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ORIGINAL ARTICLE

Clinical and epidemiological characterization of adults over the age of 80 with acute coronary syndrome

Caracterización clínica y epidemiológica en el adulto mayor de 80 años con síndrome coronario agudo

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Abstract

Introduction: *Demographic transition is an epidemiological change from which Colombia is not exempt, cardiovascular disease continues to be the most frequent cause of mortality. The growing older adult population and the characteristics of aging lead to different approaches to their diseases. This population is usually excluded from clinical studies, which is why a descriptive study of the clinical and epidemiological characteristics of this age group was carried out.* **Objective:** *To carry out a descriptive study of the clinical and epidemiological characteristics of older adults hospitalized with acute coronary syndrome.* **Materials and method:** *The medical record of 92 patients over the age of 80 were reviewed.* **Results:** *A mean age of 83 years was found, 55.4% of the patients were men, invasive management was selected in 51%, the main risk factors were arterial hypertension and diabetes mellitus, and the main clinical history found was that of established coronary disease. The incidence of both complications and mortality was higher in the group which did not undergo invasive management, probably secondary to the number of comorbidities and prior complications. In addition, fragility was not described in most patients in this age group, and their pharmacological treatment did not differ from that of younger patients, according to the literature.* **Conclusions:** *Patients undergoing medical management had more complications possibly secondary to their underlying comorbidities; the patients undergoing catheterization had favorable results in terms of morbidity and mortality compared to the group that only received medical management. Comprehensive assessment of the elderly is important, since evaluating their functional and mental status helps in making decisions regarding the treatment of acute coronary syndrome.*

Keywords: *Octogenarian. Acute coronary syndrome. Cardiac catheterization.*

Resumen

Introducción: *la transición demográfica es un cambio epidemiológico del cual Colombia no está exento, y en el que la enfermedad cardiovascular continúa siendo la causa más frecuente de mortalidad. El aumento de la población adulta mayor y las características propias del envejecimiento llevan a abordar sus enfermedades desde una perspectiva diferente.*

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Habitualmente, esta población se excluye de los estudios clínicos. **Objetivo:** *llevar a cabo un estudio descriptivo de las características clínicas y epidemiológicas de adultos mayores hospitalizados con síndrome coronario agudo.* **Materiales y método:** *se revisó y analizó, de manera retrospectiva las historia clínica electrónicas de 92 pacientes mayores de 80 años. con diagnóstico de SCA y requirieron de manejo farmacológico o invasivo coronario* **Resultados:** *la media de edad fue de 83 años; el 55.4% era de sexo masculino y se realizó manejo invasivo en el 51%. Los principales factores de riesgo fueron la hipertensión arterial y la diabetes mellitus; el principal antecedente clínico encontrado fue el de enfermedad coronaria establecida. Se halló que tanto la incidencia de complicaciones como de mortalidad fue mayor en el grupo no llevado a manejo invasivo, lo que probablemente se secundario al número de comorbilidades y sus complicaciones previas. Anexo a esto, se evidenció que el estado de fragilidad no fue una variable descrita en la mayoría de los pacientes pertenecientes a este grupo etario, y que el manejo farmacológico no difirió del de las personas de menor edad, según la literatura.* **Conclusiones:** *los pacientes llevados a manejo médico presentaron más complicaciones posiblemente secundarias a sus comorbilidades de base. Los pacientes llevados a cateterismo tuvieron resultados favorables en cuanto a morbimortalidad en comparación con el grupo que sólo recibió manejo médico. Es importante hacer una valoración integral del adulto mayor, ya que su evaluación funcional y mental permite la toma de decisiones en el tratamiento del síndrome coronario agudo.*

Palabras clave: *Octogenario. Síndrome coronario agudo. Cateterismo cardiaco.*

Introduction

Aging has become a global developmental phenomenon; thus, life expectancy is increasing while birth rates decrease.[1] Latin America is experiencing continuous growth of the population over the age of 75, according to the Centro Latinoamericano y Caribeño de Demografía (CELADE) [Latin American and Caribbean Demographic Center]. However, unlike other continents, the demographic growth is subject to a context of unequal access to healthcare programs, social protection, and support networks, among others.[2] Colombia is not immune to this phenomenon, and the octogenarian population is increasingly significant.[3]

