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Original article

Clinical-epidemiological characterization of atrial fibrillation in the emergency department. Celia Sánchez Manduley Hospital. 2019-2021

Clinical-epidemiological characterization of atrial fibrillation in the emergency department of Celia Sanchez Manduley Hospital from 2019 to 2021

Clinical-epidemiological characterization of atrial fibrillation in the health service

emergency. Celia Sánchez Manduley Hospital. 2019–2021

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SUMMARY

Atrial fibrillation is the most common sustained arrhythmia worldwide, with a growing incidence that solidifies its status as a priority health problem. Its management in



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emergency departments is crucial, as decisions made in the acute phase determine the immediate prognosis and the need for hospitalization. To clinically and epidemiologically characterize patients with atrial fibrillation treated in the emergency department of the Celia Sánchez Manduley Hospital during the period 2019-2021, an observational, descriptive, and cross-sectional study was conducted. The sample consisted of 80 patients diagnosed with atrial fibrillation. Data were collected from medical records and processed using descriptive statistics. An equitable distribution by sex was observed. The 18-44 age group was the most represented. The paroxysmal form predominated. The combination of several comorbidities was the most relevant finding, followed by hypertension as an isolated comorbidity. The main symptom was chest pain. Most patients did not experience immediate complications, and more than half were managed on an outpatient basis. Conversion to sinus rhythm was achieved in 66 patients (82.5%), with electrical cardioversion being the predominant method. It was concluded that the typical patient presenting with atrial fibrillation in the emergency department is middle-aged, has a high burden of comorbidities, and presents with symptoms primarily characterized by chest pain.

Keywords: Cardioversion; Comorbidity; Chest pain; Epidemiology; Atrial fibrillation; Hospital emergency service.

ABSTRACT

Atrial fibrillation is the most common sustained arrhythmia worldwide, with an increasing incidence that has consolidated it as a major public health concern. Its management in emergency departments is critical, as decisions made during the acute phase determine immediate prognosis and the need for hospitalization. To clinically and epidemiologically characterize patients with atrial fibrillation treated in the Emergency Department of Celia Sánchez Manduley Hospital during the period 2019–2021, an observational, descriptive, cross-sectional study was conducted. The sample consisted of 80 patients diagnosed with atrial fibrillation. Data were collected from medical records and processed through descriptive statistics. An equal distribution by



sex was found. The age group 18–44 years was the most represented. The paroxysmal form predominated. The most relevant finding was the presence of multiple comorbidities, followed by arterial hypertension as an isolated comorbidity. The main symptom was precordial pain. Most patients did not present immediate complications, and more than half were managed on an outpatient basis. Conversion to sinus rhythm was achieved in 66 patients (82.5%), with electrical cardioversion predominating over pharmacological cardioversion. It was concluded that the profile of patients with atrial fibrillation in emergency settings corresponds to middle-aged individuals with a high comorbidity burden and a symptomatic presentation in which chest pain is predominant.

Keywords: Cardioversion; Comorbidity; Precordial pain; Epidemiology; Atrial fibrillation; Hospital emergency service.

SUMMARY

Atrial fibrillation is a more frequent sustained arrhythmia on a global level, with a growing incidence that has consolidated itself as a priority health problem. The management of emergency services is crucial, as decisions taken in the acute phase determine the immediate prognosis and need for hospitalization. With the objective of clinically and epidemiologically characterizing patients with atrial fibrillation treated in the emergency service of the Celia Sánchez Manduley Hospital during the period 2019–2021, an observational, descriptive and transversal study was carried out. The sample was composed by 80 patients diagnosed with atrial fibrillation. The information is collected from two medical records and processed by means of descriptive statistics. Obtain an equitable distribution between the sexes. The age group of 18–44 years was more represented. Predominant to paroxysmal form. The combination of several comorbidities was the most relevant, followed by arterial hypertension as an isolated comorbidity. The main symptom is precordial pain. Most of the time there are no immediate complications and most of the time it was managed on an outpatient basis. The conversion to sinus rhythm was achieved in 66 patients (82.5%), since electrical



cardioversy predominated over pharmacological one. It is concluded that the profile of the patient with atrial fibrillation in the emergency corresponds to individuals of poor health, with a high burden of comorbidities and a marked symptomatic presentation in the thoracic region.

