Analysis of clinical outcomes, health resource use and costs of patients with non-valvular atrial fibrillation treated with apixaban vs. acenocoumarol in routine clinical practice in Spain

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Introduction

- In patients with non-valvular atrial fibrillation (NVAF), the effectiveness and safety of non-Vitamin K antagonist oral anticoagulants (NOAC) have been analyzed in observational studies, with generally favorable results for NOAC vs. the traditional vitamin K antagonists (VKA)[1-5].
- NOAC and VKA have been compared in economic analyses in patients with NVAF. In general, apixaban is generally a cost-effective alternative in comparison to VKA[6,7]. However, the economic evaluations mainly considered the efficacy results of clinical trials in patients with NVAF. Therefore, there is a need to estimate the cost-effectiveness value of apixaban vs. VKA in clinical practice to improve the care of these patients.

Objective

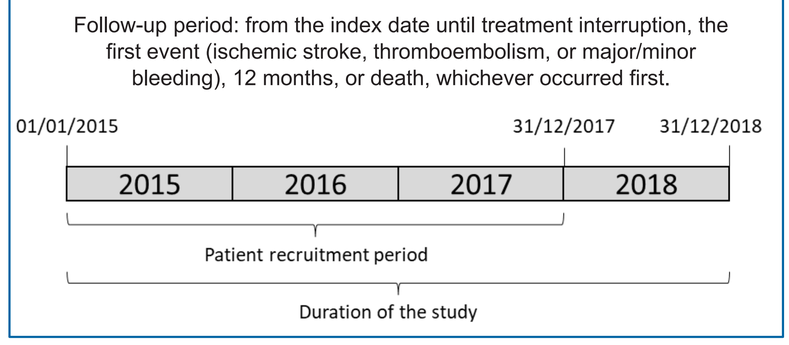
- This study aims to compare the use of healthcare resources and costs associated to the treatment of patients with NVAF, in patients receiving apixaban (NOAC) vs. acenocoumarol (VKA), according to medical practice in Spain.

Methods

Design of the study

- This is an observational and retrospective study based on electronic medical records from the BIG-PAC database[5].
- The study population was patients with NVAF who started a new anticoagulant treatment with apixaban or acenocoumarol between 01/01/2015 and 31/12/2017. The index date was the date of the initiation of the treatment (Figure 1)[5].
- A propensity score matching procedure (PSM, 1:1) maximized the comparability of study cohorts. Covariates were age, sex, Charlson comorbidity index and CHA_2DS_2-VASc and HAS-BLED scores[8,9].
- Healthcare resource utilization, costs and incremental cost-effectiveness ratios were analyzed. Unit costs were obtained from previous studies and the Spanish statistical office[10,11]. Costs were expressed in euros (€, 2021).

Figure 1. Study design



Study variables

- Demographic characteristics, comorbidities, effectiveness, treatment patterns and healthcare resources utilization were analyzed. The results in prevalent patients were compared between, the anticoagulation treatment that led to their inclusion in the study.

Results

Study population and patients' characteristics at the index date

- PSM paired 2,160 patients in the apixaban group with 2,160 patients treated with acenocoumarol, with a high degree of comparability between both groups (Table 1)[5].
- Patients with apixaban were more persistent to the treatment than those with acenocoumarol (hazard ratio, HR: 1.2 [95% CI: 1.0–1.3], p=0.006, at 6 months; HR: 1.3 [95% CI: 1.1–1.4], p=0.012 at 12 months).

Table 1. Patients' characteristics at the index date.

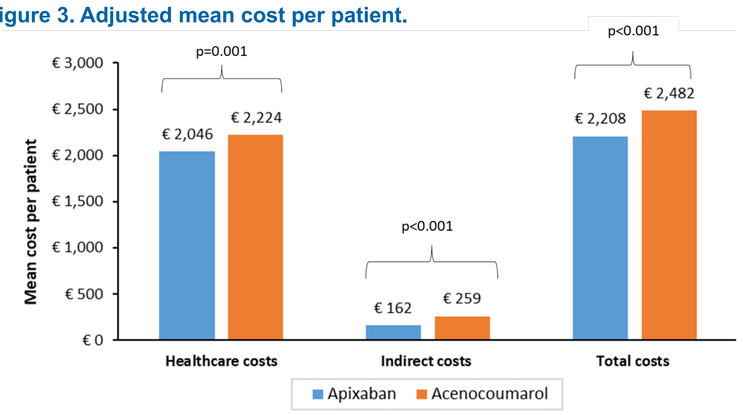
Study groups after PSM	Apixaban (N = 2,160)	Acenocoumarol (N = 2,160)	p value	Standard difference
Mean age (SD), years	71.2 (12.8)	71.6 (10.1)	0.271	-0.041
Sex (males)	47.6%	47.8%	0.903	-0.003
Scales				
CCI, mean (SD)	2.5 (2.0)	2.6 (1.9)	0.758	0.016
CHA_2DS_2-VASc, mean (SD)	3.3 (1.9)	3.4 (1.7)	0.009	-0.015
HAS-BLED, mean (SD)	2 (1.3)	2.1 (1.1)	<0.001	-0.017

CCI: Charlson comorbidity index; PSM: propensity score matching; SD: standard deviation.

Healthcare resources utilization and costs

- Apixaban patients required fewer healthcare resources than those with acenocoumarol, particularly nursing and primary care visits and hospitalizations.
- Regarding productivity losses, 15.6% of patients with acenocoumarol required an average of 2.5 days of sick leave, whereas 12.4% of patients with apixaban needed an average of 1.7 days.
- Apixaban decreased annual healthcare costs compared with acenocoumarol (Table 2), leading to reductions of 80%, 55% and 43% in the costs related to nursing visits, hospitalizations and emergency visits, respectively.

