The Role of Extended Nursing on Clopidogrel Compliance in Elderly Post-percutaneous Coronary Intervention Patients with Coronary Heart Disease

FANG CHEN, XI E WANG[1] AND XIN WANG[2]*

Department of Cardiac Surgery, the Second Hospital of Shandong University, Jinan 250033, [1]Department of Surgery, Jinan Infectious Diseases Hospital, Jinan 250000, [2]The Third Department of Cardiovascular System, the Fourth People's Hospital of Jinan City, Jinan, 250031, China

Chen *et al*: The Role of Extended Nursing on Clopidogrel Compliance

The objective of the present work was to observe and analyse the effect of extended nursing on clopidogrel medication compliance in elderly post-percutaneous coronary intervention patients with coronary heart disease. This study included 180 elderly patients with coronary heart disease who received percutaneous coronary intervention in our hospital from June 2015 to March 2018. The subjects were randomly divided into the study group (90) and the reference group (90). The reference group received general routine nursing, while the study group received extended nursing. Medication compliance was compared between the two groups. Observation of overall medication compliance rate, as well as periodic review, on-time medication, appropriate exercise, dietary adjustment scores and patients' medication after 3, 6 and 12 months revealed obvious advantage of the study group over the reference group. Extended nursing applied to elderly post-percutaneous coronary intervention patients with coronary artery disease could obviously improve clopidogrel compliance and promote patient recovery through good medication behaviour. Therefore, it is worthwhile to promote and practice this nursing mode.

Key words: Extended nursing, elderly coronary heart disease, PCI, clopidogrel, medication compliance

Coronary heart disease, also known as atherosclerotic heart disease, is a very common disease in the clinic. The disease has a high incidence in recent years and the incidence keeps increasing. The main way to treat it clinically is percutaneous coronary intervention (PCI). After treatment, patients need to take various drugs such as clopidogrel[1,2]. To help patients receive best therapeutic effect and get rehabilitation as soon as possible, patients need higher medication compliance, which is the key to improving treatment efficiency and carries great significance.

Two arteries extending from the aorta root are responsible for the blood circulation of the heart itself, known as coronary arteries (fig. 1). The main cause of coronary heart disease is coronary atherosclerosis (fig. 2), but no consensus has yet been reached on the specific factors of atherosclerosis. It is generally considered to be a result of combined action of multiple factors including age, gender, family history, dyslipidemia, diabetes and hypertension[3,4]. Coronary heart disease has a long course of disease, so many patients will fail to take the medicine according to the instruction, reduce or increase medication amount arbitrarily, stop medication, during the medication, lowering the treatment effectiveness[5-6]. For the post-PCI elderly patients with coronary heart disease, it is essential to provide scientific nursing and improve clopidogrel compliance. This study is to observe the effect of extended nursing on patients' medication compliance, with report content as follows.

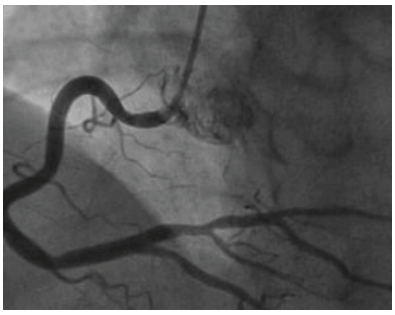

Fig. 1: Coronary angiography

The 180 post-PCI patients with coronary heart disease treated in Second Hospital of Shandong University from June 2015 to March 2018 were enrolled in the study. The image examination picture of one patient is shown in fig. 3. All patients were clinically diagnosed with coronary heart disease (fig. 3) and treated with PCI. Aged 60 y and older, the patients had an average age of 68.4±3.2 y. All patients and their families have the right to know and signed formal informed consent. The patients were randomized into study group and reference group, each with 90 cases. Where, the study group included 45 males and 45 females; the reference group included 48 males and 42 females. Comparison of relevant data of the two groups reveals comparability, $p>0.05$.

The study group and reference group were treated with different nursing schemes. The reference group only received general routine nursing. That is, after PCI, health publicity and education was given to let them master the basic disease knowledge. Also, the patients were instructed to correctly take clopidogrel drugs at 75 mg each time, once daily. On the basis of routine nursing, the study group received extended nursing with the main contents as follows.

