreatitis in the emergency room.

Keywords

Pancreatitis; Acute; Characteristics of the population.

INTRODUCTION

Acute pancreatitis (AP) is an inflammatory process that involves the pancreas, secondary to self-digestion by the enzymes it secretes [1]. It should be suspected in a patient with upper, acute and severe abdominal pain; and for its diagnosis biochemical or radiological evidence is required [1-4].

It is a disease with a high degree of clinical complexity, and depending on its severity, it can have high morbidity and mortality rates, resulting in substantial health-care costs, particularly at the hospital level [6,7].

In Colombia, there are few studies that characterize patients with AP. The present work sought to describe the sociodemographic and clinical characteristics of patients diagnosed with AP in a fourth-level institution between 2011 and 2018.

MATERIALS AND METHODS

A retrospective descriptive study was developed, based on medical records from a highly complex university hospital. After obtaining the approval of the institutional ethics committee, the records with ICD 10 diagnosis of acute pancreatitis between January 2011 and December 2018 were reviewed (ICD 10 K85X, K868, K871). All patients over the age of 18, of both sexes, with an AP diagnosis who

met at least two of the 2012 Atlanta criteria were included in the study. Sociodemographic characteristics, clinical presentation, pancreatic enzyme levels, diagnostic imaging, management and complications were described.

A descriptive statistical analysis was performed; continuous variables are expressed as median and interquartile range (IQR), due to their distribution. Categorical variables are presented in proportions. For data analysis, the statistical *software* Stata 14.0 was used.

RESULTS

1353 records were reviewed, of which 386 met the criteria for AP. There were 205 women (53%) and 181 men (47%) among them, and comorbidities were found in less than 10% of the participants. 38% of cases of pancreatitis occurred in people between 50 and 70 years old. **Table 1** shows the proportions of the other age groups.

Table 1. Sociodemographic Data and Clinical Presentation

Variable	n (total: 386)	%
Sex		
- Male	181	46.9
- Female	205	53.1
Age (years)		
- < 30	55	14.3
- 30-49	107	27.7
- 50-69	148	38.3
- > 70	76	19.7
History		
- Dyslipidemia	30	7.8
- Alcoholism	21	5.4
- Cigarette consumption	21	5.4
- Recurrent pancreatitis	13	3.4
Clinical presentation		
- Abdominal pain	376	97.4
- Emesis	282	73.1
- SIRS*	138	35.8
- Severe acute pancreatitis	98	25.7
- Jaundice	75	19.4
- Shock	58	15.0
- Symptom time** (hours)	20 (4-48)	-

*SIRS: Systemic inflammatory response syndrome. It is defined as the presence of more than two of the following: temperature > 38 °C or < 36 °C, heart rate (HR) > 90 beats per minute (bpm), respiratory rate (RR) > 20 breaths per minute (bpm), leukocytes > 10 000, < 4000 or bandemia greater than 10 %. **Median (IQR).

Regarding the initial clinical manifestation, it was found that 97.4% of patients presented abdominal pain and 73% emesis, which are the two most frequent symptoms; the frequency of other symptoms is described in **Table 1.** In 98 patients (25.7%) who consulted the emergency room, severe AP was diagnosed. Pancreatic enzymes were found to be elevated in most cases: amylase and lipase were measured at 36% and 84%, respectively. The median amylase was 874 (laboratory limit value = 100) and 1293 for lipase (laboratory limit value = 60). The duration of symptoms prior to admission to the emergency room was on average 20 hours (8-48 hours).

Regarding the etiology of AP, biliary origin was the most frequent with 200 cases (52%), followed by idiopathic (19,7%) and post-endoscopic retrograde cholangiopancreatography (ERCP) in 33 patients (8.5%) and toxic in 22 cases (5,7 %) (**Table 2**). Other less frequent causes are mentioned in (**Table 3**).

Table 2. Toxic

Medicine	n	%
Natural	5	22.8
Azathioprine	5	22.8
Pembrolizumab	1	4.5
5-ASA	1	4.5
Clozapine	1	4.5
Docetaxel	1	4.5
Glucantime®	1	4.5
Sulfonamides	1	4.5
Acyclovir	1	4.5
AINE	1	4.5
Antiretrovirals	1	4.5
Corticosteroids	1	4.5
Estrogens	1	4.5
Valproic acid	1	4.5

5-ASA: 5 aminosalicylic acid; NSAIDs: nonsteroidal anti-inflammatory drugs.

