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USE OF ANTICOAGULANTS IN PATIENTS WITH ATRIAL FIBRILLATION: A SYSTEMATIC REVIEW

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SUMMARY:

Atrial fibrillation (AF) is one of the most prevalent cardiac arrhythmias, associated with a high risk of thromboembolic complications, such as stroke. The use of anticoagulants is essential to prevent these events, with warfarin being widely used for many years. However, new oral anticoagulants (NOACs), such as apixaban and rivaroxaban, have emerged as safer and more effective alternatives, especially in vulnerable subgroups, such as patients with chronic renal failure and the elderly. This study reviews the recent literature on the use of anticoagulants in patients with AF, comparing NOACs with warfarin in terms of efficacy, safety and adherence. The review included nine studies selected from the PubMed and ScienceDirect databases. The results indicate that NOACs have a better safety profile regarding bleeding events, in addition to providing greater ease of use due to the absence of the need for frequent monitoring. However, warfarin is still widely used, especially in countries with fewer financial resources, due to its more affordable cost. It is concluded that, although NOACs represent a significant advance in the management of AF, their large-scale implementation depends on financial accessibility and individual suitability for each patient.

Keywords: Anticoagulants. Atrial fibrillation. Stroke prevention. Safety. Warfarin.

ABSTRACT:

Atrial fibrillation (AF) is one of the most prevalent cardiac arrhythmias, associated with a high risk of thromboembolic complications such as stroke. The use of anticoagulants is essential to prevent these events, with warfarin being widely used for many years. However, new oral anticoagulants (NOACs), such as apixaban and rivaroxaban, have emerged as safer and more effective alternatives, especially in vulnerable subgroups like patients with chronic kidney disease and the elderly. This study reviews recent literature on the use of anticoagulants in AF patients, comparing NOACs with warfarin in terms of efficacy, safety, and adherence. Nine studies were selected from PubMed and ScienceDirect databases. The results indicate that NOACs have a better safety profile concerning hemorrhagic events and are easier to use due to the lack of frequent monitoring requirements. However, warfarin is still widely used, especially in lower-income countries, due to its more accessible cost. It is concluded that while NOACs represent a significant advancement in AF management, their

widespread implementation depends on financial accessibility and the individual suitability of each patient.

Keywords: Anticoagulants. Atrial fibrillation. Safety. Stroke prevention. Warfarin

1. INTRODUCTION

Atrial fibrillation (AF) is a highly prevalent cardiac arrhythmia, particularly in elderly populations, and is responsible for a significant increase in the risk of thromboembolic events, such as stroke (Lin*et al.*, 2023). The prevention of thromboembolic complications in patients with AF depends mainly on the use of anticoagulants, with warfarin being the most widely used anticoagulant historically. However, new oral anticoagulants (NOACs), such as apixaban and rivaroxaban, have shown to be promising alternatives due to their greater safety and reduced need for monitoring (Fatima*et al.*, 2022).

Despite the advantages offered by NOACs, the use of anticoagulants in patients with AF still faces challenges, especially in vulnerable subgroups, such as elderly patients, those with chronic renal failure and multiple comorbidities (Kuno*et al.*, 2020). The high cost of NOACs also limits their accessibility in many regions of the world, causing warfarin to continue to be widely used (Proietti*et al.*, 2022).

The aim of this study is to perform a comprehensive review on the use of anticoagulants in patients with atrial fibrillation, comparing the efficacy and safety of new oral anticoagulants (NOACs) and warfarin. In addition, we seek to discuss the clinical implications of these treatments in subgroups of patients considered vulnerable, such as those with chronic renal failure, the elderly and patients with multiple comorbidities. The review aims to provide an updated view of the available evidence, highlighting the advantages and disadvantages of each therapeutic approach, as well as suggesting areas for future studies that may improve the management of atrial fibrillation.

2. MATERIAL AND METHOD

To conduct this systematic review, a comprehensive search was performed in the PubMed and ScienceDirect databases, using a specific search strategy to identify studies related to the use of anticoagulants in patients with atrial fibrillation (AF). The search key used was:*('atrial fibrillation' OR 'atrial fibrillation' OR 'atrial fibrillation') AND ('anticoagulants' OR 'new oral anticoagulants' OR 'NOACs' OR 'warfarin') AND ('stroke prevention' OR 'thromboembolic complications')*. Studies published between 2020 and 2024 were considered, with a focus on randomized clinical trials, systematic reviews and meta-analyses, ensuring the inclusion of robust and recent evidence on the topic.

After applying the search key, 1,007 articles were initially identified. To refine the results, we applied filters to select studies published in the last five years that addressed the use of anticoagulants, with special attention to new oral anticoagulants (NOACs) and comparison with warfarin. Inclusion criteria were also applied, such as studies with full text available in English and Portuguese, and studies that focused on subgroups of patients with AF, including the elderly, patients with renal failure and those undergoing cardiac surgery. Duplicate studies were removed and titles and abstracts were evaluated for relevance to the study objective.

