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Introduction: Atrial fibrillation remains a pervasive global health concern, contributing significantly to the incidence of stroke, heart failure, sudden death, and overall cardiovascular morbidity.

Materials and methods: The present study undertook a retrospective analysis involving a meticulous examination of 127 patients, representing a diverse cohort of individuals encompassing 73 men (with a median age of 62 and a range of 37-75) and 54 women (with a median age of 60 and a range of 42-78) duration of atrial fibrillation 48 hours or less.

Results: The results highlighted amiodarone's remarkable efficiency, as it successfully converted 81.2% of cases (56 out of 69 patients) to sinus rhythm. In comparison, propafenone also demonstrated considerable efficacy, converting 78.8% of cases (26 out of 33 patients) to sinus rhythm. The most striking results were observed with electrical cardioversion, achieving an impressive 96.0% success rate (24 out of 25 patients). (p

Conclusion: In conclusion, the combination of amiodarone, propafenone, and electrical cardioversion offers an array of effective tools for restoring sinus rhythm in patients with atrial fibrillation. To further enhance patient care, medical practitioners should prioritize the consideration of atrial fibrillation duration when deciding on the most appropriate treatment plan within the emergency department.

Keywords

atrial fibrillation, sinus rhythm, treatment

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Abstract

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Materials and methods: The present study undertook a retrospective analysis involving a meticulous examination of 127 patients, representing a diverse cohort of individuals encompassing 73 men (with a median age of 62 and a range of 37-75) and 54 women (with a median age of 60 and a range of 42-78) duration of atrial fibrillation 48 hours or less.

Results: The results highlighted amiodarone's remarkable efficiency, as it successfully converted 81.2% of cases (56 out of 69 patients) to sinus rhythm. In comparison, propafenone also demonstrated considerable efficacy, converting 78.8% of cases (26 out of 33 patients) to sinus rhythm. the most striking results were observed with electrical cardioversion, achieving an impressive 96.0% success rate (24 out of 25 patients). ($p < 0.001$ compared to both amiodarone and propafenone). In case if atrial fibrillation duration is less than 8h propafenone is more effective and for atrial fibrillation with duration over 24h more effective is amiodarone. Efficacy of amiodarone and propafenone in converting atrial fibrillation paroxysm to sinus rhythm was almost the same.

Conclusion: In conclusion, the combination of amiodarone, propafenone, and electrical cardioversion offers an array of effective tools for restoring sinus rhythm in patients with atrial fibrillation. To further enhance patient care, medical practitioners should prioritize the

consideration of atrial fibrillation duration when deciding on the most appropriate treatment plan within the emergency department.

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Introduction

Atrial fibrillation remains a pervasive global health concern, contributing significantly to the incidence of stroke, heart failure, sudden death, and overall cardiovascular morbidity. The risk of atrial fibrillation escalates with advancing age and the presence of underlying structural heart conditions. Notably, it represents a prominent precipitant of strokes, particularly in the geriatric population. Moreover, the condition independently heightens the severity and recurrence rates of ischemic strokes [6, 2]. Clinicians are faced with multiple therapeutic avenues, including electrical cardioversion and/or the administration of antiarrhythmic drugs, in their pursuit to restore and maintain sinus rhythm [8, 11].

Aim

The central aim of this study was to conduct a comprehensive evaluation and comparative analysis of the effectiveness of amiodarone, propafenone, and synchronized electrical cardioversion for converting paroxysmal atrial fibrillation to sinus rhythm. This investigation was conducted within the emergency department of Rigas Stradins University Hospital, with an emphasis on addressing the pressing need for optimal treatment strategies. Over the course of an extensive three-year period, we meticulously examined and scrutinized the medical records of 127 individuals who sought urgent medical attention due to atrial fibrillation paroxysms.

By delving into the intricate nuances of each therapeutic approach and carefully considering their outcomes, we aspired to contribute valuable insights into the field of emergency cardiology. The uniqueness of this research lies in its extensive patient cohort and the in-depth analysis that allowed us to derive meaningful conclusions. Our endeavor represents a pivotal step toward

enhancing the management of atrial fibrillation emergencies and ultimately improving patient outcomes.

