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RESEARCH ARTICLE

SEVERE CARDIAC ARRHYTHMIAS IN THE EMERGENCY DEPARTMENT: A RETROSPECTIVE STUDY OF 79 CASES AT IBN ROCHD UNIVERSITY HOSPITAL

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Abstract

Cardiac arrhythmias are a frequent reason for admission to emergency departments and may lead to severe hemodynamic complications. The objective of this study was to analyze the epidemiological, clinical, therapeutic, and evolutionary characteristics of severe cardiac arrhythm ias admitted to the emergency department of Ibn Rochd University Hospital.This retrospective study included 79 cases of severe cardiac arrhythmias collected over a six-month period. Patients older than 60 years represented the most affected age group (45.8%), with a female predominance accounting for 54.2% of admissions.Atrial fibrillation was the most frequent arrhythmia (43.8%), followed by ventricular tachycardia (20.8%) and supraventricular tachycardia (27%). The main presenting symptoms were dyspnea and palpitations. Hypertension was the most common underlying condition (56.3%), often associated with structural heart disease (52.1%).Hemodynamic instability was observed in 45.8% of patients at admission. Initial management was mainly based on oxygen therapy, anticoagulation, and antiarrhythmic drugs, with amiodarone being the most commonly used antiarrhythmic (86.7%). Electrical cardioversion was performed initially in 33.3% of cases.Clinical outcomes were favorable in most patients, with stabilization in 58.3% and improvement in 25% of cases. However, clinical deterioration occurred in 16.7% of patients, all of whom died.These results confirm the predominance of atrial fibrillation among severe arrhythmias admitted to the emergency department and highlight the importance of rapid and appropriate management.

Introduction:-

Cardiac arrhythmias correspond to abnormalities in the electrical activity of the heart that lead to disturbances in heart rhythm and conduction. They represent a frequent reason for consultation and admission to emergency departments and may result in severe hemodynamic compromise, sometimes threatening the patient's life. These rhythm disturbances can occur in patients with or without structural heart disease and may be associated with several risk factors such as hypertension, ischemic heart disease, electrolyte disturbances, or drug toxicity.

Among these arrhythmias, atrial fibrillation is the most common in the general population, and its prevalence increases significantly with age. It is associated with an increased risk of thromboembolic events, particularly stroke, as well as heart failure and increased mortality. Cardiac arrhythmias may present with a wide range of clinical manifestations, from simple palpitations and dizziness to syncope, chest pain, or severe hemodynamic instability requiring urgent medical intervention.

Emergency management requires rapid identification of the type of arrhythmia, evaluation of hemodynamic tolerance, and prompt initiation of appropriate treatment, which may include pharmacological therapy, electrical cardioversion, or supportive measures. Early recognition and adequate management are essential to prevent complications and improve patient outcomes.

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

Methods:-

This was a retrospective descriptive study conducted in the emergency department of Ibn Rochd University Hospital.The study included patients admitted for severe cardiac arrhythmias over a six-month period. A total of 79 patients were included.

Data were collected from medical records and included:

- demographic characteristics (age and sex)
- presenting clinical symptoms
- underlying etiologies
- electrocardiographic findings
- therapeutic management
- patient outcomes.

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

Results:-

-A total of patients presenting with severe cardiac arrhythmias were included in this study. Patients older than 60 years represented the most affected age group (45.8%). A female predominance was observed, accounting for 54.2% of admissions.

Table 1: Demographic characteristics of patients

VARIABLE	Percentage
Age >60 ans	45,8%
Female	54,2%
Male	45,8%

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

Table 2: Types of cardiac arrhythmias

Type of arrhythmia	Percentage
Atrial fibrillation	43,8%
Ventricular tachycardia	20,8%
Junctional tachycardia	18,8%
Wolff–Parkinson–White syndrome	8,2%

The most common presenting symptoms were dyspnea and palpitations, observed in more than half of the cases. Hypertension was the most frequent underlying condition (56.3%), often associated with structural heart disease in 52.1% of cases.