Key words: Cardioversão; Comorbidity; Precordial Dor; Epidemiology; Atrial fibrillation; Hospital emergency service.

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Introduction

Atrial fibrillation (AF) is the most common sustained tachyarrhythmia worldwide, with an incidence that continues to rise due to population aging and the increase in cardiovascular diseases, to the point that some experts consider it the epidemic of the coming decades. It is more prevalent in men and middle-aged groups, and tobacco use is considered a major risk factor.

The problematic reality of this disease is overwhelming; it is estimated that AF affects approximately 1.5-2% of the general population, a figure that jumps to 8% in those over 80 years of age, and the number of patients is expected to double in the next 35 years. (1-4) This condition not only leads to a high number of hospitalizations, representing about 33% of admissions for arrhythmias, but also increases the risk of stroke fivefold, triples the risk of heart failure, and doubles the risk of dementia and death, generating a substantial burden on healthcare systems. (1,5-7)

At the pathophysiological level, atrial fibrillation (AF) is a supraventricular tachyarrhythmia characterized by disorganized atrial activation and loss of effective atrial contraction. Its clinical management is complex and must consider objectives



such as heart rate control, cardiac rhythm control (when possible), and, crucially, the prevention of thromboembolic complications through anticoagulation. (2,8,9)

The scientific literature on atrial fibrillation (AF) reports a therapeutic arsenal that includes pharmacological cardioversion—with drugs such as amiodarone and propafenone, which have been the most commonly used—as well as electrical cardioversion (ECV) in cases of hemodynamic instability, and more complex procedures such as catheter ablation. Risk stratification using scores such as CHA₂DS₂-VASc is essential to guide anticoagulant therapy, a strategy that has been shown to significantly reduce the risk of new cerebrovascular events. (1,2,10,11)

Despite abundant international evidence, the epidemiological characterization of atrial fibrillation (AF) presents geographical variations and specific contexts that demand their own analysis. Studies in different settings (4,12,13) agree on a predominantly male profile, with hypertension as the most frequent comorbidity, followed by diabetes mellitus and smoking. The most common clinical manifestations are palpitations and dyspnea (9,12). Similarly, there is a gap in specific knowledge regarding the clinical-epidemiological characterization of patients who present with this arrhythmia to the emergency departments of the Celia Sánchez Manduley Hospital.

The reality of the Cuban healthcare system, with the reorganization of its emergency services and the creation of municipal intensive care units, adds a layer of unique characteristics that warrants investigation. It is imperative to have up-to-date local data that reflect the burden of disease, prevalent risk factors, applied therapeutic strategies, and outcomes in this specific context.

This gap is especially relevant considering that hospital emergency services are a critical entry point for these patients, where acute management decisions are made that can be decisive for their long-term prognosis. (6,14) Therefore, the purpose of this study is to clinically and epidemiologically characterize patients with atrial fibrillation treated in the emergency department of the Celia Sánchez Manduley Hospital during the period 2019-2021.

Methods

Type of study and sample selection

A descriptive, observational, cross-sectional study was conducted on the clinical and epidemiological characteristics of atrial fibrillation in the emergency department of the Celia Sánchez Manduley Hospital, Manzanillo, during the period between 2019 and 2021. The sample consisted of 80 patients diagnosed with atrial fibrillation at said hospital, selected by consecutive convenience sampling who met the inclusion criteria.

Inclusion and exclusion criteria

Patients aged 18 years or older, regardless of sex, with a confirmed diagnosis of atrial fibrillation who attended the health service during the study period, as well as a stay of more than six hours in the emergency service and who agreed to participate in the study by signing the informed consent or a family member who authorized it, were included.