Materials and Methods

The present study undertook a retrospective analysis involving a meticulous examination of 127 patients, representing a diverse cohort of individuals encompassing 73 men (with a median age of 62 and a range of 37-75) and 54 women (with a median age of 60 and a range of 42-78) (Table 1). These patients sought immediate medical attention due to atrial fibrillation episodes lasting no more than 48 hours, with an average duration of approximately 23.5 ± 0.8 hours.

The patient cohort was thoughtfully divided into three distinct groups to explore various treatment modalities. Specifically, Group I (consisting of 69 patients, accounting for 54.3% of the cohort) received intravenous administration of amiodarone, while Group II (comprising 33 patients, representing 26.0% of the cohort) underwent intravenous propafenone therapy. For Group III (comprising 25 patients, making up 19.7% of the cohort), the treatment approach involved synchronized electrical cardioversion.

A rigorous monitoring process was implemented, involving repeated electrocardiogram (ECG) registrations to closely monitor the duration of complexes and intervals. Additionally, blood pressure and pulse assessments were meticulously performed at hourly intervals until the successful conversion of atrial fibrillation to sinus rhythm or within a maximum period of 24 hours.

To ensure the integrity and reliability of the findings, strict exclusion criteria were enforced. Patients with atrial fibrillation durations exceeding 48 hours, individuals who had taken antiarrhythmic drugs within the last 24 hours, those with thyroid disorders, and patients classified under heart failure NYHA Class III-IV were carefully excluded from the analysis. Moreover, individuals with congenital or acquired QT elongation syndrome, as well as those experiencing acute myocardial infarction or unstable angina, were also excluded from the study [4].

By meticulously adhering to these stringent criteria, the study aimed to yield a comprehensive and robust evaluation of the selected treatment approaches for paroxysmal atrial fibrillation,

contributing valuable insights to emergency cardiology and guiding clinical decision-making to optimize patient care.

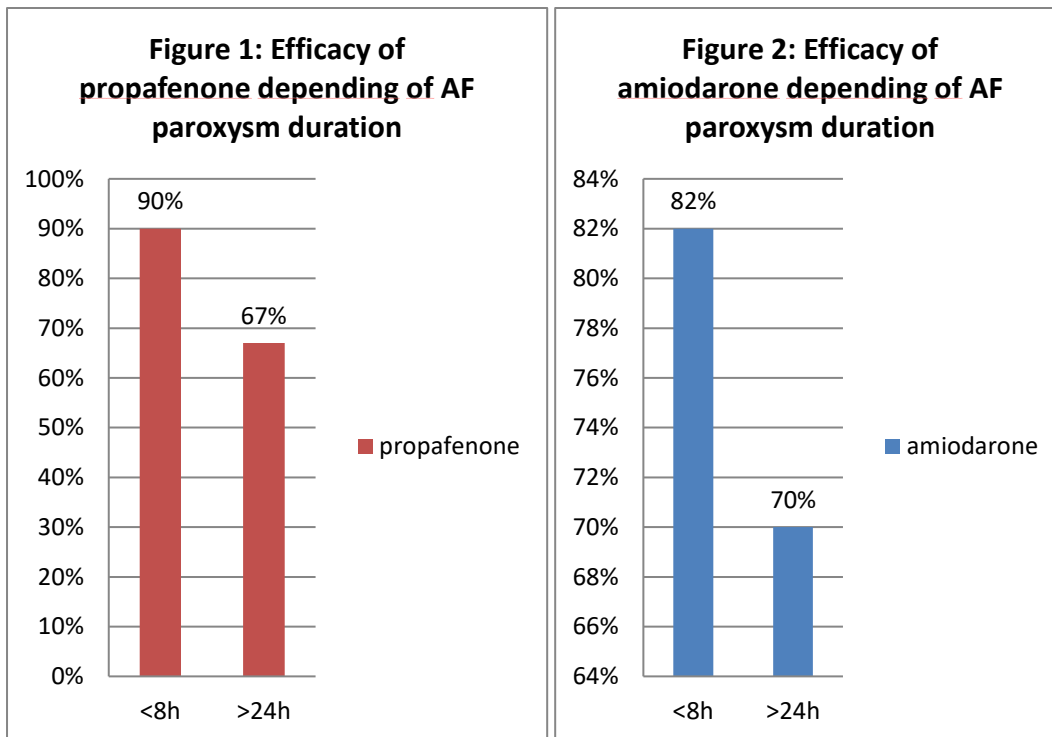
Table 1: Age and gender distribution, (n=127)