First, special archival data were created for each patient. Basic information of each patient was registered in detail, including name, age, contact number, diagnosis result and home address, to facilitate future follow-up visits.

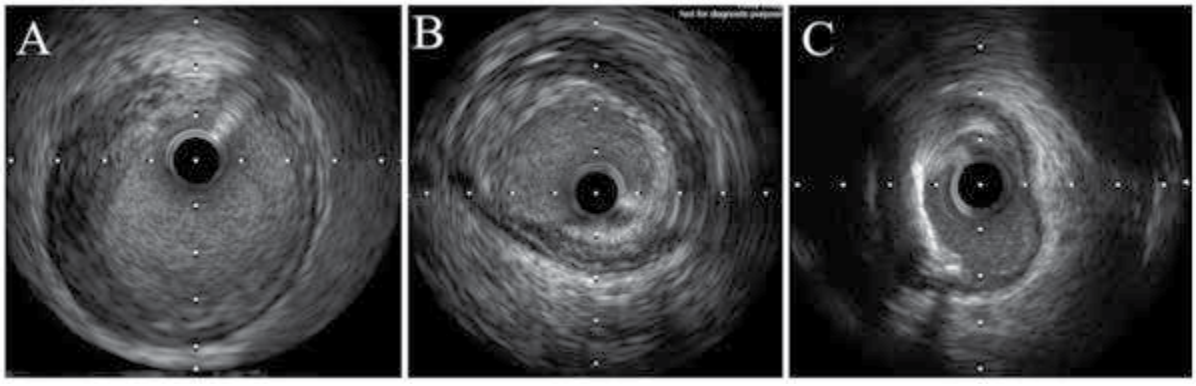

Fig. 2: Coronary atherosclerosis imaging pictures

***Address for correspondence**
E-mail: 2739681831@qq.com

Second, the nurses were grouped. Each nurse was responsible for several patients, reminding patients to take the medicine on time and by volume. SMS reminder is possible. Every week, communicate with the patient for 10 min by phone to master actual medication of the patient, and at the same time, instruct the patient to make reexamination in the hospital according to the schedule. Meanwhile, inquire about the diet, life and exercise status of each patient, make correction and provide guidance for unreasonable aspects in a timely manner.

Next, arrange a specialist to perform patient follow-up. The patient should be followed-up once a month. The follow-up personnel must conduct the return visit and record the return visit results after professional training to master good communication skills and a solid knowledge base. Finally, patients are visited at home at 3 and 6 mo and after 1 y. The visits aimed to understand patient's medication status to evaluate medication compliance.

The overall clopidogrel medication compliance was observed and counted in the 2 groups. The evaluation involved periodic review, on-time medication, appropriate exercise, and dietary adjustment. The evaluation criteria included full compliance, basic compliance, occasional compliance, and non-compliance[7]. At the same time, the patient's medication compliance rate was counted, and the length of medication time was observed in the 2 groups after discharge from the hospital.

Statistical analysis software used was SPSS21.0. Where, the measurement data was expressed as mean±SD, t was used for comparison between groups; count data was expressed by natural number (n) and percentage (%), and chi-square was used for comparison between groups. $P<0.05$ indicates statistical value.

As shown in Table 1, after the implementation of different nursing modes, comparison of length of medication time between the 2 groups showed significant advantage of the study group over the reference group $p<0.05$. As shown in Table 2, comparison of several indicators of medication compliance scores showed more significant advantage of the study group over the reference group, $p<0.05$. As shown in Table 3, comparison of the overall medication compliance rate revealed significantly higher overall medication compliance rate in the study group than in the reference group, $p<0.05$. As an important organ of the human body, the heart acts like a pump that operates endlessly. With every heart contraction, blood carrying oxygen and nutrients is transported to the whole body through the aorta to meet the histocyte metabolism needs[8-11]. The exacerbation of aging results in constantly growing population of elderly patients with coronary heart disease, which seriously impacts patients' normal quality of life, and even threatens their life safety.