Furthermore, patients with incomplete medical histories or insufficient data for analysis, with a primary diagnosis alluding to other types of arrhythmias, with a disability or disabling illness that prevented their participation, as well as pregnant or postpartum patients, prisoners, or those who did not want to participate in the study, were excluded.

Variables to be measured in the study

Socio-demographic data such as sex and age were measured, divided into groups (18-44, 45-54, 55-64, 65-74, ≥75 years), as well as the classification of atrial fibrillation (paroxysmal, permanent, persistent, long-term persistent), according to the clinical histories of the patients with their history of hospitalization records in the emergency department and/or outpatient cardiology or internal medicine consultations that strictly had previous echocardiographic records and evolution notes to ensure the reliability of the classifications.



Other variables included comorbidities (high blood pressure, structural heart disease, etc.); signs and symptoms (dyspnea, palpitations, precordial pain); complications (heart failure, acute pulmonary edema); method of conversion to sinus rhythm (pharmacological, electrical or no action); risk factors and finally the final destination (admitted, outpatient or deceased).

Information gathering

The data were collected through a survey developed by the study authors and validated by a panel of cardiology, emergency medicine, and intensive care specialists. Using a structured form and a data collection sheet with specific fields, all study variables were collected anonymously. Data were also collected from patient medical records. General empirical and theoretical methods were employed, including analytical-synthetic, historical-logical, inductive-deductive, mathematical-statistical, and descriptive statistical methods. Data were entered manually and processed automatically using Microsoft Excel 2016 for Windows 8.

Statistical analysis

Data analysis was performed using descriptive statistics. For qualitative variables, absolute and relative frequencies were calculated with their respective 95% confidence intervals (95% CI) for percentages or prevalence ratios according to the corresponding tables. The association between categorical variables such as sex and age groups, as well as sex and AF classifications, was assessed using the Chi-square (χ^2) test or Fisher's exact test when appropriate; the corresponding p-value was reported.

Ethical considerations

The data obtained from the sources were processed in accordance with the ethical standards established in the Declaration of Helsinki, which guarantee anonymity and confidentiality in all cases. All patients who met the selection criteria were informed about the characteristics of the research being conducted at the institution, its main objective, and their right to participate.



Results

According to Table 1, there was an equal distribution by sex (50% female, 50% male). The most frequent age group was 18–44 years (25.00%; 95% CI: 16.6%–35.5%), followed by the 45–54 age group (22.50%; 95% CI: 14.5%–33.0%). The significantly higher proportion of women in the ≥75 age group stands out (85.71%; female/male ratio 6:1; 95% CI: 1.39–25.89; $p = 0.012$).

Table 1. Distribution by sex and age group.

Age group	Sex		Total n (%)	Reason Women/Men	95% CI (Prevalence Ratio)	X ² *	p-value
	Female n (%)	Male n (%)					
18-44	7 (8.75)	13 (16,25)	20 (25.00)	0.54:1	0.25-1.16	1.80	0.180
45-54	8 (10.00)	10 (12.50)	18 (22.50)	0.80:1	0.32-2.00	0.22	0.639
55-64	7 (8.75)	7 (8.75)	14 (17.50)	1.00:1	0.35-2.84	0.00	1,000
65-74	6 (7.50)	8 (10.00)	14 (17.50)	0.75:1	0.26-2.14	0.29	0.592
≥75	12 (15.00)	2 (2.50)	14 (17.50)	6.00:1	1.39-25.89	5.4	0.012
Total	40 (50.00)	40 (50.00)	80 (100)				
*Chi-square or Fisher's exact test Average age: 54.86±17.05 years Median: 56.4 years, 95% CI: 53.9-60.0 years							

Table 2 showed that the paroxysmal form was the most frequent (58.75%; 95% CI: 47.7%-69.0%) within the classifications of atrial fibrillation, with no statistically significant differences by sex ($p=0.245$). A trend toward a higher frequency of permanent AF was observed in women (25.00% vs. 7.50% in men; ratio 3.33:1; $p=0.068$).

Table 2. Classification of atrial fibrillation according to sex.