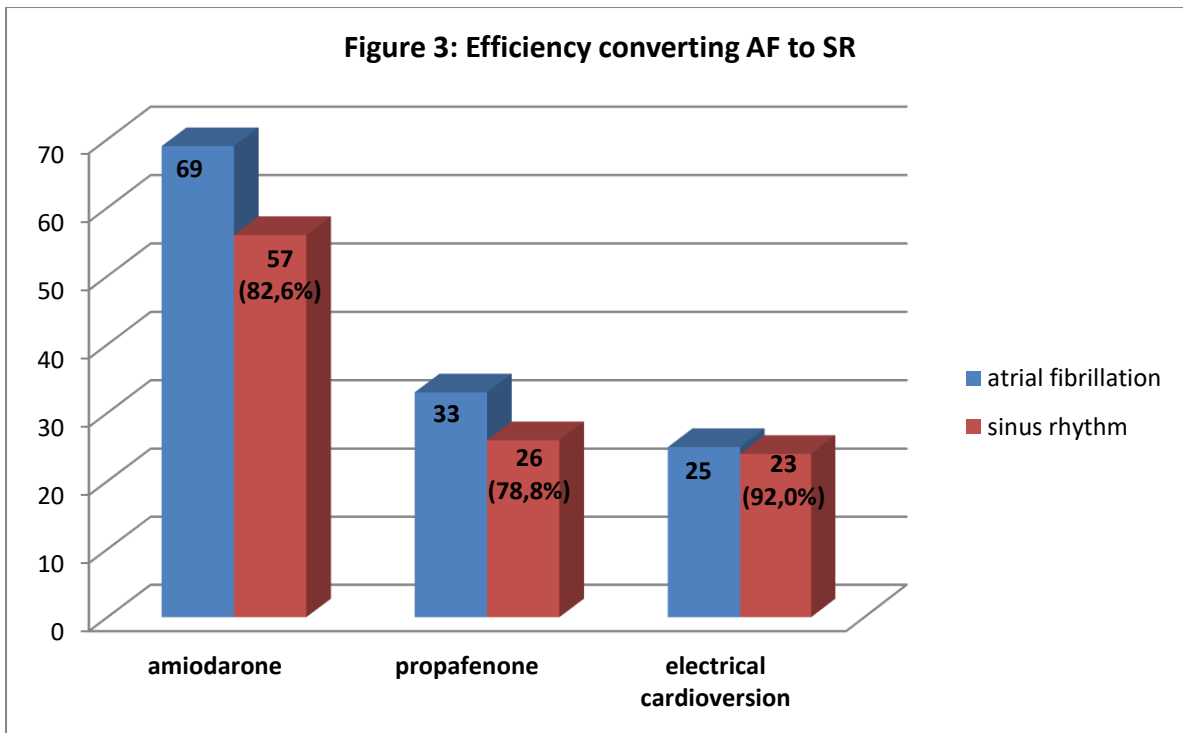
Variable	Number (%)
Age ranges (years)	
30-40	14 (11%)
41-50	19 (15%)
51-60	17 (13%)
61-70	29 (23%)
>70	48 (38%)
Gender	
Male	73 (57%)
Female	54 (43%)