At present, one effective therapeutic regimen for coronary heart disease is PCI surgery, which generally receives good results in positively improving the patient's angina pectoris, and helping improve the quality of life. However, patients are often prone to various adverse events and restenosis after such

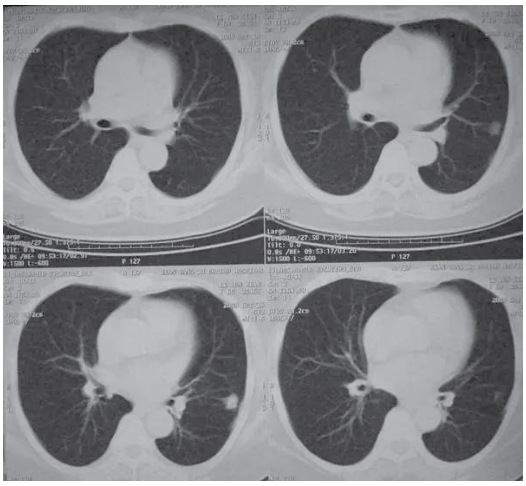

Fig. 3: Coronary heart disease imaging examination picture

TABLE 1: COMPARISON OF LENGTH OF COMPLICATION TIME BETWEEN THE TWO GROUPS

Group	Case number	3 mo	6 mo	1 y
Study group	90	88 (97.78)	83 (92.22)	78 (86.67)
Reference group	90	77 (85.56)	67 (74.44)	61 (67.78)
X^2		5.42	9.25	8.36
P		<0.05	<0.05	<0.05

n (%)

TABLE 2: COMPARISON OF MEDICATION COMPLIANCE SCORES BETWEEN THE TWO GROUPS

Group	periodic review	on-time medication	appropriate exercise	dietary adjustment
Study group (n=90)	3.68±0.42	3.69±0.29	3.58±0.35	3.84±0.28
Reference group (n=90)	2.03±0.60	2.20±0.52	2.48±0.46	2.02±0.36
t	4.28	6.03	9.36	5.05
P	<0.05	<0.05	<0.05	<0.05

TABLE 3: COMPARISON OF MEDICATION COMPLIANCE RATES BETWEEN THE TWO GROUPS

Group	Full compliance	Basic compliance	Occasional compliance	Non-compliance	Overall compliance rate
Study group (n=90)	56	20	10	4	86 (95.56)
Reference group (n=90)	20	26	22	22	68 (75.56)
X^2					9.60
P					<0.05

n (%)

operation. Therefore, patients need to take long-term antiplatelet drugs and other secondary drugs for coronary heart disease prevention to minimize the occurrence of adverse problems[12-15]. Clopidogrel is an effective antiplatelet drug that is often used in treatment of patients with coronary heart disease. Where, one key guarantee for patients to prevent and control coronary heart disease recurrence is medication compliance. Whether coronary heart disease patients accurately take clopidogrel on time is the key that affects their treatment effectiveness and quality of life.

During the actual medication of patients, many patients usually do not have good medication compliance, especially elderly patients who have low medication compliance owing to factors such as memory, cognitive competence, economy and lack of medication knowledge. This will prevent patients from getting better rehabilitation effect. Therefore, scientific extended nursing model means great significance for elderly post-PCI patients with coronary heart disease. During the implementation of extended nursing model, doctors will pay more attention to supervise patients' correct medication awareness, instruct patients on how to take the medicine, the best time to take the medicine, amount of each medication, when to return to the hospital for review, thus helping patients improve medication compliance.

According to the study results, comparison of the study group treated with extended nursing and the reference group treated with routine nursing revealed significantly higher overall medication compliance of the study group than the reference group, $p<0.05$. Evaluation of patients' scores in periodic review, on-time medication, appropriate exercise, and dietary adjustment shows obvious advantage of the study group over the reference group, $p<0.05$. Comparison of patients' medication after 3 and 6 mo and 1 y showed significant difference between the two groups, $p<0.05$. The study group has more obvious advantage. The study results fully demonstrate that application of extended nursing initiatives is effective.