Classification	Sex		Total n (%)	Reason Woman/Men	95% CI (Prevalence Ratio)	X ² *	p-value
	Female n (%)	Male n (%)					
Paroxysmal	21 (52.50)	26 (65.0)	47 (58.75)	0.81:1	0.56-1.16	1.35	0.245
Permanent	10 (25.00)	3 (7.50)	13 (16,25)	3.33:1	0.97-11.45	3.31	0.068
Persistent	7 (17.50)	10 (25.00)	17 (21,25)	0.70:1	0.28-1.73	0.71	0.399

Long-lasting and persistent	2 (5.00)	1 (2.50)	3 (3.75)	2:1	0.19-21.19	0.35	0.554
Total	40 (100)	40 (100)	80 (100)				
*Chi-square or Fisher's exact test							

The most relevant finding regarding comorbidities and risk factors shown in Table 3 was the high frequency of combined comorbidities (61.25%; 95% CI: 50.2%–71.2%). Hypertension as an isolated comorbidity was reported in 17.50% (95% CI: 10.5%–27.6%). Contrary to expectations, only 5.00% (95% CI: 2.0%–12.3%) of the patients were smokers. 57.50% (95% CI: 46.5%–67.9%) did not present with classic modifiable risk factors such as hypertension, diabetes mellitus, or smoking.

Table 3. Comorbidities and risk factors in patients with atrial fibrillation.

Comorbidity	Total n (%)	95% CI
Combined	49 (61.25)	50.2%-71.2%
High blood pressure	14 (17.50)	10.5%-27.6%
Cerebrovascular disease	6 (7.50)	3.5%-15.6%
Smoking	4 (5.00)	2.0%-12.3%
Obesity	3 (3.75)	1.3%-10.5%
Heart disease	2 (2.50)	0.7%-8.7%
Hyperthyroidism	2 (2.50)	0.7%-8.7%
Risk factors		
More than one factor	49 (61.50)	50.2%-71.2%
Female	40 (50.00)	39.1%-60.9%
Without risk factors	46 (57.50)	46.5%-67.9%
Age 65-75 years	14 (17.50)	10.5%-27.6%
High blood pressure	14 (17.50)	10.5%-27.6%
Age >75 years	12 (15.00)	8.8%-24.3%
Diabetes	8 (10.00)	5.0%-18.9%

Table 4 shows that among the most frequent symptoms and signs, the main one was precordial pain (51.25%; 95% CI: 40.3%-62.0%), followed by palpitations (32.50%; 95% CI: 23.0%-43.7%). Furthermore, the most frequently used conversion strategy was electrical cardioversion (43.75%; 95% CI: 33.1%-55.0%), which slightly surpassed pharmacological cardioversion (38.75%; 95% CI: 28.6%-49.9%). Conversion to sinus rhythm was achieved in 82.5% of cases.

Table 4. Symptoms and signs of patients with atrial fibrillation, as well as conversion strategies to sinus rhythm.

Symptoms and signs	Total n (%)	95% CI	
Precordial pain	41 (51.25)	40.3%-62.0%	
Palpitations	26 (32.50)	23.0%-43.7%	
Dyspnoea	13 (16.25)	9.8%-25.7%	
Conversion to sinus rhythm			Electrical/Pharmacological Reason
Electric	35 (43.75)	33.1%-55.0%	1,13:1
Pharmacological	31 (38.75)	28.6%-49.9%	1:1
No action	14 (17.50)	10.6%-27.5%	0.45:1

Finally, according to the data shown in Table 5, the majority of patients did not experience immediate complications (66.25%; 95% CI: 55.2%–75.8%). The most frequent complication was acute pulmonary edema (20.00%; 95% CI: 12.5%–30.5%). More than half of the patients were managed on an outpatient basis (56.25%; 95% CI: 45.2%–66.8%). In-hospital mortality was low (2.50%; 95% CI: 0.7%–8.7%).

Table 5. Main complications and final outcome of patients.

