



ORIGINAL ARTICLE

APOLLO I: Anticoagulation control in atrial fibrillation[☆]



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KEYWORDS

Atrial fibrillation;
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Abstract

Introduction and Aims: Anticoagulation control as assessed by time in therapeutic range (TTR) correlates positively with the safety and efficacy of thromboprophylaxis in atrial fibrillation. We set out to assess TTR in our unit and to investigate determinants of better control.

Methods: This was a case series study of atrial fibrillation patients anticoagulated with warfarin or acenocoumarol at the Family Health Unit of Fânzeres. Sociodemographic and clinical data were collected and TTR was calculated by the Rosendaal method, based on international normalized ratio tests performed in external laboratories in the preceding six months. SPSS® 21.0 was used for the statistical analysis, with descriptive statistics, Spearman's correlation, and the Mann-Whitney U and Kruskal-Wallis tests.

Results: Of the 106 eligible patients, 70% participated in the study. Median TTR was 65.3% (P25=48.3%, P75=86.8%). We found a positive association between this variable and duration of atrial fibrillation ($\rho=0.477$, $p<0.001$, $r^2=0.116$) and with duration of anticoagulation ($\rho=0.5$, $p<0.001$, $r^2=0.087$). No association was found with age, gender, educational level or existence of a caregiver ($p>0.05$).

Conclusions: Median TTR in our unit is similar to that in southern European countries and close to the good control threshold (70%) proposed by the European Society of Cardiology. The duration of atrial fibrillation and of anticoagulation explains only a small part of the measure's variability. Other determinants of anticoagulation control must be investigated in future studies and comparative studies should be carried out in family health units monitoring anticoagulation on the premises.

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PALAVRAS-CHAVE

Fibrilhação auricular;
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APOLO I: Controlo da hipocoagulação na fibrilhação auricular**Resumo**

Introdução e objetivos: Na fibrilhação auricular o controlo da hipocoagulação avaliado pelo tempo em alvo terapêutico correlaciona-se positivamente com a segurança e eficácia trombo profiláticas. Pretende-se realizar essa avaliação na unidade dos autores e pesquisar determinantes de melhor controlo.

Métodos: Série de casos – utentes da Unidade de Saúde Familiar de Fânzeres com fibrilhação auricular sob varfarina ou acenocumarol. Colheram-se dados sócio-demográficos e clínicos; calculou-se o tempo em alvo terapêutico pelo método de *Rosendaal*, usando os resultados de Razão Normalizada Internacional realizados em laboratórios externos à unidade nos seis meses precedentes. Os dados foram tratados em SPSS 21.0®, recorrendo-se a estatística descritiva, correlação de *Spearman*, teste de *Mann-Whitney U* e *Kruskal-Wallis*.

Resultados: Participaram 70% dos 106 pacientes elegíveis. O tempo em alvo terapêutico mediano foi de 65,3% (P₂₅ = 48,3%; P₇₅ = 86,8%). Encontrou-se relação positiva entre essa variável e duração da doença ($\rho = 0,477$; $p < 0,001$; $R^2 = 0,116$) e duração da hipocoagulação ($\rho = 0,5$; $p < 0,001$; $R^2 = 0,087$). Não se estabeleceu relação com idade, género, escolaridade e existência de cuidador ($p > 0,05$).

Conclusões: O tempo em alvo terapêutico mediano na unidade é semelhante ao dos países sul europeus, ficando próximo do «bom controlo» definido pela Sociedade Europeia de Cardiologia (70%). A duração da fibrilhação auricular e da hipocoagulação explicam uma pequena parte da variabilidade dessa medida. Serão necessários estudos para identificação de outros determinantes do controlo da hipocoagulação e estudos comparativos com unidades que realizem os testes laboratoriais de monitorização da hipocoagulação nas suas instalações.

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List of abbreviations

AF	atrial fibrillation
FHU	Family Health Unit
INR	international normalized ratio
MIM@UF	Database and monitoring software for Primary Care Units in the Portuguese national health system
OAC	oral anticoagulant
P25	25th percentile
P50	50th percentile
P75	75th percentile
TTR	time in therapeutic range

Introduction

Atrial fibrillation (AF) is the most common sustained supraventricular tachyarrhythmia encountered in clinical practice, with a prevalence on electrocardiographic studies of 2.5% in the Portuguese population aged 40 or over, 36% of whom are undiagnosed.¹ Prevalence increases with age, reaching 10% in those aged 80 or over.¹

If conversion to sinus rhythm is not indicated or possible, AF becomes chronic, which often entails changes in lifestyle and thromboprophylaxis with oral anticoagulants (OACs) that require laborious dose adjustment. Poor adherence to therapy places patients at high risk for morbidity

and mortality, particularly from stroke.¹⁻⁷ The classic OACs are warfarin and acenocoumarol, for which the target international normalized ratio (INR) is between 2.0 and 3.0, based on their proven efficacy for prevention of stroke and pulmonary embolism, together with an acceptable safety profile in terms of bleeding risk.^{7,8}

The time in therapeutic range (TTR), expressed as a percentage, is a measure of anticoagulation control, $\geq 70\%$ being proposed as good control by the European Society of Cardiology.⁷ This is reflected in greater efficacy and fewer adverse effects: an 12% improvement in TTR is associated with a reduction in thromboembolic events of 1 event per 100 patient-years, while a 7% increase is associated with a reduction in major bleeding of 1 event per 100 patient-years.⁸

Data from the literature show differences between regions and countries, with TTR ranging from 50% in Israel to 64% in southern Europe, 74.5% in northern Europe and 76.5% in Sweden.⁸⁻¹⁶ The Randomized Evaluation of Long-Term Anticoagulation Therapy (RE-LY) trial, the only source of data on TTR in Portugal, reports 61% for participants anticoagulated with warfarin.¹⁷ However, this was a phase III trial comparing the efficacy and safety of warfarin and a new OAC, dabigatran, for stroke prevention in AF patients, and the figure reported thus reflects the specific conditions of the trial, which are not necessarily comparable to everyday clinical practice. There are two other studies on anticoagulation control in Portugal, but these report the percentage of INR values within the therapeutic range in specific health units.^{18,19} This measure provides different information from

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