INR and Warfarin Plasma Level of Atrial Fibrillation Patients at Tertiary Hospital in West Sumatera

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INR and Warfarin Plasma Level of Atrial Fibrillation Patients at Tertiary Hospital in West Sumatera

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Introduction: Warfarin is the mainstay of anticoagulant therapy to prevent embolism in atrial fibrillation, that has a narrow therapeutic window rendering monitoring prothrombine time necessary by using international normalized ratio (INR). However, INR value is not always correlated with clinical risk of bleeding, Therefore, warfarin plasma level needs to be monitored in atrial fibrillation. *Methods*: A cross-sectional study was conducted in patients with atrial fibrillation at a tertiary hospital in West Sumatera, Indonesia. At the time of the study, patients have received at least five weeks of warfarin. Their characteristics were obtained from medical records and INR data were collected. *Results*: Preliminary data of 50 patients (26 males and 24 females) showed that INR values were between 0.9 and 5.3. Thirteen patients (26%) had INR value within therapeutic target (2.0–3.0); thirty patients (60%) had lower INR value and seven patients (14%) had higher INR value compared to target value. *Conclusion*: Warfarin therapy fails to reach therapeutic target for emboli prevention in most patients with atrial fibrillation.

Keywords: Atrial Fibrillation, Emboli, INR, Warfarin.

1. INTRODUCTION

Arrhythmias are heart rhythm abnormalities that can cause sudden death (Cardiac sudden death). Atrial fibrillation (AF) is the most common type of arrhythmia.The prevalence of atrial fibrillation in some countries in Europe ranges from 1.9–2.9%.[1,2] In Indonesia, the prevalence of AF at Harapan Kita Hospital in 2013 was 9.8%.[3]

Warfarin is an oral anti-coagulant commonly used in arrhythmic patients, particularly atrial fibrillation patients. Warfarin is a drug with a narrow therapeutic index. In addition warfarin binds strongly with albumin, so it can shift the bonds of other drugs with albumin when given simultaneously, thus reducing the effectiveness of other drugs.[4]

The amount of dose according to the circumstances of each patient, as a guide should always be checked the period of protombin, and note the tendency for the occurrence of bleeding. Bleeding complications generally occur when the ratio of PT (Protrombin Time) 1.3–1.5 times the normal value.[4,5] The oral therapeutic range of oral coagulants is expressed by the International Normalized Ratio (INR) calculated on the basis of prothrombin time. Generally the therapeutic range when INR 2.0–3.0. This data is used for dose adjustment in patients receiving warfarin.[6,7]

In some patients resistance to warfarin is found to require more doses. This condition is associated with genetic abnormalities or the presence of genetic polymorphisms, including CYP2C9 and VKORC1.[8–10]

2. METHODS

This was an observational study with cross sectional design in patients with atrial fibrillation who received warfarin therapy. This research was conducted in Polyclinic Cardiology and Vascular Medicine, Dr. M. Jamil Hospital, Padang, and Pharmametric Laboratory, Jakarta from January to November 2017.

This study involved patients with atrial fibrillation who treated in Polyclinic Cardiology and Vascular Medicine, Dr. M. Djamil Hospital during study period. Inclusion criteria was patients diagnosed with atrial fibrillation based on standard diagnostic criteria and received warfarin therapy for at least 5 weeks. Exclusion criteria was pregnant women, impaired liver and kidney function and allergic to warfarin. The large sample calculation uses the observational research formula with one study population

$n = Z\,(1-\alpha/2)\,2\,p\,(1-p)$

n = minimum sample

$Z\,(1-\alpha/2) = 1.96$ with $\alpha = 0.05$

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p = proportion of atrial fibrillation patients at Harapan Kita Hospital, Jakarta, that is 9.8%
d = 0.1.

From the calculation, the minimum sample for this research is 33 patients. Taking into account the drop out rate, about 20%, then required a minimum sample of 40 patients. In this study we set a sample of 50 patients. INR value was categorized as within therapeutic target if the value was 2.0–3.0.

This study has received permission from the ethics committee of Faculty of Medicine, Universitas Andalas.

3. RESULT

There have been found 50 subjects with atrial fibrillation at Polyclinic Cardiology and Vascular Medicine Dr. M Djamil Padang, who meets the inclusion criteria and has signed informed consent. The age range of the study subjects was 25–79 years with an average of 54.3 years.

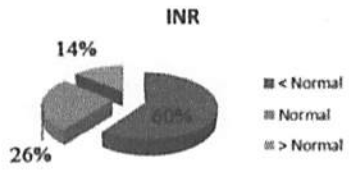

Fig. 1. Pie diagram of INR.

Table I. Characteristic of patients an INR.

Characteristics	All patients (n = 50)
Age, year*	54.3 (25–79)
Gender	
Male	26/50 (52%)
Female	24/50 (48%)
INR	
Low	30/50 (60%)
Within therapeutic target	13/50 (26%)
High	7/50 (14%)

There have been found 50 subjects, 26 male subjects (52%) and 24 women (48%). Thirteen patients (26%) had INR value within therapeutic target; thirty patients (60%) had lower INR value and seven patients (14%) had higher INR value compared to target value (Table I).

4. CONCLUSION

Warfarin therapy fails to achieve therapeutic targets for prevention of embolism in most patients with atrial fibrillation.

SUGGESTION

1. For the next study it is recommended that the number of patients more so that more representative of the population.
2. Further research is needed to find out the incidence of CYP2C9 and VCORC1 polymorphisms in the study subjects.

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