Complications	Total n (%)	95% CI		
No complications	53 (66.25)	55.2%-75.8%		
Pulmonary edema	16 (20.00)	12.5%-30.5%		
Heart failure	7 (8.75)	4.3%-17.2%		
Cerebrovascular disease	3 (3.75)	1.3%-10.5%		
Cardiogenic shock	1 (1.25)	0.2%-6.7%		
Final destination			Reason vs. Deaths	Reason vs Outpatient Clinics
Outpatient clinics	45 (56.25)	45.2%-66.8%	22.5:1	1:1
Admitted	33 (41.25)	30.1%-52.0%	16.5:1	0.73:1
Deaths	2 (2.50)	0.7%-8.7%	1:1	0.04:1

Discussion

Atrial fibrillation (AF) is globally recognized as the most common sustained tachyarrhythmia, with an epidemiology that has traditionally shown a clear predominance in males. Studies such as that by Sariol González et al. (1) report that

71.8% of AF patients are men, while Solano García et al. (4) found a 54.12% male predominance. Even in studies where women represent a higher percentage, such as the study by Coll Vinent et al. (14) with 55%, it is emphasized that men tend to have a higher burden of comorbidity and higher hospitalization rates. In contrast, the results of the present study reveal an equitable distribution between sexes in the population treated in the emergency department of the Celia Sánchez Manduley Hospital. This discrepancy suggests that, in the specific context studied, local factors may be at play, equalizing the incidence, or that women in this region seek medical attention for this arrhythmia with a similar frequency to men. This epidemiological peculiarity raises questions about social determinants, access to healthcare, and cardiovascular risk profiles in the reference population, and highlights a research gap regarding geographical and cultural differences in the presentation of atrial fibrillation.

Regarding age distribution, the literature agrees that the prevalence of atrial fibrillation (AF) increases markedly with age, doubling with each decade of life after age 50, with a mean age of onset around 75 years, as noted by Carcasés Lamorú et al. (2) and Gómez Núñez et al. (3). In the analyzed series, while older age groups are still significantly represented, the 18-44 age group constitutes a quarter of the sample. This indicates that, in the studied setting, AF is not a pathology exclusive to older adults, but also significantly affects young and middle-aged adults. This result could reflect higher detection rates in emergency departments, a high prevalence of risk factors at younger ages in the population, or particular genetic or environmental characteristics. The clinical implication is direct: the emergency department must be prepared to manage this arrhythmia across a broader age range than traditionally described.

Regarding the classification of atrial fibrillation (AF), international evidence, including the work of Sariol González et al. (1) and Ramos García et al. (9), reports that the paroxysmal form is the most frequent. The results of this study are consistent with this, showing a clear predominance of this form. However, a differentiating finding emerges when analyzing the distribution by sex: while there was no difference in the overall sample, disaggregation revealed a trend toward a higher frequency of



permanent AF in women. This raises the hypothesis that, in the studied setting, AF may have a different natural history or response to treatment depending on sex. It is questioned whether there are barriers to accessing more aggressive rhythm control strategies for women or whether their comorbidity profile favors a greater progression to permanent forms. This observation opens a line of research on gender disparities in the management and evolution of AF within the local healthcare system.

The comorbidity and risk factor profile associated with atrial fibrillation (AF) has been extensively described. Studies such as those by Regal Cuesta et al. (12) and Carcasés Lamorú et al. (2) identify hypertension as the cardinal comorbidity globally, followed by diabetes mellitus (DM) and smoking, while Sariol González et al. (1) and Regal Cuesta et al. (12) point to smoking as a highly significant risk factor. However, the findings of this study reveal important nuances. While hypertension was the most frequently reported single comorbidity, the most striking finding was the high frequency of patients with multiple combined comorbidities, underscoring the multifactorial nature of the arrhythmia.

On the other hand, in stark contrast to the cited literature, smoking was present in only 5% of the cohort. This low prevalence could reflect the specific sociodemographic characteristics of the population attending the hospital. Furthermore, a crucial finding for public health was that more than half of the patients did not present classic modifiable risk factors, implying that, in a substantial proportion of cases, the onset of AF could be primarily influenced by age, sex, genetic factors, or conditions not captured in the study.