As part of the diagnosis, biliary ultrasound was performed on all patients, 131 (30.1%)were subsequently taken to abdominal computed axial tomography (CT scan) and 137 to cholangioresonance (35.5%). The pancreatitis finding in these studies was 22.8%, 80.2% and 64.8%, respectively. The Balthazar classification was used in all patients with CT scan and 47 patients were classified as A (35.9%), 27 patients as B

(20.6%), 28 patients as C (21.4%), 18 patients as D (13.7%) and 11 patients as E (8.4%). Of the patients evaluated, 42 (10%) had pancreatic necrosis, of which 23 (54.8%) had necrosis in less than 30% of the pancreas, 11 (26.2%) between 30% and 50% and 8 (19%) in more than 50%.

Table 3. Aetiology

Cause	n (total: 386)	%
Biliary	200	51.8
Idiopathic	76	19.7
Post-ERCP	33	8.5
Toxic	22	5.7
Alcoholic	13	3.4
Posttraumatic	12	3.1
Recurrent	10	2.6
Dyslipidemic	9	2.3
Postsurgical	6	1.6
Autoimmune	5	1.3

Regarding management, 372 patients were hospitalized on the general floor (96.4%) with a median hospital stay of 4 (2-7) days. 230 patients required intensive care unit (ICU; 59.6%) with a median ICU stay of 4 (2-9) days. In relation to the initiation of the via oral, it was on average 2 (1-3) days after admission in 81.5% of patients, enteral nutrition in 10.6% and parenteral nutrition in 4.1% of patients. Other interventions such as antibiotic treatment and procedures are described in **Table 4.**

A total of 323 patients (83.6%) had no complications, 42 (10.9%) had necrotizing pancreatitis; 9 pancreatic pseudocyst (2.3%); 8 (2.1%) pancreatic abscess, and 4 (1.0%) diabetes *mellitus* (DM). Overall mortality was 4.1% (17 patients) **(Table 5).**

DISCUSSION

This study included 386 patients who met the criteria for the diagnosis of AP over an 8-year period, following a review of more than 1300 medical records who had an ICD-10 diagnosis of AP. This means that, even with clinical pictures suggestive of this pathology, there are limited cases that do meet the criteria. The proportion of patients by sex distribution was similar to that of international [8-10] and local [11,12] studies, with a slight predominance of the female sex, a situation that may be related to biliary etiology as the most frequent cause of AP, which is usually slightly more frequent in women [8,9].

Table 4. Management

Management	n (total: 386)	%
Hospitalization		
- Floor	372	96.4 %
- Days on the floor	4*	2-7**
- ICU	230	59.6 %
- Days in the ICU	4*	2-9**
Diet		
- Time without via oral	2*	1-3**
- Oral	315	81.6 %
- Enteral	41	10.6 %
- Parenteral	16	4.1 %
Antibiotic		
- Antibiotic requirement	104	26.9 %
Indication		
- Pancreatic	27	26 %
- Extra pancreatic	77	74 %
Procedures		
- ERCP	59	15.3 %
- Laparoscopic cholecystectomy	126	32.6 %
- Cholecystectomy, laparotomy	13	3.4 %
- Necrosectomy	19	5 %

*Median. **IQR.

Table 5. Complications

Complications	n (total: 386)	%
Without complications	323	83.6
Necrotizing pancreatitis	42	10.9
Pancreatic pseudocyst	9	2.3
Pancreatic abscess	8	2.1
DM	4	1.0
Death	17	4.4

The prevalence was higher in patients between 50 and 70 years old, which is consistent with the study by Yatay et al., in which the most prevalent age was the sixth decade of life [9].

There is a low percentage of comorbidities that can be explained by the variables chosen for the study, which are those that are associated as precipitating events of AP, and it can be observed that only a small fraction of patients with these predisposing factors developed the disease.

Abdominal pain characteristic of epigastric predominance and band irradiation was the most frequent symptom, present in almost all patients (97.4%), a percentage similar to that reported in the literature, in which it is reported that this is the cardinal symptom that leads patients to consult the emergency service [1]. About three out of four patients had emetic episodes and one in five of those consulted had jaundice; this frequency of symptoms is similar to what was reported [1].

In relation to pancreatic enzymes, on the one hand, serum amylase presents an earlier elevation and helps guide the diagnosis for AP, but also presents a rapid return to normality, so that the diagnosis of AP can be lost in patients who show up more than 24 hours after the onset of symptoms. On the other hand, serum lipase, despite presenting a later elevation, remains elevated longer, since it reaches its peak at 24 hours and lasts up to14 days [3]. Associated with this, in our study we see that on average patients enter the emergency room within 20 hours of the onset of symptoms and cases are found up to 48 hours later, this could indicate the highest percentage of serum lipase performed (84%), compared to serum amylase (36%). Both have good specificity and sensitivity [1]. Patients who were included in the study met criteria for elevating pancreatic enzymes. In addition, amylase or lipase can be used in the institutional protocol, according to institutional guidelines, they are usually administered in the first 24-48 hours.