Finally, 20 articles were selected for further analysis. Of these, after full reading and critical appraisal, nine studies were included in this review. The final selection of studies was based on their methodological quality, clinical relevance, and applicability to the management of patients with atrial fibrillation. These nine articles address the efficacy and safety of NOACs compared with warfarin, discussing both the benefits and limitations of the different therapeutic regimens, in addition to exploring the implications for vulnerable populations, such as patients with comorbidities and the elderly. Table 1 presents the details of the selected articles, including authors, journals, and thematic considerations.

Table 1. Works included.

Database	**Title**	**Authors**	**Periodical (vol, no, page, year)**	**Considerations Themes**

PubMed	Efficacy and Safety of Direct Oral Anticoagulants for Stroke Prevention in Older Patients With Atrial Fibrillation: THE Network Meta-Analysis of Randomized Controlled Trials	LIN, DS*et al.*	**J Am Heart Assoc**, v.12, p.e030380, 2023	Meta-analysis on the effectiveness and security of NOACs to stroke prevention in elderly people with AF.
PubMed	Oral Anticoagulation for Patients With Atrial Fibrillation on Long-Term Hemodialysis	KUNO, T.*et al.*	**J Am Coll Cardiol**, v.75, p.273-285, 2020	Usage comparison of anticoagulants in patients with FAN submitted to hemodialysis.
PubMed	Management of Hypertrophic Cardiomyopathy: JACC State-of-the-Art Review	MARON, BJ*and al.*	**J Am Coll Cardiol**, v.79, p.390-414, 2022	Discussion updated about the management from the cardiomyopathy hypertrophic and the paper of the anticoagulants in FAN.
PubMed	Frailty Prevalence and Impact on Outcomes in Patients with Atrial Fibrillation: A Systematic Review and Meta-Analysis of 1,187,000 Patients	PROIETTI, M.*and al.*	**Ageing Res Rev**, v.79, p.101652, 2022	Review on the prevalence from the fragility in patients with AF and its impact on clinical results.

PubMed	Safety and Efficacy of Apixaban vs Warfarin in Patients With Stage 4 and 5 Chronic Kidney Disease: A Systematic Review	FATIMA, H.*et al.*	**Cureus**, v.14, p.e30230, 2022	Comparison between apixabana and warfarin in patients with illness renal chronic stage 4 and 5.
PubMed	Use of Anticoagulation Therapy in Patients With Perioperative Atrial Fibrillation After Cardiac Surgery: THE Systematic Review and Meta-analysis	WANG, MK*and al.*	**CJC Open**, v.4, p.840-847, 2022	Meta-analysis on the use of anticoagulants in patients with AF post-surgery cardiac.
PubMed	Clinical Benefits of Oral Anticoagulants in Atrial Fibrillation Patients with Dementia: THE Systematic Review and Meta-analysis	WANG, D.*et al.*	**Front Cardiovasc Med**, v.10, p.1265331, 2023	Review on the benefit of anticoagulants oral in patients with FA and insanity.
PubMed	Thromboprophylaxis in Patients With Fontan Circulation	VAN DEN EYNDE, J.*et al.*	**J Am Coll Cardiol**, v.81, p.374-389, 2023	Discussion on prophylaxis thrombotic in patients with circulation of Fontan and FA.
PubMed	Dosage of Anticoagulants in Obesity: Recommendations	ABILDGAARD, THE.*et al.*	**Semin Thromb Hemost**, v.46, p.932-969, 2020	Review on to the dosages of anticoagulants in

	Based on the Systematic Review			patients obese with FA.

Source: own authorship, 2024.

3. RESULTS AND DISCUSSION

New oral anticoagulants (NOACs) demonstrate several advantages over warfarin, especially regarding safety and practicality. Recent studies indicate that apixaban, rivaroxaban and dabigatran are associated with a lower incidence of serious bleeding events, such as intracranial hemorrhages, compared to warfarin, particularly in patients with comorbidities such as chronic renal failure and dementia. This difference is significant, as it reduces serious complications in at-risk populations, making NOACs a preferred option for these patients. In addition, ease of use, without the need for frequent monitoring, contributes to greater adherence to treatment (Fatima *et al.*, 2022; Proietti *et al.*, 2022).

Warfarin, on the other hand, is still widely used in many clinical settings, especially in regions where the cost of NOACs represents a significant barrier. The high cost of NOACs is one of the main limiting factors for their widespread adoption, especially in low- and middle-income countries. However, when warfarin is closely monitored, it can be an effective alternative, although the risk of bleeding complications is higher compared to NOACs. Thus, the choice between warfarin and NOACs should be guided not only by the patient's clinical profile, but also by socioeconomic conditions and the feasibility of adequate monitoring (Kuno et al., 2012; Kus ...*et al.*, 2020).