The clinical presentation of atrial fibrillation (AF) in emergency departments is usually dominated by palpitations and dyspnea, as demonstrated by Regal Cuesta et al. (12), with 77.8% palpitations, and Ramos García et al. (9), with 45%. In contrast, this study found a different symptomatic pattern, in which chest pain was the main symptom, followed at some distance by palpitations. This divergence is of great clinical relevance and could suggest that, in the studied setting, AF frequently manifests as an acute chest syndrome, which can lead to diagnostic confusion with acute coronary

syndromes. This raises the research question of whether this high frequency of chest pain is due to a higher prevalence of undiagnosed coexisting coronary artery disease or whether it is an atypical expression of the arrhythmia or associated anxiety in this cohort. This question is key to optimizing triage and initial management protocols in the emergency department.

Strategies for conversion to sinus rhythm vary depending on the context and guidelines. Authors such as Sarioi González et al. (1) and Carcasés Lamorú et al. (2) suggest that pharmacological cardioversion should be the predominant initial strategy in many cases. In contrast, this study observed a slightly higher use of electrical cardioversion compared to pharmacological cardioversion, and conversion to sinus rhythm was achieved in a very high proportion of patients. This preference for a more active and interventional strategy could be justified by the desire for faster resolution in an emergency department, especially in the presence of prominent symptoms such as chest pain.

The high conversion success rate and the fact that more than half of the patients were managed on an outpatient basis, with a low rate of serious complications, support the effectiveness and safety of this approach in the analyzed setting. However, a research question arises regarding the long-term impact, specifically whether this predominantly electrical strategy is associated with lower rates of AF recurrence or a better quality of life compared to more pharmacological management.

Regarding the results on complications and final outcome, these offer an encouraging perspective: most patients did not experience immediate complications and were able to be discharged, a finding that aligns with that reported by Coll Vinent et al. (14). The most frequent complication was acute pulmonary edema, which emphasizes the pathophysiological link between atrial fibrillation and cardiac dysfunction. The low rate of cerebrovascular disease and in-hospital mortality suggests effective acute management and adequate risk stratification, although it reinforces the urgent need to not neglect evaluation for long-term anticoagulant therapy.

In summary, this study not only characterizes a specific population but, by comparing its results with the prevailing literature, reveals epidemiological, clinical, and therapeutic particularities that constitute its main contribution. These differences underscore the existence of significant research gaps, including the need to identify the social and biological determinants of the equitable sex distribution in the region, elucidate the reasons why chest pain is the predominant presentation, and define the optimal patient profile for initial electrical cardioversion in the emergency department. The impact of this work lies in providing a solid local evidence base that challenges generalizations, informs immediate clinical practice in the emergency department, and charts a clear course for future research.

Furthermore, this study has inherent limitations due to its cross-sectional and descriptive design, which prevent the establishment of causal relationships. The relatively small sample, selected by consecutive convenience sampling at a single center, limits the generalizability of the results and may introduce selection bias. Retrospective data collection from medical records carries the risk of information bias due to incomplete or heterogeneous records. Likewise, the lack of a more robust inferential statistical analysis and the potential influence of uncontrolled factors such as prior treatments or access to specialized care may bias the interpretation of the reported clinical and epidemiological findings.

Conclusions

According to the results of this investigation, it is concluded that the profile of the patient with atrial fibrillation treated in the emergency department was characterized by an equitable distribution between sexes, a notable predominance of the paroxysmal form, and a high frequency of combined comorbidities, with hypertension being the most significant. The clinical presentation was distinguished by the preeminence of precordial pain, and medical management demonstrated high



effectiveness, with a predominantly active strategy of conversion to sinus rhythm, especially electrical, which allowed for a high percentage of outpatient resolutions and a low rate of serious complications. As a main contribution, this study demonstrated the emergency department's capacity to resolve the acute management of this arrhythmia, which constitutes a solid basis for optimizing local care protocols and reducing the need for routine hospitalization.

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Conflict of interest



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