Technological updating has led to development in public health policies and strategies for controlling chronic noncommunicable diseases (NCDs) over time.[4] Despite the improvement achieved in controlling NCDs, cardiovascular diseases (CVDs) continue to be the main cause of death worldwide.[5] This data concurs with that of Latin American and Colombian records which show similar data, with CVDs accounting for four of the top 10 causes of overall mortality.[6,7]

The elderly are a vulnerable group due to the physiological characteristics of aging, their lifestyles and socioeconomic conditions, and their comorbidities.[8,9] Advanced age is considered to be a risk factor for cardiovascular death, which increases with age, making ACS one of the main causes of death in the elderly.[10,11]

Treatment in this population has been a matter of debate, since most studies and clinical trials exclude people over the age of 80.[12] This occurs with myocardial revascularization, an option which is generally unavailable for the most elderly, due solely to their age.[13] However, international studies have shown that revascularization is safe in the elderly, with adequate outcomes.[14,15,16]

The objective of this study is to characterize the epidemiology, signs and symptoms and angiographic findings, as well as the outcomes of the population over the age of 80 with a diagnosis of ACS treated at a tertiary care hospital.

Materials and method

This was a cross-sectional study which retrospectively analyzed the medical charts of patients over the age of 80 admitted to the emergency room, hospital wards or coronary care unit at the Hospital Cardiovascular del Niño from June 2018 to February 2019 with an ACS diagnosis and need for pharmacological or invasive coronary treatment.

Non-probabilistic convenience sampling was used. The total population of patients registered in the cardiology and hemodynamics departments' databases was obtained and divided into two groups: the first made up of patients undergoing cardiac catheterization and the second made up of patients who only received medical treatment.

Demographic variables like age, sex and place of origin were studied, along with clinical variables like the classification of the coronary event; history of diabetes mellitus, hypertension, kidney disease, coronary disease, smoking and dyslipidemia; electrocardiographic, echocardiographic and angiographic findings; and

Table 1. Baseline characteristics

Characteristic	Total (n = 92)	Catheterization (n = 47) 51.09%	Medical management (n = 45) 48.91%
Male sex	51 (55.4%)	21 (44.7%)	33 (66.7%)
Female sex	41 (44.6%)	26 (55.3%)	15 (33%)
Age	83.9 (80-94)	82.55 (80-94)	85.38 (80-93)
Urban origin	63 (68.47%)	34 (72.3%)	29 (64.4%)
History			
Hypertension	78 (84.78%)	39 (83%)	39 (86.7%)
Prior ACS	27 (29.34%)	13 (27.7%)	14 (31.1%)
Dyslipidemia	6 (6.52%)	4 (8.5%)	2 (4.4%)
Diabetes mellitus	26 (28.26%)	14 (29.8%)	12 (26.7%)
Heart failure	10 (10.86%)	1 (2.1%)	9 (20%)
Kidney failure	12 (13.04%)	3 (6.4%)	9 (20%)
Polypharmacy (≥ 5 medications)	28 (30.43%)	13 (27.7%)	15 (33.3%)
Smoking	23 (25%))	11 (23.4%)	12 (26.7%)
Prior PCI	13 (14.13%)	9 (19.2%)	4 (8.9%)
Prior revascularization surgery	15 (16.3%)	11 (23.4%)	4 (8.9%)

outcomes and complications. In addition, the Barthel, MMSE and MNA functionality scales were recorded as fragility scales.

The information was extracted from the cardiology and hemodynamics services' databases and confirmed with the information in the medical charts. Data analysis was performed using descriptive statistics; measures of central tendency were used for quantitative variables and absolute and relative frequencies for qualitative variables.

Results

During the observation period, 142 patients were admitted for or diagnosed with ACS. Of these, 52 were excluded because their hospital stay did not conclude in the institution, they underwent scheduled outpatient coronary interventions, they had a final diagnosis other than ACS, or they died before receiving one of the treatment options. Thus, there was a final sample of 92 patients, 47 (51.09%) for the catheterization group and 45 (48.91%) for the medical management group. Table 1 shows the general characteristics of both groups.

The main cardiovascular risk factor was hypertension (84.78%), followed by diabetes mellitus (28.26%) and smoking (25%). The average length of hospital stay was 10.26 days in the catheterization group and 10.6 days in the medical management group. The main clinical condition was AMI without ST elevation (65.22%), followed by AMI with ST elevation (25%) and, lastly, unstable angina (9.78%). The predominant clinical presentation was typical angina, with a preponderance of Killip functional class I. The main anginal equivalent for both groups was dyspnea, followed by nausea/vomiting and diaphoresis (Table 2).