Results and Discussion

The study meticulously evaluated the effectiveness of intravenous amiodarone, propafenone, and electrical cardioversion in restoring sinus rhythm from atrial fibrillation paroxysms. The results highlighted amiodarone's remarkable efficiency, as it successfully converted 81.2% of cases (56 out of 69 patients) to sinus rhythm. The recovery time was an average of 6.5 ± 1.4 hours after amiodarone administration, with an average intravenous dose of 800 ± 200 mg. In comparison, propafenone also demonstrated considerable efficacy, converting 78.8% of cases (26 out of 33 patients) to sinus rhythm, with a relatively faster recovery time of 2.9 ± 1.2 hours after administration of an average dose of 90 ± 22 mg. However, the most striking results were observed with electrical cardioversion, achieving an impressive 96.0% success rate (24 out of 25 patients). This treatment modality surpassed both amiodarone and propafenone in terms of efficacy, indicating its potential as a highly effective intervention for atrial fibrillation paroxysms. The statistical analysis underscored the significance of these findings, showing a significant difference in effectiveness between propafenone and amiodarone ($p=0.01$), with electrical cardioversion demonstrating overwhelming superiority over both drugs ($p<0.001$). Additionally, an intriguing observation was made concerning the duration of atrial fibrillation. Propafenone displayed higher effectiveness when the duration was less than 8 hours (Figure 1), while amiodarone exhibited superior efficacy for episodes lasting over 24 hours (Figure 2). Furthermore, the overall efficacy of

amiodarone and propafenone in converting atrial fibrillation paroxysms to sinus rhythm was comparable (Figure 3) [3, 15], with a slight advantage observed for amiodarone over propafenone [10]. The study's outcomes contribute novel insights to the field, reaffirming the effectiveness of electrical cardioversion in atrial fibrillation management and supporting existing literature [5, 9, 12]. Moreover, the study's findings align with the mean values reported in prior research focusing on the treatment of atrial fibrillation paroxysms [1, 7, 14]. In conclusion, this investigation presents a comprehensive and unique analysis of treatment options for atrial fibrillation paroxysms, providing valuable evidence to aid clinicians in making informed decisions and optimizing patient care in emergency scenarios.

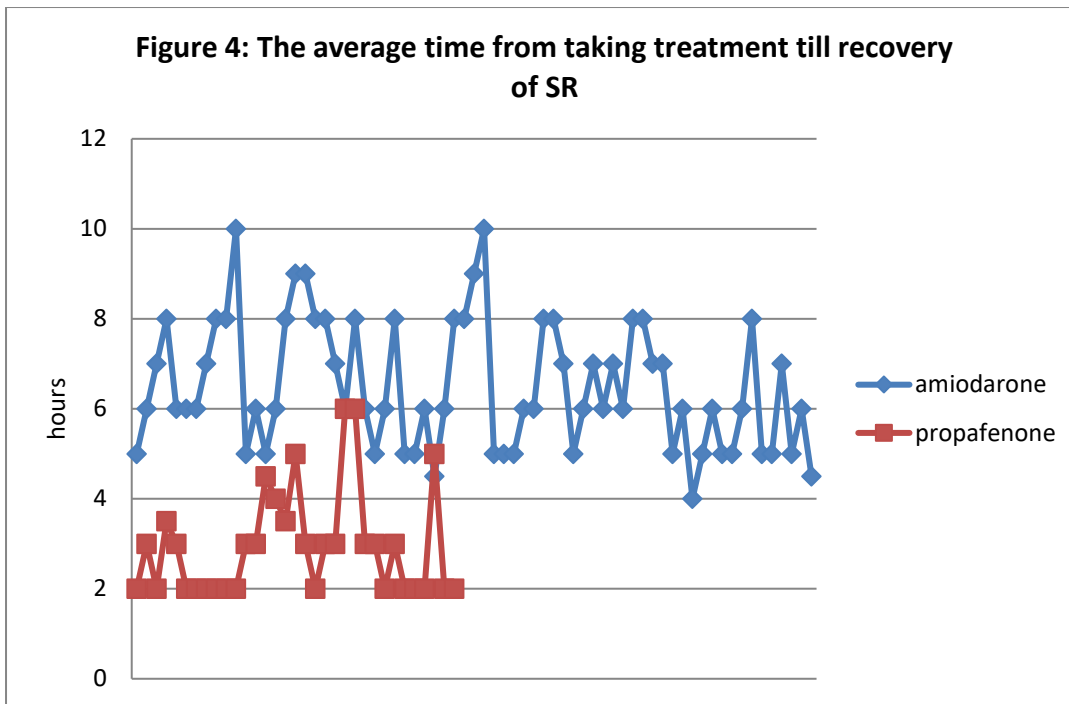




Discussion

The efficacy of amiodarone was 81.2%, propafenone 78.8%, and electrical cardioversion a high 96.0%. It should be noted that the effect of amiodarone was slightly higher than that of propafenone, but the difference between them was not significant. Both drugs can be considered acceptable options for the treatment of atrial fibrillation to restore sinus rhythm [3, 10].