Figure 3. Adjusted mean cost per patient.



Costs were adjusted by using an analysis of covariance, considering sex, age, Charlson comorbidity index, and CHA2DS2-VASc and HAS-BLED score as covariates.

Table 2. Characteristics of prevalent patients

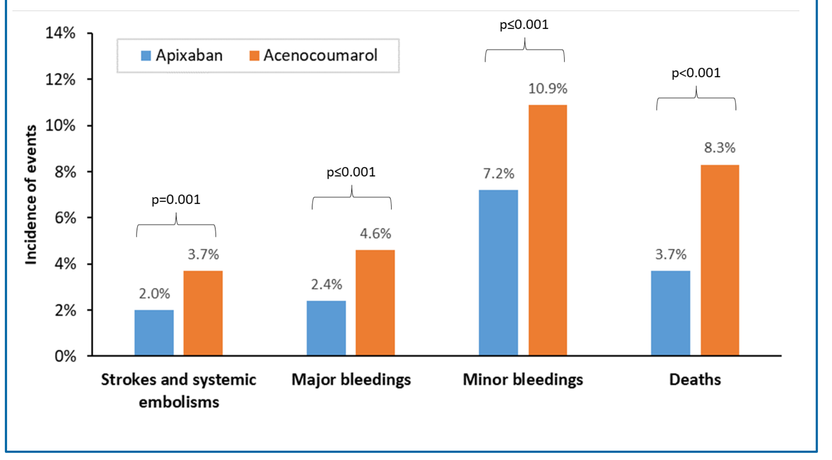
Study groups after PSM	Apixaban (N = 2,160)	Acenocoumarol (N = 2,160)	P value
Medical visits			
Primary care visits	146 (99)	252 (163)	<0.001
Nursing visits	60 (45)	294 (195)	<0.001
Specialist visit	193 (175)	257 (185)	<0.001
Emergency visits	21 (48)	37 (63)	<0.001
Hospitalizations	293 (1196)	658 (2036)	<0.001
Clinical tests and procedures			
Laboratory tests	48 (35)	70 (51)	<0.001
Radiology	15 (14)	18 (15)	<0.001
Computerized axial tomography	31 (45)	97 (80)	<0.001
Magnetic resonance	60 (84)	148 (136)	<0.001
Other tests	43 (37)	89 (65)	<0.001
Cateterization	96 (192)	104 (198)	0.154
Angioplasty	100 (195)	102 (197)	0.709
Endarterectomy	2 (29)	99 (194)	<0.001
Cardiovascular medication	899 (327)	42 (20)	<0.001
Total costs			
Healthcare costs	2,008 (1490)	2,268 (2251)	<0.001
Indirect costs	169 (478)	252 (641)	<0.001
Total	2,177 (1488)	2,520 (2268)	<0.001

PSM: propensity score matching.

Effectiveness

- As it was previously reported, apixaban reduced the incidence of strokes and systemic embolisms and minor and major bleedings vs. acenocoumarol[5]. In addition, the mortality rate was lower in NVAF patients who received apixaban vs. those treated with acenocoumarol (Figure 2).

Figure 2. Effectiveness of apixaban vs acenocoumarol.



Cost-effectiveness analysis

- Apixaban improved the efficacy outcomes in NVAF, leading to a reduction in the use of healthcare resources and indirect costs, in comparison with acenocoumarol (Figure 3). Therefore, apixaban is considered a dominant alternative vs acenocoumarol, from the perspective of the society (Table 3).

Table 3. Cost-effectiveness analysis per event avoided

	Type of event	Apixaban	Acenocoumarol
Total cost*	Strokes and systemic embolisms	€ 2,208	€ 2,482
	Minor bleedings	€ 2,208	€ 2,482
	Major bleedings	€ 2,208	€ 2,482
	Deaths	€ 2,208	€ 2,482
Effectiveness	Strokes and systemic embolisms	0.980	0.963
	Minor bleedings	0.928	0.891
	Major bleedings	0.976	0.954
	Deaths	0.963	0.917
Incremental costs	Strokes and systemic embolisms	-	-€ 274
	Minor bleedings	-	-€ 274
	Major bleedings	-	-€ 274
	Deaths	-	-€ 274
Incremental effectiveness	Strokes and systemic embolisms	-	0.017
	Minor bleedings	-	0.037
	Major bleedings	-	0.022
	Deaths	-	0.046
ICER	Strokes and systemic embolisms	-	-€ 16,118
	Minor bleedings	-	-€ 7,405
	Major bleedings	-	-€ 12,455
	Deaths	-	-€ 5,957

. *Adjusted mean costs per patient. ICER: incremental cost-effectiveness ratio.

Conclusions

The clinical improvements and the reduction of disease management costs suggested that apixaban is a cost-effective alternative for patients with NVAF and may reduce the economic burden of this disease for the Spanish National Health System and society.

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Disclosures

This study was sponsored by BMS-Pfizer Alliance. Dr. J. Comín-Colet reports fees as a coordinator investigator of this study by Pfizer and Bristol Myers Squibb. Antoni Sicras is an Atrys Health employee, CRO of the study. Inés Pérez Román is an Atrys Health employee, CRO of the study. Joel Salazar-Mendiguchía reports that he is a Bristol Myers Squibb employee and has BMS stocks. Isabel del Campo reports that she is a Bristol Myers Squibb employee has BMS stocks. Ainara Echeto reports that she is a Bristol Myers Squibb employee has BMS stocks. David Vilanova Larena reports that he is a Bristol Myers Squibb employee has BMS stocks. Dra. Olga Delgado Sánchez reports fees as a coordinator investigator of this study by Pfizer and Bristol Myers Squibb.

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