Table 3: Underlying conditions

Condition	Percentage
Hypertension	56,3%
Structural heart disease	52,1%

Hemodynamic instability was present in 45.8% of patients at admission.
Initial management mainly consisted of oxygen therapy and anticoagulation. Anticoagulant therapy was administered in 60.4% of patients, with low-molecular-weight heparin being the most commonly used (33.3%). Amiodarone was the most frequently used antiarrhythmic drug (86.7%). Electrical cardioversion was performed initially in 33.3% of cases and after failure of medical treatment in 15.6% of patients.

Table 4: Therapeutic management

Treatment	Percentage
Anticoagulation	60,4%
LMWH	33,3%
Amiodarone	86,7%
Initial electrical cardioversion	33,3%
Cardioversion after medical failure	15,6%

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

Table 5: Patient outcomes

Outcome	Percentage
Stabilization	58,3%
Clinical improvement	25%
Clinical deterioration	16,7%
Mortality	16,7%

Discussion:-

The findings of our study are consistent with those reported in the literature, which identify atrial fibrillation as the most common cardiac arrhythmia (3,4,5,7), with a prevalence that increases markedly with advancing age. This observation reflects the progressive structural and electrical remodeling of the atria associated with aging. Hypertension appears to be the principal etiological factor associated with atrial fibrillation in many cases (6,8), as it contributes to left atrial enlargement and structural heart changes that predispose patients to rhythm disturbances.

The relatively high proportion of patients presenting with hemodynamic instability in our series highlights the potential severity of cardiac arrhythmias and underscores the importance of rapid diagnosis and appropriate management in emergency settings. Early recognition and treatment are essential to prevent serious complications such as heart failure, thromboembolic events, or sudden cardiac death (9).

Amiodarone was the most frequently used antiarrhythmic agent in our study due to its effectiveness in managing both supraventricular and ventricular arrhythmias (10). Its broad spectrum of action and relative safety in patients with structural heart disease make it a commonly used drug in emergency departments.

Electrical cardioversion remains a key therapeutic option, particularly in patients with hemodynamic instability or in cases of pharmacological treatment failure. In unstable patients, synchronized electrical cardioversion is recommended as the first-line treatment in order to rapidly restore sinus rhythm and improve hemodynamic status (1,2).

Regarding anticoagulation therapy, current guidelines recommend the use of direct oral anticoagulants (DOACs), which are considered preferable to vitamin K antagonists (VKAs) in the majority of patients with non-valvular atrial fibrillation due to their better safety profile and ease of use (7).According to the literature, beta-blockers and calcium channel blockers are recommended as first-line agents for rate control in acute atrial fibrillation, unless contraindicated (1). In addition, lidocaine is considered the first-line treatment for well-tolerated sustained ventricular tachycardia in emergency settings (11).

Conclusion:-

Severe cardiac arrhythmias represent a frequent cause of admission to emergency departments and may lead to life-threatening complications. Atrial fibrillation remains the most common arrhythmia encountered.Early diagnosis and prompt management based on hemodynamic assessment and appropriate therapeutic interventions are essential to improve patient outcomes.

Summary / Key Points:-

-Cardiac arrhythmias represent a frequent cause of admission to emergency departments and may lead to severe hemodynamic compromise requiring urgent management.
-In our study, atrial fibrillation was the most common arrhythmia, particularly in patients older than 60 years, which is consistent with findings reported in the literature.
- Hypertension was the most frequent underlying condition and appeared to be strongly associated with the occurrence of atrial fibrillation.
- Hemodynamic instability was observed in a significant proportion of patients, highlighting the potential severity of cardiac arrhythmias in emergency settings.
- Amiodarone was the most frequently used antiarrhythmic drug due to its effectiveness in the management of both supraventricular and ventricular arrhythmias.
- Electrical cardioversion remains an important therapeutic option, especially in patients with hemodynamic instability or in cases of failure of pharmacological treatment.
- Early diagnosis and prompt management of cardiac arrhythmias in emergency departments are essential to improve patient outcomes and reduce complications.

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