Misuse of novel anticoagulants in hospital settings

K. Ioannidis[1], I. Scarlatinis[1], A. Papachristos[1], X. Madia[2]

[1] Department of Clinical Pharmacy, Hygeia General Hospital, Athens, Greece

[2] Private Pharmacy, Athens, Greece

Ioannidis Konstantinos
e-mail: kioannidis@hygeia.gr

Abstract Number: 4CPS-017
ATC code: B01

Background

In the past few years, the development of four novel oral anticoagulants (NOACs), which directly target thrombin or factor Xa, has brought a remarkable change in the clinical practice of anticoagulation therapy. Although they constitute an attractive alternative option to cumarins and heparins, the appropriate use of those agents is essential in order to maximize their effect and avoid adverse events.

Purpose

The aim of the present study is to investigate the interventions of two clinical pharmacists regarding NOACs prescribing in a private hospital.

Material and Methods

A prospective study was conducted at a Private General Hospital from 01/01/2016 to 31/12/2016. NOACs were administered in different doses according to indication, body weight, age and comorbidities. During study period, the clinical pharmacists documented all cases in which NOACs were prescribed. Data were analyzed so as to reveal potential medication errors.

Results

- 370 cases of NOACs prescriptions were recorded.
- 42 (11,0%) included prescription errors. (Figure 1)
- Among these errors, 28 (66,7%) were related to erroneously calculated NOACs dosage based on renal function, 8 (19%) to drug-drug interactions and 6 (14,3%) to concurrent active cancer. (Table 1)
- Rivaroxaban was the most frequent NOAC to be erroneously prescribed (28 cases, 67%), followed by Apixaban (13 cases 13%) and Dabigatran (1 case, 2%). (Figure 2)

Type of error	Description of error		Total (N=42 errors)
Concurrent active Cancer			6
Drug Interactions	Apixaban with Itraconazole	1	8
	Apixaban with Clarithromycin	1	
	Rivaroxaban with Rifampicin	2	
	Rivaroxaban with Carbamazepine	1	
	Rivaroxaban with Clarithromycin	2	
	Rivaroxaban with Verapamil	1	
Dose based on renal function	High dose/Contraindication	8	28
	Low dose	20	

