Effects of pharmacist counseling on outpatients receiving warfarin at Songklanagarind Hospital

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Abstract:

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Songkla Med J 2006;24(2):93-99

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ปีที่ 24 ฉบับที่ 2 มี.ค.-เม.ย. 2549

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Effects of pharmacist counseling on warfarinized patients
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Objective: *To assess the effects of pharmacist counseling in warfarinized patients in Songklanagarind Hospital.*

Method: *Comparison of pre- and post-counseling services from February-September 1999. Both verbal and written reinforcement were used for counseling.*

Results: *Data were collected on 97 patients with mitral stenosis (29.9%), mitral valve replacement (43.3%), and atrial fibrillation (26.8%). The numbers of patients whose International Normalized Ratio (INR) was in the therapeutic range for each indication were not statistically different between before and after receiving counseling (p>0.05). The number of patients with subtherapeutic INRs was greater in those with mitral valve replacement than in the other groups. Minor bleeding was reported more frequently during the counseling service than the pre-counseling period (41 vs 12, p<0.05). The most common symptoms of bleeding were ecchymosis and gum bleeding. Thromboembolic events during both periods were comparable, 13 vs 15 in post-and pre-counseling periods, respectively. The most common symptoms indicating thromboembolism were paresthesia and syncope. Patients' knowledge of warfarin therapy had increased after receiving the counseling service (p<0.05). Patient satisfaction toward the counseling service was rated as good in the following areas: general satisfaction, interpersonal manner of pharmacist providing counseling, communication, and accessibility to the service.*

Conclusion: *Pharmacist counseling through verbal and written reinforcement could improve patients' knowledge of warfarin therapy, and may enable the patients to identify complications related to the therapy, particularly minor bleedings. Pharmacist counseling may not be the only factor that could affect the control of INRs and complications related to warfarin therapy.*

Key words: *warfarin, outpatients, pharmacist counseling*

บทคัดย่อ:

วัตถุประสงค์ : ศึกษาผลการให้คำแนะนำของเภสัชกรแก่ผู้ป่วยนอกที่รับประทานยาวาร์ฟารินที่โรงพยาบาลสงขลานครินทร์

วิธีการศึกษา: เปรียบเทียบผลก่อนและหลังการให้คำแนะนำกับผู้ป่วยในช่วงเดือนกุมภาพันธ์-กันยายน พ.ศ. 2542 จากค่า INR, ภาวะแทรกซ้อนจากการใช้ยาวาร์ฟาริน ได้แก่ ภาวะเลือดออก ภาวะลิ่มเลือดอุดตัน, และความพึงพอใจของผู้ป่วยต่อการให้บริการ

ผลการศึกษา: ผู้ป่วยที่ทำการศึกษาทั้งสิ้น 97 ราย เป็นผู้ป่วยโรคลิ้นไมตรัลตีบ 29 ราย (ร้อยละ 29.9) ผู้ป่วยที่ได้รับการผ่าตัดใส่ลิ้นหัวใจเทียม 42 ราย (ร้อยละ 43.3) และผู้ป่วยโรคหัวใจเต้นผิดจังหวะ 26 ราย (ร้อยละ 26.8) ค่า INR เฉลี่ยของผู้ป่วยแต่ละโรค ได้แก่ 2.56±1.05, 2.58±1.40 และ 2.49±1.27 ตามลำดับ ผลการให้คำแนะนำแก่ผู้ป่วยพบว่าสัดส่วนของค่า INR ที่อยู่ในช่วงการรักษาสำหรับแต่ละโรคก่อนและหลังได้รับคำแนะนำไม่มีความแตกต่างกันอย่างมีนัยสำคัญทางสถิติ (p>0.05) และผู้ป่วยที่ได้รับการผ่าตัดใส่ลิ้นหัวใจเทียมจะมีค่า INR ต่ำกว่าช่วงของการรักษามากกว่าโรคอื่น ๆ ภาวะเลือดออกไม่รุนแรงในช่วงที่ให้คำแนะนำมีจำนวนสูงกว่าช่วงก่อนให้คำแนะนำ (41และ 12 ครั้ง, p<0.05) อาการที่พบส่วนใหญ่ ได้แก่ จ้ำเลือดบริเวณผิวหนัง เลือดออกตามไรฟัน และประจำเดือนมามาก ส่วนอาการที่อาจบ่งชี้ว่ามีภาวะลิ่มเลือดอุดตันก่อนและหลังให้คำแนะนำมีจำนวนใกล้เคียงกันคือ 13 และ 15 ครั้ง อาการที่พบได้แก่ อาการชาตามปลายมือปลายเท้า หน้ามืด และพูดไม่ชัด ผู้ป่วยที่ได้รับคำแนะนำจะมีระดับความรู้เกี่ยวกับยาวาร์ฟารินเพิ่มขึ้นอย่างต่อเนื่อง (p<0.05) ผู้ป่วยส่วนใหญ่มีความพึงพอใจกับการให้คำแนะนำอยู่ในระดับดี ในแง่ของความพึงพอใจโดยรวม การสื่อสาร ความสะดวกสบาย ยกเว้นในแง่เวลารอรับคำแนะนำซึ่งรอนาน