Very interesting was the finding that propafenone had a faster sinus rhythm recovery time (2.9 ± 1.2 hours) compared to amiodarone (6.5 ± 1.4 hours) (Figure 4). This allows us to consider propafenone as a faster-acting drug. In addition, it is worth noting that propafenone was more effective in cases where the duration of atrial fibrillation was less than 8 hours, while amiodarone was more effective when the duration of atrial fibrillation was more than 24 hours [3, 5, 10]. This highlights the importance of taking into account the duration of an atrial fibrillation episode when choosing the optimal treatment.



Electrical cardioversion, in turn, has shown high efficiency in converting atrial fibrillation paroxysms into sinus rhythm. With results showing a success rate of 96.0%, electrical cardioversion has been shown to be reliable and has a high success rate [5, 12]. However, it should be remembered that this method requires special equipment, more detailed preparation of the patient for sedation and qualified personnel.

Based on the results of the study, we draw attention to the importance of taking into account the duration of atrial fibrillation when choosing a method of treatment in emergency care. Clinicians should be aware that for short episodes of atrial fibrillation, propafenone may be the preferred option, while amiodarone may be more effective for long episodes. At the same time, electrical cardioversion remains an effective method in the treatment of atrial fibrillation paroxysms and can be considered as the optimal choice in certain cases [13].

Conclusion

In conclusion, our study significantly enhances our understanding of the effectiveness of various medications and treatments in managing paroxysmal atrial fibrillation within the emergency room context. The findings underscore the importance of amiodarone, propafenone, and electrical cardioversion as valuable options for physicians in restoring sinus rhythm in patients with atrial

fibrillation. Each of these approaches offers an effective toolkit, yet the selection should be guided by the specific duration of the atrial fibrillation episode and the expertise of the medical team available. By considering the duration of atrial fibrillation and weighing the pros and cons of each method, healthcare professionals can make well-informed decisions that align with the patient's individual needs. We firmly believe that the insights gleaned from this study will serve as practical guidance for clinicians in navigating the complexities of atrial fibrillation management in emergency settings. The incorporation of atrial fibrillation duration as a crucial factor in treatment decisions should be increasingly emphasized within the emergency department. Ultimately, this research aims to optimize patient outcomes and reinforce the importance of tailored approaches in emergency care. As the medical community advances in understanding and treating atrial fibrillation, we hope our study will play a pivotal role in refining the management of patients with this condition in urgent medical settings.

Ethics approval and consent to participate

The study was authorized and approved by the ethical committee of Paula Stradins University Hospital on 23.04.2020. Order No. 2-3/217

All patients whose data were processed previously gave their consent in written form

Data Availability

As per the requirement for a data availability statement, we confirm that all data underlying the findings of our research article/clinical trial are available. The data is stored securely with the author and adheres to the ethical guidelines set by the research committee. Non-confidential data is accessible through tables and lists utilized for this specific study. For interested readers, we provide where the data is deposited, along with any applicable deposition codes to access the data. We are committed to transparency and reproducibility in our research, and this data availability statement ensures that others can verify and build upon our findings.

Conflicts of Interest

Authors declare no conflict of interest.

Funding Statement

None.

Authors' contributions

M.Tracevskis -analyzed and interpreted the patient data regarding the patients in emergency department with atrial fibrillation and they treatment and was a major contributor in writing the manuscript.

I.Pupkeviča -recommendations for the use of literature and scientific articles for the research of this work, scientific consultant in the development of the article

All authors read and approved the final manuscript.

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