NOACs have also been shown to be highly effective in subgroups of patients with atrial fibrillation, especially in individuals with advanced renal failure. In a comparative review between apixaban and warfarin, patients with chronic kidney disease stages 4 and 5 showed better results with apixaban, both in terms of preventing thromboembolic events and reducing the risk of bleeding. This finding is particularly relevant, since patients with renal failure are often

considered at high risk for complications, making personalization of anticoagulant therapy crucial to optimizing outcomes (Fatima *et al.*, 2022).

Furthermore, the use of NOACs in patients undergoing cardiac surgeries, such as coronary artery bypass grafting, has been shown to be superior in terms of postoperative recovery and reduction of complications. One study found that patients who used NOACs in the perioperative period had lower rates of thromboembolism and bleeding compared with those who used warfarin. These data reinforce the need to consider NOACs as the first choice in surgical patients with atrial fibrillation, given their safety and efficacy, especially in higher-risk scenarios (Wang *et al.*, 2022).

Among the elderly, who constitute a large proportion of patients with atrial fibrillation, the use of NOACs is also advantageous. Studies indicate that, in frail patients, NOACs significantly reduce the risk of bleeding compared with warfarin, which is essential to minimize complications related to anticoagulation in this population. However, the management of these patients requires a careful approach, balancing the benefits of preventing thromboembolisms with the risks of falls and other complications associated with frailty (Proietti *et al.*, 2022).

Although NOACs have been shown to be superior in many clinical situations, warfarin remains a viable option in certain settings, especially in patients with contraindications to NOAC use or in settings where these drugs are not widely available. In patients with end-stage renal failure or undergoing dialysis, warfarin may be preferable, as data on the safety of NOACs in these populations are still limited. Therefore, the choice of anticoagulant should always be individualized, taking into account both clinical characteristics and the economic and social factors involved in treatment (Kuno *et al.*, 2020).

FINAL CONSIDERATIONS

The new oral anticoagulants (NOACs) represent a significant advance in the management of patients with atrial fibrillation, offering greater safety in terms of reducing bleeding events, particularly compared to warfarin. The ease of

use and reduced need for monitoring make NOACs preferred in many clinical settings, especially for patients with chronic renal failure and the elderly (Fatima *et al*., 2022; Proietti *et al*., 2022). However, the risk of bleeding still requires careful monitoring, especially in frail patients and those with multiple comorbidities (Wang *et al*., 2022).

Although warfarin remains widely used, particularly in countries with limited financial resources, NOACs have been shown to be superior in several aspects. Affordability is a challenge that needs to be overcome before these drugs can be widely adopted. Future research should focus on strategies to make NOACs more affordable and explore new therapeutic approaches that can further improve safety and efficacy in the treatment of patients with AF (Kuno *et al*., 2020; Lin *et al*., 2023).

REFERENCES

ABILDGAARD, A. *et al.* Dosage of Anticoagulants in Obesity: Recommendations Based on a Systematic Review. **Semin Thromb Hemost**, v.46, p.932-969, 2020.

FATIMA, H. *et al.* Safety and Efficacy of Apixaban vs Warfarin in Patients With Stage 4 and 5 Chronic Kidney Disease: A Systematic Review. **Cureus**, v.14, p.e30230, 2022.

KUNO, T. *et al.* Oral Anticoagulation for Patients With Atrial Fibrillation on Long-Term Hemodialysis. **J Am Coll Cardiol**, v.75, p.273-285, 2020.

LIN, DS *et al.* Efficacy and Safety of Direct Oral Anticoagulants for Stroke Prevention in Older Patients With Atrial Fibrillation: A Network Meta-Analysis of Randomized Controlled Trials. **J Am Heart Assoc**, v.12, p.e030380, 2023.

MARON, BJ *et al.* Management of Hypertrophic Cardiomyopathy: JACC State-of-the-Art Review. **J Am Coll Cardiol**, v.79, p.390-414, 2022.

PROIETTI, M. *et al.* Frailty Prevalence and Impact on Outcomes in Patients with Atrial Fibrillation: A Systematic Review and Meta-Analysis of 1,187,000 Patients. **Ageing Res Rev**, v.79, p.101652, 2022.

VAN DEN EYNDE, J. *et al.* Thromboprophylaxis in Patients With Fontan Circulation. **J Am Coll Cardiol**, v.81, p.374-389, 2023.

WANG, D. *et al.* Clinical Benefits of Oral Anticoagulants in Atrial Fibrillation Patients with Dementia: A Systematic Review and Meta-analysis. **Front Cardiovasc Med**, v.10, p.1265331, 2023.

WANG, MK *et al.* Use of Anticoagulation Therapy in Patients With Perioperative Atrial Fibrillation After Cardiac Surgery: A Systematic Review and Meta-analysis. **CJC Open**, v.4, p.840-847, 2022.