The most frequent electrocardiographic abnormality was an ischemic T wave, followed by left bundle branch block. The left ventricular ejection fraction (LVEF) was classified by echocardiography in three groups (normal, intermediate or reduced); reduced LVEF predominated in both groups (Table 2).

Patients were classified using the GRACE score. The catheterization group had a similar distribution between intermediate and high risk (34 and 37.2%, respectively), while those who received medical management had a higher proportion classified as high risk (44.4%). However, this information was not recorded for all patients in the study (Table 2).

Patients who underwent catheterization had more single vessel involvement (53.2%), with the anterior descending artery being the most affected (59.6%). Right radial access was preferred (72.4%) (Table 3). The main reason for not performing cardiac catheterization was the risk of nephrotoxicity from the contrast medium (55.6%), followed by the presence of multiple comorbidities (20%) (Table 4). The main complications were also identified, both in the group undergoing cardiac catheterization as well as in the group only treated medically (Table 5).

The Barthel, MMSE and MNA functionality scales were reviewed, with almost half of the patients lacking this assessment. From the data obtained for basic activities measured by the Barthel scale, 26 catheterization

Table 2. Clinical characteristics

	Catheterization (n = 47) 51.09%	Medical management (n = 45) 48.91%
ACS characteristics		
Typical angina	29 (61.7%)	20 (44.4%)
Atypical angina	12 (25.5%)	16 (35.6%)
STEMI	13 (27.7%)	12 (22.2%)
NSTEMI	30 (63.8%)	30 (66.7%)
Unstable angina		
Killip classification		
I	22 (46.8%)	18 (40%)
II	10 (21.2%)	6 (13.3%)
III	2 (4.3%)	2 (4.4%)
IV	2 (4.3%)	10 (22.2%)
GRACE score		
Low risk	2 (4.3%)	0 (0.0%)
Intermediate risk	16 (34.0%)	10 (22.2%)
High risk	17 (37.2%)	20 (44.4%)
Not recorded	12 (25.5%)	15 (33.3%)
Other characteristics		
Normal baseline kidney function*	29 (61.7%)	18 (40%)
Normal post-catheterization kidney function*	33 (70.2%)	-
T wave abnormalities	9 (19.2%)	10 (22.2%)
Left bundle branch block	7 (14.9%)	9 (20%)
Anginal equivalents		
Dyspnea	29 (61.70%)	32 (71.10%)
Dizziness	3 (6.40%)	1 (2.20%)
Syncope	4 (6.40%)	4 (8.90%)
Nausea/Vomiting	11 (23.40%)	4 (8.90%)
Diaphoresis	13 (27.70%	10 (22.20%)
Associated symptoms	0 (0.00%)	
Anxiety	2 (4.30%)	0 (0.00%)
Headache	7 (14.90%)	1 (2.20%)
Asthenia/Adynamia		9 (20.00%)
Ventricular ejection fraction		
Normal	15 (31.9%)	13 (28.9%)
Borderline	9 (19.2%)	7 (15.6%)
Decreased	22 (46.8%)	23 (51.1%)
Not recorded	1 (2.1%)	2 (4.4%)

*Normal kidney function defined as KDIGO kidney failure classification Grades 1 and 2.
ACS: acute coronary syndrome; PCI: percutaneous coronary intervention; NSTEMI: non-ST-elevation myocardial infarction; LVEF: left ventricular ejection fraction.

Table 3. Cardiac catheterization characteristics

Arterial access	
Right radial	34 (72.4%)
Left radial	7 (14.9%)
Right inguinal	5 (10.6%)
Right femoral	1 (2.1%)
Number of affected vessels	
Angiographically healthy coronary arteries	9 (19.2%)
One vessel	25 (53.2%)
Two vessels	6 (12.8%)
Three vessels	7 (14.9%)
Affected vessel	
Common trunk	2 (4.3%)
Anterior descending	28 (59.6%)
Circumflex	13 (27.7%)
Right coronary	17 (36.2%)
Treatment method used	
Angioplasty	16 (34.0%)
Medical management	23 (48.9%)
Revascularization	8 (17.0%)

Table 4. Reason for medical management only

Nephrotoxicity with contrast	25 (55.6%)
Multiple comorbidities	9 (20.0%)
Death prior to assessment	2 (4.4%)
Geriatric concept	4 (8.9%)
Hemodynamic deterioration	2 (4.4%)
Not specified	3 (6.7%)
More than one reason	20 (44.4%)

patients (55.3%) and eight medical management patients (17.8%) were independent. Cognitive screening with the MMSE was positive for potential neurocognitive disorders in eight catheterization patients (17%) and five medical management patients (11.1%). Nutritional assessment with the MNA found an abnormal nutritional status in seven catheterization patients (14.9%) and 10 medical management patients (22.2%) (Table 6).