สรุป: การให้คำแนะนำของเภสัชกรโดยการพูดคุยร่วมกับการแจกเอกสารให้แก่ผู้ป่วยจะช่วยเพิ่มความรู้เรื่องยาให้แก่ผู้ป่วยได้ และยังช่วยให้ผู้ป่วยสามารถสังเกตหรือปฏิบัติตนเพื่อป้องกันภาวะแทรกซ้อนจากการใช้ยาโดยเฉพาะภาวะเลือดออกไม่รุนแรงได้ อย่างไรก็ตามความรู้ที่เพิ่มขึ้นอาจไม่ใช่ปัจจัยเดียวที่ส่งผลต่อการควบคุม INR หรือภาวะแทรกซ้อนอื่น ๆ ได้

คำสำคัญ: ยาวาร์ฟาริน, ผู้ป่วยนอก, การให้คำแนะนำโดยเภสัชกร

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Introduction

Oral anticoagulants have been used widely for treatment and prevention of thromboembolic disorders. In 1982, the World Health Organization (WHO) adopted a calibration model known as the International Normalized Ratio (INR) to standardize the reporting of prothrombin time. An optimal therapeutic range for oral anticoagulant dosage was adopted by the 1995 Fifth American College of Chest Physicians (ACCP) Guidelines for Prevention and Treatment of Thrombosis.[1] An INR range of 2.0-3.0 was recommended for all indications except for mechanical heart valves in which an INR range of 2.5-3.5 was recommended.

There are some limitations of warfarin use due to its narrow therapeutic range, variable INR reporting and complications, including bleeding and thromboembolic events, that may raise barriers to treatment.[2] Pharmacokinetic and pharmacodynamic variability in patients could influence the response to warfarin. Other factors, for example changes in dietary intake of vitamin k, alcohol consumption, patient compliance, and physical activity, could also affect warfarin response.[3-4]

Pharmacist-managed anticoagulation clinic has been shown to maximize the efficacy of anticoagulation therapy, and minimize morbidity and hospitalizations related to bleeding and thromboembolism events.[5-8] Pharmacist activities have included educating the patients, obtaining medication histories, and providing therapeutic consultation to doctors.[9-14]

The objective of this study was to assess the effects of pharmacist counseling on outpatients receiving warfarin therapy at Songklanagarind Hospital.

Materials and methods

Inclusion criteria

Patients who received long term warfarin therapy during the study period of February-September 1999 were included. They must have a stable INR, which was defined as having received the same dose of warfarin for at least 3 months prior to the study. They were required to have retrospective data available and have been followed up for at least 3 times, with a period between each visit of no greater than 3 months.

Exclusion criteria

Patients lost to follow up because of death, referral to other medical services, or failure to contact, were excluded.