Regarding the etiology of AP, biliary origin remains the main cause with more than half of the cases reported, a finding that is consistent with multiple previous reviews around the world [8,13], and slightly lower than that reported by Diaz et al. in 2012[11]. However, in contrast to other previous studies, the second most frequent cause in our population was not alcohol, which only represented 3.4% of cases; considerably less than in international studies [8.13] in which it represents around 20%. Our findings are consistent with what was reported by Diaz et al. [11], a situation that suggests the possibility of lower alcohol consumption at the national level or local mutations of aldehyde dehydrogenase (ALDH), alcohol-dehydrogenase (ADH) and cytochrome P450 CYP2E1, which make people less likely to develop the disease; a consideration that will have to be studied in the future [8,14-19].

The third cause of AP in this study was post-ERCP, the definition used was elevation of amylases 3 times to the normal value, 24 hours after the procedure. This etiology represented about 8% of cases; a very high incidence when compared to studies in other countries [8,13,20,21] and almost double of what was reported by Dias et al. [11], a finding that may be related to the complexity of the cases treated in the institution, a referral center in southwestern Colombia [22]. In line with this, we found that severe AP after ERCP was uncommon compared to the other etiologies (3%); however, in our study this incidence is high compared to what was reported in the literature (0.5%) [8].

Hypertriglyceridemia was an uncommon cause of AP in our study, representing only 2.3% of cases with an average triglyceride of 600 mg/dL, substantially lower than that reported by studies such as Papachristou et al.[23], in which it represents up to 10% of cases, and almost half of what was reported by Diaz et al. [11] locally. Although in more than 80% of cases a plausible etiology of AP was distinguished, in some patients (especially in those in whom idiopathic cause was determined) a lipid profile was not available.

Other causes of pancreatitis were toxicity, with a value lower than that reported in other series (5.7%) [8,24,25] and trauma, in 3% of cases, lower than previously described at the national level [11].

Regarding the relationship between the value of pancreatic enzymes and the severity of the disease, it was not possible to establish a relationship compatible with the findings of reviews found in the literature. In the 73 patients who had lipases below 600 IU/mL, mortality was 5.7%; whereas, in those with higher values, mortality was 3.3%[26].

Almost 60% of patients required ICU management in the first 48 hours, double of what was reported in other series [8,11], possibly related to the typical population characteristics of a remission center, as mentioned above, where a higher level of complexity tends to be frequent. Severe AP was defined according to the Atlanta criteria, the medical criteria and in the APACHE II.

26.9% of patients received antibiotics; of these, 74% were due to extrapancreatic infections [27-30]; antibiotic prophylaxis was not used, which is consistent with the management proposed in the guidelines [11].

30% of the patients were taken to cholecystectomy, taking into account that the most frequent etiology was of biliary origin and the procedure was performed during the same hospitalization. While only 5% of patients were taken to necrosectomy. Compared to other national series, a lower need for procedures was found, which could be related to an inclusion of fewer severe cases and a timely management [31-37].

Unlike other series, 83.6% of the patients did not present complications. The most frequent complication was pancreatic necrosis (10.9%), followed by pancreatic pseudocyst (2.3%) and pancreatic abscess (2.1%); beyond all this, the mortality observed in the study was lower than that reported in other series with a value of 4.4%[38-40] and the mortality referred to in the clinical history was related to pancreati-

tis. The 17 medical records of the deceased patients were reviewed, in which the cause of death was analyzed and 95% died from infectious complications. When the relationship between complications and severity of pancreatitis is reviewed, mild pancreatitis was only complicated in 3% of cases, while severe pancreatitis had complication rates up to 37%[41-45]. The scope of this study did not consider the description of the management of complications, which we will take into account for an additional study, given that in our institution we perform transgastric necrosectomies and drains with transgastric pseudocyst prostheses.

CONCLUSIONS

AP is a common condition that affects adults of all ages and results in a high number of emergency room visits. In Colombia, previous data was only about individuals with severe pancreatitis, and nothing was known about the sociodemographic and clinical characteristics of acute pancreatitis in the emergency room. This study provides clinical information of interest on a large population of patients treated in a referral center. The demographic behavior of the population studied is similar to that reported in the rest of the world, with similar affection in sexes and age groups. It is noteworthy that the biliary cause is the main etiology of AP and in most cases, its extensive study allowed to clarify other etiologies. Management in general is consistent with most guidelines suggesting avoiding the use of prophylactic antibiotics and deferring early feeding. More local studies are required to clarify the behavior of complications and long-term mortality in our environment.

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