In summary, implementation of scientific extended nursing program for post-PCI elderly patients with coronary heart disease can significantly improve clopidogrel compliance and cultivate good medication behavior. In addition, it wins general satisfaction of patients. Therefore, it is of great significance to extensively apply the nursing model in clinical nursing.

REFERENCES

1. Mai HZ, Shi XP, Hu QM. Effect of holistic nursing extension services on medication compliance of elderly patients with coronary heart disease after the percutaneous coronary intervention. Chin Clin Nursing 2015;7(05):393-5.
2. Wang ZC. The role of extended nursing in the treatment of clopidogrel medication compliance in post- PCI elderly patients with coronary heart disease. Strait Pharm J 2015;27(09):199-200.
3. Wang Q. Simple analysis of the effect of extended nursing on medication compliance in post-PCI elderly patients with coronary heart disease. Healthy People 2016;10(12):232-3.
4. Lutsey PL, Alonso A, Selvin E, Pankow JS, MichosErin D, Agarwal SK, *et al*. Fibro blast growth factor-23 and incidentcoronary heart disease, heartfailure, and cardiovascula rmortality: the Atherosclerosis Risk in Communities study. J Am Heart Assoc 2014;10(33):102-5.
5. Morbach C, Wagner M, Güntner S, Malsch C, Oezkur M, Wood D, *et al*. Heart failure in patients with coronary heartdisease: Prevalence, characteristics and guideline implementation-Results from the German Euro Aspire I Vcohort. BMC Cardiovasc Disor 2017;71:209-14.
6. Hyre, AD, Fox, CS, Astor, BC, Cohen, AJ, Muntner, P. The impact of reclassifying moderate ckd as a coronary heart disease risk equivalent on the number of us adults recommended lipid-lowering treatment. Am J Kidney Dis 2007;49(1):37-45.
7. Chen L, Zhou H. Study on the related factors affecting quality of life of elderly patients with coronary heart disease after percutaneous coronary intervention and the intervention effect. J Bengbu Medical College 2018;43(03):407-9.
8. Di Q, Yang J, Wang JJ, Li Ting. Effect of extended nursing on medication compliance in elderly patients with coronary heart disease after percutaneous coronary stent implantation. Chin J Clin Rational Drug Use 2016;9(32):90-1.
9. Cengiz H, Aygin D. Validity and reliability study of the Turkish version of the Postoperative Recovery Index of patients undergoing surgical intervention. Turk J Med Sci 2019;49(2):566-73.
10. Li W, Jia MX, Deng JJ, Wang JH, Lin QL, Liu C, *et al*. Isolation, genetic identification and degradation characteristics

of COD-degrading bacterial strain in slaughter wastewater. Saudi J Biol Sci 2018;12(25):1800-5.

11. Song N, Yu DS, Kang YM, Cao ZY, Yang XY, Wang J, *et al*. Negative correlation between CSF zinc level and anxiety in male Chinese subjects. Psychiatry Res 2016;246:841-3.
12. Margaret M, Debbie AL, Rita P, Ann R, Gordon L, Shah E. Associations of von Wille brand factor, fibrin D-dimer and tissue plasm in ogen activator with incident coronary heart disease: BritishWomen's Heart and Health cohort study. Eur J Cardiovasc Prev Rehabil 2007;1(45):169-73.
13. Hyvärinen M, Qiao Q, Tuomilehto J, Söderberg S, Eliasson M, Stehouwer CD. The difference between acute coronary heart disease and ischaemic stroke risk with regard to gender and age in Finnish and Swedish populations. Int J Stroke 2016;10(53):200-3.
14. Wang LP, Xu HQ, Ren WW, Zhu L, Chang YL, Gu YY, *et al*. Low serum prealbumin levels in post-stroke depression. Psychiatry Res 2016;246:149-53.
15. Xie XD, Zhou Q, Chen L, Feng B, Ji CW, Geng WX, *et al*. Aggression Differences among Non-offender, Onset-Offender, and Recidivist Migrant Youth In China. Soc Behav Personal 2017;45(4):605-16.

This article was originally published in a special issue, "Clinical and Experimental Studies on Drug and Intervention Repurposing in China
Indian J Pharm Sci 2019:81(4)spl issue1;161-165