Process of pharmacist counseling

At the initial visit to anticoagulation clinic, the patients were invited to participate in the study. The pharmacists assessed the patients' baseline knowledge about disease and drug therapy, via verbal query. Issues of counseling included indications for and action of warfarin, blood test, how to take it, do's and don'ts, diet and vitamin K intake, drug interactions, and self-monitoring for complications. The pharmacist also monitored the physical examination and INR results. The INRs were monitored as an indicator of optimal therapy. The acceptable INR range for all indications was 2.0-3.0, except 2.5-3.5 for mitral valve replacement. At each follow up visit, the pharmacist discussed changes in therapy, if any, assessed the patients for possible bleeding symptoms, and other signs which could indicate a thromboembolic event. At the final visit, patient satisfaction was assessed with a Patient Satisfaction Questionnaire (PSQ) modified from Schommer and Kucukarslan.[15]

Data collection

Demographic data, indication, dosage and duration of warfarin, and concomitant diseases were recorded. Complications associated with warfarin therapy, both bleeding and thromboembolic events, were also noted. Bleeding symptoms were classified into major events (those causing death, cessation of therapy, or hospital admission), and minor events.

Statistical analysis

The proportion of patients whose INR was in the therapeutic range, the incidences of bleeding and/or thromboembolic events, and patients' knowledge between pre-and post-counseling service were compared. Paired t-test and cochran test were used as appropriate.

Results

Data were collected on 97 patients, 55 (56.7%) females and 42 (43.3%) males (Table 1). The mean age of patients was 46.32±13.39 years (range 19-75). The mean duration of warfarin therapy was 50.08±43.50 months (range

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15-202). The most common indications for warfarin therapy were mitral vale replacement. Some patients had a concomitant disease that might increase warfarin activity, 6 patients had congestive heart failure and 1 patient had hypothyroidism.

At each visit, the number of patients with INRs remaining in the therapeutic range for each indication was 32.0%, 33.0%, and 35.1% at the first, second and third visits, respectively (Table 2).

Table 1 Demographic data

Demographic data	No. of patients (%)
Sex	
male	42 (43.30)
female	55 (56.70)
Indication for warfarin	
Mitral valve replacement (MVR)	42 (43.30)
Mitral stenosis (MS)	29 (29.90)
Atrial fibrillation (AF)	26 (26.80)
Age (years)	
15-24	5 (5.15)
25-34	12 (12.37)
35-44	30 (30.93)
45-54	30 (30.93)
55-64	20 (20.62)
> 65	10 (10.31)
Duration of therapy (months)	
$\leq$24	39 (40.21)
25-48	27 (27.84)
49-72	12 (12.37)
73-96	5 (5.15)
97-144	7 (7.22)
$\geq$145	7 (7.22)

The mean INRs of MS, MVR, and AF patients after the third visit were 2.56±1.05, 2.58± 1.40, and 2.49±1.27, respectively (Table 3). The proportion of patient whose INRs being in the therapeutic range for each indication was not statistically different between pre-and post-counseling by Cochran tests (p=0.882) (Table 4).

The incidence and types of bleeding and thromboembolic events were shown in Tables 5 and 6, respectively. Thromboembolic events caused hospital admission in 3 patients (2 patients had cerebral embolism and 1 patient had pulmonary embolism) because of subtherapeutic INRs.

Patients' knowledge about warfarin therapy increased after each visit (Table 7). The patient satisfaction toward the pharmacy service was rated as good in the following areas: general satisfaction, pharmacist's interpersonal manner, communication, and accessibility (Table 8). The only area of dissatisfaction was that the patients felt the waiting time for counseling was too long.

Table 2 INR status of each indication at the follow up visit

INR status	No. of patients (%)		
	First visit	Second visit	Third visit
INR within therapeutic range	31 (31.96)	32 (32.99)	34 (35.05)
INR lower than therapeutic range	47 (48.45)	44 (45.36)	42 (43.30)
INR higher than therapeutic range	19 (19.59)	21 (21.65)	21 (21.65)

Table 3 Mean INR of each indication at the follow up visits

Indication	No. of patients	Mean INR ± SD			
		First visit	Second visit	Third visit	Overall
MS	29	2.61±1.23	2.43±1.10	2.62±0.81	2.56±1.05
MVR	42	2.44±1.36	2.64±1.17	2.68±1.65	2.58±1.40
AF	26	2.44±1.26	2.67±1.47	2.37±1.10	2.49±1.27

Table 4 Proportion of patients whose INR being in the therapeutic range at each visits

Visit	No. of patients (%)	
	INR out of therapeutic range	INR within therapeutic range
1	66 (68.04)	31 (31.96)
2	65 (67.01)	32 (32.99)
3	63 (64.95)	34 (35.05)
Total*	**194**	**97**