Table 1: Type and description of prescription errors

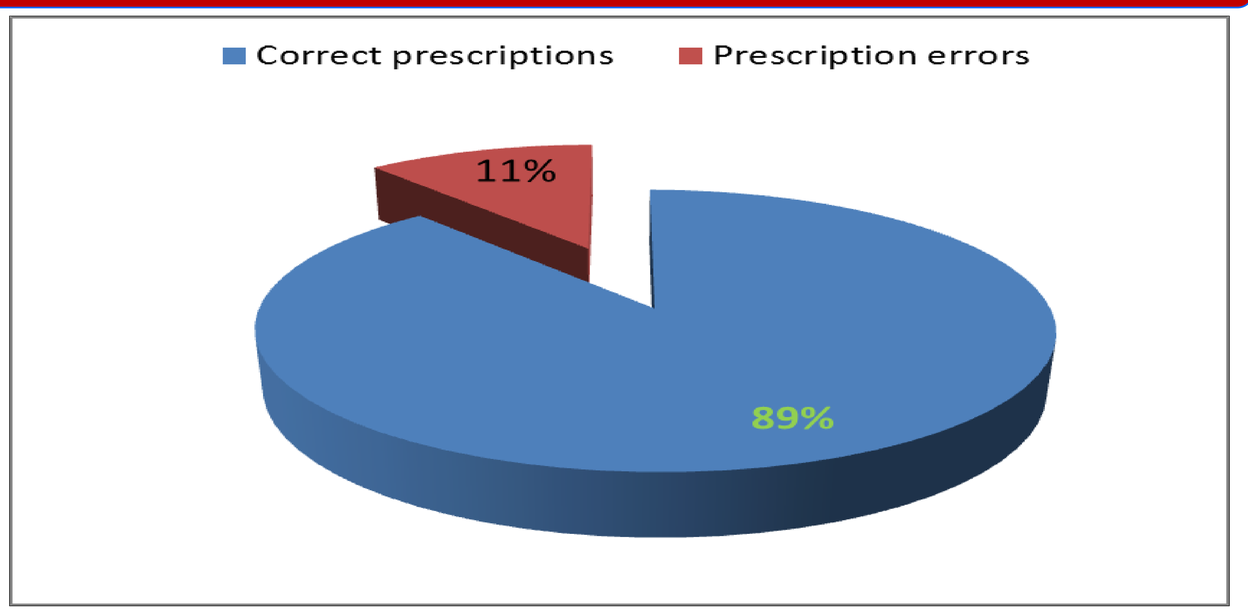

Figure 1: Prescriptions of NOACs

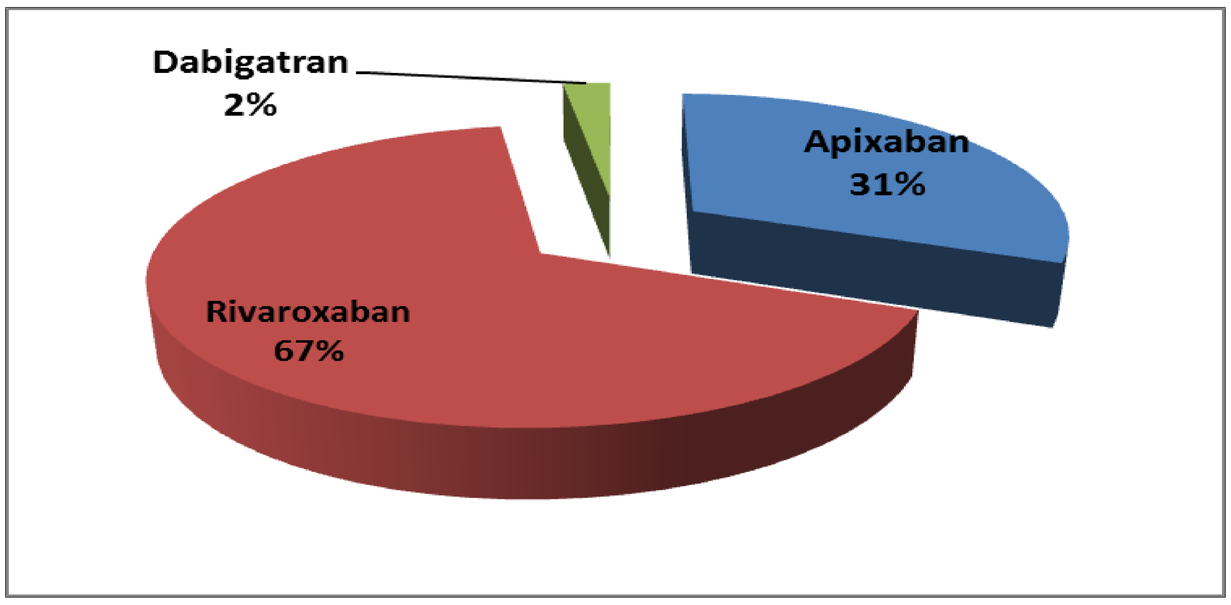

Figure 2: Errors per NOAC

Conclusions

No matter how advantageous NOACs seem to be, they are accompanied by several risks which are more likely to happen if these agents are not used appropriately. Efficacy and bleeding risk depend on patient variables, such as renal function, age, weight and concomitant medication, whereas, due to their recent authorization, there is insufficient experience on their benefit-to-risk ratio in special cases, like cancer, obesity or childhood. The present study showed that, in our hospital, a significant amount of patients prescribed NOACs in a way that contradicts the product label characteristics. The necessity to take one's medical history and NOACs' pharmacological characteristics into account was highlighted, along with the potential contribution of a drug-handling expert, such as a clinical pharmacist.

References

1. Trujillo-Santos J, Di Micco P, Dentali F, et al. Real-life treatment of venous thromboembolism with direct oral anticoagulants: The influence of recommended dosing and regimens. Thromb Haemost 2017; 117:382.
2. Poulsen BK, Grove EL, Husted SE. New oral anticoagulants: a review of the literature with particular emphasis on patients with impaired renal function. Drugs 2012; 72:1739.

- The authors declare that there is no conflict of interest
- There was no financial support for the current project