

1 Severe Cardiac Arrhythmias in the Emergency Department: A 2 Retrospective Study of 79 Cases at Ibn Rochd University Hospital

3 Abstract

4 Cardiac arrhythmias are a frequent reason for admission to emergency departments and may
5 lead to severe hemodynamic complications. The objective of this study was to analyze the
6 epidemiological, clinical, therapeutic, and evolutionary characteristics of severe cardiac
7 arrhythmias admitted to the emergency department of Ibn Rochd University Hospital.

8 This retrospective study included 79 cases of severe cardiac arrhythmias collected over a six-
9 month period. Patients older than 60 years represented the most affected age group (45.8%),
10 with a female predominance accounting for 54.2% of admissions.

11 Atrial fibrillation was the most frequent arrhythmia (43.8%), followed by ventricular
12 tachycardia (20.8%) and supraventricular tachycardia (27%). The main presenting symptoms
13 were dyspnea and palpitations. Hypertension was the most common underlying condition
14 (56.3%), often associated with structural heart disease (52.1%).

15 Hemodynamic instability was observed in 45.8% of patients at admission. Initial management
16 was mainly based on oxygen therapy, anticoagulation, and antiarrhythmic drugs, with
17 amiodarone being the most commonly used antiarrhythmic (86.7%). Electrical cardioversion
18 was performed initially in 33.3% of cases.

19 Clinical outcomes were favorable in most patients, with stabilization in 58.3% and
20 improvement in 25% of cases. However, clinical deterioration occurred in 16.7% of patients,
21 all of whom died.

22 These results confirm the predominance of atrial fibrillation among severe arrhythmias
23 admitted to the emergency department and highlight the importance of rapid and appropriate
24 management.

25 **Keywords:** cardiac arrhythmias, atrial fibrillation, emergency department, cardioversion,
26 amiodarone.

27

28 Introduction

29 Cardiac arrhythmias correspond to abnormalities in the electrical activity of the heart that lead
30 to disturbances in heart rhythm and conduction. They represent a common reason for
31 admission to emergency departments and may result in severe hemodynamic compromise,
32 sometimes threatening the patient's life.

33 Among these arrhythmias, atrial fibrillation is the most common in the general population,
34 and its prevalence increases with age. Cardiac arrhythmias may present with a wide range of
35 symptoms, from simple palpitations to severe hemodynamic instability.

36 Emergency management requires rapid identification of the type of arrhythmia, evaluation of
37 hemodynamic tolerance, and prompt initiation of appropriate treatment.

38 The aim of this study was to analyze the epidemiological, clinical, therapeutic, and outcome
39 characteristics of severe cardiac arrhythmias admitted to the emergency department of Ibn
40 Rochd University Hospital.

41

42 **Methods**

43 This was a retrospective descriptive study conducted in the emergency department of Ibn
44 Rochd University Hospital.

45 The study included patients admitted for severe cardiac arrhythmias over a six-month period.
46 A total of 79 patients were included.

47 Data were collected from medical records and included:

- 48 • demographic characteristics (age and sex)
- 49 • presenting clinical symptoms
- 50 • underlying etiologies
- 51 • electrocardiographic findings
- 52 • therapeutic management
- 53 • patient outcomes.

54 The collected data were analyzed to evaluate the epidemiological, clinical, and therapeutic
55 aspects of these severe arrhythmias.

56

57 **Results**

58 Patients older than 60 years represented the most affected age group (45.8%). A female
59 predominance was observed, accounting for 54.2% of admissions.

60 Atrial fibrillation was the most frequent arrhythmia, representing 43.8% of cases. Ventricular
61 tachycardia accounted for 20.8% of admissions, while supraventricular tachycardia
62 represented 27%, including junctional tachycardia (18.8%) and Wolff–Parkinson–White
63 syndrome (8.2%).

64 The most common presenting symptoms were dyspnea and palpitations, observed in more
65 than half of the cases.

66 Hypertension was the most frequent underlying condition (56.3%), often associated with
67 structural heart disease in 52.1% of cases.

68 Hemodynamic instability was present in 45.8% of patients at admission.

69 Initial management mainly consisted of oxygen therapy and anticoagulation. Anticoagulant
70 therapy was administered in 60.4% of patients, with low-molecular-weight heparin being the
71 most commonly used (33.3%).

72 Amiodarone was the most frequently used antiarrhythmic drug (86.7%).

73 Electrical cardioversion was performed initially in 33.3% of cases and after failure of medical
74 treatment in 15.6% of patients.

75 Regarding outcomes, patient stabilization was observed in 58.3% of cases, while 25% showed
76 clinical improvement. However, clinical deterioration occurred in 16.7% of patients, and all
77 of these cases resulted in death.

78

79 Discussion

80 The findings of our study are consistent with those reported in the literature, which identify
81 atrial fibrillation as the most common cardiac arrhythmia (3,4,5), with a prevalence that
82 increases markedly with advancing age. Hypertension appears to be the principal etiological
83 factor associated with atrial fibrillation in many cases (6).

84 The relatively high proportion of patients presenting with hemodynamic instability in our
85 series highlights the potential severity of cardiac arrhythmias and underscores the importance
86 of rapid and appropriate management in emergency settings.

87 Amiodarone was the most frequently used antiarrhythmic agent in our study due to its
88 effectiveness in managing both supraventricular and ventricular arrhythmias. Electrical
89 cardioversion remains a key therapeutic option, particularly in patients with hemodynamic
90 instability or in cases of pharmacological treatment failure.

91 Regarding anticoagulation therapy, current guidelines recommend the use of direct oral
92 anticoagulants (DOACs), which are considered preferable to vitamin K antagonists (VKAs) in
93 the majority of patients with non-valvular atrial fibrillation.

94 According to the literature, beta-blockers and calcium channel blockers are recommended as
95 first-line agents for rate control in acute atrial fibrillation, unless contraindicated (1). In
96 addition, lidocaine is considered the first-line treatment for well-tolerated sustained
97 ventricular tachycardia

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100 Conclusion

101 Severe cardiac arrhythmias represent a frequent cause of admission to emergency departments
102 and may lead to life-threatening complications. Atrial fibrillation remains the most common
103 arrhythmia encountered.

104 Early diagnosis and prompt management based on hemodynamic assessment and appropriate
105 therapeutic interventions are essential to improve patient outcomes.

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