*Cochran′s Q=0.250, p=0.882

Table 5 Bleeding symptoms during the study period

Bleeding locations	No. of events	INR status		
		INR within therapeutic range	INR higher than therapeutic range	INR lower than therapeutic range
Ecchymosis	22	11	4	7
Gum bleeding	6	3	1	3
Vaginal bleeding	5	2	2	1
Hematuria	2	2	–	–
Hemorrhoidal bleeding	3	2	–	1

Table 6 Manifestations indicating thromboembolic events during the study period

Manifestations	No. of events	INR status		
		INR within herapeutic range	INR higher than therapeutic range	INR lower than therapeutic range
Paresthesia	8	2	2	4
Syncope	3	–	–	3
Slurred speech	2	–	2	–

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Table 7 Patients' knowledge about warfarin therapy at each visit

Knowledge	No. of patients responded correctly(%)		
	First visit	Second visit	Third visit
1. Warfarin			
Name of medication	18 (18.6)	35 (36.1)	53 (54.6)
Action of warfarin	56 (57.7)	72 (74.2)	88 (90.7)
How to take warfarin	92 (94.8)	95 (97.9)	97 (100)
Blood test	22 (22.7)	27 (27.8)	49 (50.5)
2. Do's and don'ts			
Forget to take warfarin	47 (48.5)	78 (80.4)	93 (95.9)
Alcohol	22 (22.7)	77 (79.4)	96 (99.0)
Diet	16 (16.5)	74 (76.3)	92 (94.8)
Self-medication	26 (26.8)	72 (74.2)	95 (97.9)
Dental surgery	34 (35.1)	73 (75.3)	94 (96.9)
3. Complications			
Bleeding	49 (50.5)	86 (88.7)	96 (99.0)
Thromboembolism	25 (25.8)	72(74.2)	86 (88.7)
4. Other			
Appointment	93 (95.9)	93 (95.9)	94 (96.9)
Warfarin card	22 (22.7)	80 (82.5)	95 (97.9)

Table 8 Patient satisfaction toward pharmacist's counseling at the final visit

Satisfaction	Mean ± SD
General satisfaction	4.33±0.61
Interpersonal manner	4.36±0.50
Communication	4.16±0.68
Time spent	3.62±0.86
Accessibility and convenience	4.14±0.68

Discussion

As can be seen in Table 3, the mean INRs for the observed indications were within therapeutic range, but the data was not distributed normally, especially in the MVR patients, and it was more useful to show median INRs in the MVR patients (2.30, 2.38 and 2.03 at the first, second, and third visits, respectively). In Thai patients with MVR, some local factors may influence the INR results, for example vegetables and beverages containing high vitamin K content, and genetics[16], and these factors may have led to lower INR results than in the normal therapeutic range recommended by the ACCP. This issue should be further evaluated. During the study period, many patients reported minor bleeding more frequently than in the pre-study period, but this may have been caused by their increased awareness through pharmacist counseling. Minor bleeding such as ecchymosis or gum bleeding can occur even when INRs remain within the therapeutic range, and do not necessarily require any dosage adjustment. The intensity of anticoagulant effect, patient characteristics, and concomitant drugs are the risk factor associated with bleeding.[17] Signs which could indicate thromboembolic events tended to occur when the INRs were lower than the therapeutic range.

From this study, pharmacist's counseling did not appear to directly affect the control of INR, which may indicate that providing knowledge to patients may not be the only factor that affects the INR. Many factors such as intensity of warfarin therapy, physical activity, and vitamin K intake could affect INR and were not controlled in this study. With increasing knowledge, patients may be able to identify the complications by themselves, and immediately contact their physician as appropriate. They also knew the risks of taking other prescription or nonprescription drugs, and the importance of compliance and their clinic visit. Several studies showed that patient compliance and improvement of warfarin therapy could be achieved if the patient have adequacy knowledge.[14, 18-19] Patient satisfaction toward pharmacy service was rated as good in many areas due to personal communication and patient's health perception. This result was in accordance with the study by Gray and Garabedian-Ruffalo.[20]

Conclusion

Counseling by a pharmacist through verbal and written reinforcement may help stable warfarinized patients improve self-monitoring for complications, and also increase the patient's knowledge of the warfarin therapy.

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