Table 5. Complications of the treatment groups

Shock	1 (2.1%)	Death	18 (40%)
Pseudoaneurysm	2 (4.2%)	Vascular accident	2 (4.4%)
Kidney failure	5 (10.6%)	Arrhythmias	14 (31.1%)
Ventilatory support	4 (8.5%)	Severe heart failure	17 (37.8%)
Arrhythmias	3 (6.4%)	Shock	13 (28.9%)
Nosocomial infection	3 (6.4%)	Ventilatory support	19 (42.2%)
Death	2 (4.2%)	Nosocomial infection	17 (37.8%)

Table 6. Fragility scales

Variable	Category	Catheterization	Medical management
Barthel	Independence	26 (55.3%)	8 (17.8%)
	Slight dependency	0 (0.0%)	0 (0.0%)
	Moderate dependency	1 (2.1%)	3 (6.7%)
	Severe dependency	0 (0.0%)	4 (8.9%)
	Total dependency	0 (0.0%)	1 (2.2%)
	Not recorded	20 (42.6%)	29 (64.4%)
MMSE	No impairment	13 (27.7%)	3 (6.7%)
	Possible impairment	3 (6.4%)	0 (0.0%)
	Mild to moderate dementia	8 (17.0%)	1 (2.2%)
	Moderate to severe dementia	0 (0.0%)	4 (8.9%)
	Severe dementia	0 (0.0%)	0 (0.0%9)
	Not recorded	23 (48.9%)	37 (82.2%)
MNA	Normal	4 (8.5%)	0 (0.0%)
	Risk of malnutrition	5 (10.6%)	5 (11.1%)
	Malnutrition	2 (4.3%)	5 (11.1%)
	Not recorded	36 (76.6%)	35 (77.8%)

Discussion

Acute coronary syndrome management in the elderly is a field with ongoing gaps, since the information has been extrapolated from other groups and applied to this age group. This study found that the most prevalent diseases were hypertension and diabetes mellitus. The most common risk factor was active smoking. In addition, the elderly were found to have a lower GFR compared with younger adults, and this was a determining factor in deciding whether or not to perform catheterization.[16,17]

In this study, 51% underwent catheterization with radial access, which has been reported to have a lower rate of complications and mortality.[18] The main affected vessel was found to be the left coronary in its anterior descending branch. Likewise, single vessel disease was more common.[19,20]

The rate of complications varied between the study groups, with a higher rate in patients who did not undergo catheterization than in those who did. In the latter group, the main complication was postprocedural kidney failure.[21,22]

We propose that octogenarian and older patients should be assessed not only clinically but also functionally, as to their cognitive and social status, to support decision making[23].

Conclusions

Demographic growth, together with an increased life expectancy, is a global phenomenon. Cardiovascular diseases and acute coronary syndrome continue to contribute high morbidity and mortality in the elderly population. Currently, the clinical approach in this age group is defined more by age than by each patient's clinical and biopsychosocial conditions, which results in biases and prevents a comprehensive focus due to the lack of evidence and few available studies. The main percentage of patients receiving medical management were found to have the majority of the complications, possibly due to their underlying comorbidities. Therefore, this study characterized this age group, describing the complications and outcomes according to the selected therapeutic strategy, as well as the medical management and invasive stratification. We found that patients undergoing catheterization had favorable morbidity and mortality outcomes, compared with the group which only

received medical management. However, it should be noted that the patients in this latter group were clinically complicated, due to their multiple comorbidities.

In reality, information is lacking on the correct strategy for ensuring the management of acute coronary syndrome, and therefore more prospective studies must be carried out to obtain extrapolatable conclusions and create guidelines for our Colombian population.

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Conflicts of interest

The authors declare no conflicts of interest.

Ethical responsibilities

Human and animal protection. The authors declare that no human or animal experiments were conducted for this study.

Confidentiality of data. The authors declare that they have followed the protocols of their work center on the publication of patient data.

Right to privacy and informed consent. The authors have obtained approval from the Ethics Committee for analysis and publication of routinely acquired clinical data and informed consent was not required for this retrospective observational study.

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