Risks in Dispensing Kampo Medicines and Their Prevention

Sung-Joon KIM\textsuperscript{a} Chiaki OGATA\textsuperscript{a} Miyuki MIZUSAWA\textsuperscript{a}
Koji SAKATA\textsuperscript{a} Haruki YAMADA\textsuperscript{a,b} Shogo ISHINO\textsuperscript{a}
Toshihiko HANAWA\textsuperscript{a}

\textsuperscript{a}Oriental Medicine Research Center, The Kitasato Institute, 5-9-1 Shirokane, Minato-ku, Tokyo, 108-8642 Japan
\textsuperscript{b}Kitasato Institute for Life Sciences, Kitasato University, 5-9-1 Shirokane, Minato-ku, Tokyo, 108-8641 Japan

Abstract

Recently, the number of physicians using Kampo (Japanese traditional herbal) medicines has been increasing in Japan, and it is becoming more common for pharmacists to dispense Kampo medicines. As Kampo medicines become more popular, in addition to extract formulae, the use of decocting formulae that are more suited to each patient’s predisposition and symptoms has increased. Therefore, more pharmacists are dispensing such decocting formulae. However, dispensing decocting formulae can be a complicated task. The risk of dispensing errors is not small. In present paper, we examined preventive measures based on investigations of errors involving decocting formulae in our Kampo clinic. From 1990 to 1999, there were 54 cases in which errors were found after patients received their medicines, and 44 of these cases were dispensing errors. To prevent such errors, in addition to having the knowledge of Kampo medicine and medicinal herbs that is needed for dispensing decocting formulae, it is also necessary to understand the contents of the prescription. The most important preventive measures are to re-inspect the weight and contents of the prescription after preparing it, and to do a final inspection of the medicine contents with the patient. It is expected that this report will play a role in preventing dispensing errors of Kampo medicines by pharmacists.

Key words: Kampo medicine, decocted formulae, dispensing errors, risk prevention

Introduction

Recently, the number of physicians using Kampo medicines has been increasing in Japan. According to a 2001 survey, 72\% of physicians have prescribed Kampo medicines\textsuperscript{1}. It is also becoming more common for pharmacists to dispense Kampo medicines. As Kampo medicines become more popular, in addition to extract formulae, the use of decocting formulae that are more suitable to each patient’s predisposition and symptoms increased. Therefore, more pharmacists are dispensing decocting formulae.

As for dispensing errors by pharmacists, the Japanese Association of Pharmacists composed the “Manual for Pharmacies and Pharmacists to Prevent...
Dispensing Accidents" and made extensive efforts to enhance the prevention of accidents caused by dispensing errors\(^1\)\(^{-4}\). However, there is no mention in these manuals about the prevention of dispensing errors related to Kampo medicines.

As for the prevention of dispensing errors of Kampo medicines, there are points in common with western medicine, but there are also specific dispensing errors related to Kampo medicines. The dispensing of Kampo extract formulae is similar to that of western medicine, but Kampo decocting formulae dispensing is unique, and the risk of dispensing errors is not small. Currently there is almost no chance for pharmacists to get training in Kampo decocting formulae dispensing, and there are very few appropriate dispensing manuals. Given this situation, we investigated errors related to Kampo medicines at the outpatient Kampo clinic of our institute where decocting formulae are mainly used, and we examined preventive measures.

**Methods**

**Numbers of Errors**: The number of errors found after dispensing to patients from 1990 to 1999
and the incidence of errors in each year’s prescriptions were investigated.

Classification of the Errors: The types of errors over a 10-year period were classified, and the types of dispensing errors that happened most frequently were classified.

Reasons and Preventive Measures: Based on the results of investigation, the reasons and preventive measures for each particular dispensing error were examined.

*JTDN (Japanese Traditional Drug’s Name) and book titles are shown in their Japanese pronunciations.

Results

Numbers of Errors: The number of errors in the 10-year period was 54, and the incidence rate as regards prescriptions was 0.012%. The incidence rates of 1995 and 1997 were higher than in other years (Figure 1).

Types of Errors: There were 44 dispensing errors, and 10 other errors.

Classification of Dispensing Errors: The reasons for dispensing errors are classified as follows:

a. One kind of medicinal herb was left out of a decocting formulae prescription that was a combination of several kinds of medicinal herbs (11).

b. Mistakenly dispensed decocting formulae (10).

c. One kind of medicinal herb was mistakenly put into a decocting formula prescription that was a combination of several kinds of medicinal herbs (6).

d. Mistakes due to similarities in the names of medicines prescribed (6).

e. Others (11).

Reasons and Preventive Measures for Dispensing Errors: The incidence of errors was higher in 1995 and 1997 because there were many new staff members. New staff members were educated regarding Kampo medicines during their 3-month training period. The high rate of error, however, shows that it is necessary to give a more solid education to new staff members who have little experience dispensing decocting formulae.

Methods for the prevention of Kampo decocting formulae dispensing errors are similar to that of western medicines in many ways, but there are some cases in which errors occur because of reasons specific to the dispensing of decocting formulae. We checked the points where the dispensing errors happened in the decocting formulae dispensing proce-
They are C, D, F, J and K in the figure. Based on the examination of the reasons for the errors and of the preventive measures, we tried to revise the dispensing method.

C: Select the prescribed basic prescription from the Kampo formulation book, and confirm the ingredients. In some cases errors due to similarities in the name of the prescriptions happened at this point. These errors happened when mistaking prefixes such as “kami,” “bakumono,” “ho,” “sai,” “eppi,” and “shi” (Table 1). The Kampo formulation book used in Kampo pharmacy of our institute includes more than 300 prescriptions (formulae). Among these prescriptions, there are similar prescriptions (Table 2), and there are also prescriptions that have the same name but different medicinal herb ingredients due to different sources (Table 3). To prevent errors it is necessary to understand this kind of difficulty and confirm the name and source of each prescription.

D: Take out the necessary medicinal herbs and reconfirm the names and the numbers of each ingredient. In some cases errors were the result of forgetting to put in a medicinal herb at this point. We examined the name of the prescription, the number of ingredients, the name of the forgotten medicinal herb and its quantity (Table 4). Generally, this kind of error happened when the number of ingredients...
was comparatively big, the dispensing time was long, and there was an attempt to hurry. To solve this problem, an assistant pharmacist should be added to help with prescriptions that take a long time to dispense.

**F:** Confirm that the ingredients noted in the prescription are included, and if there is a mistake in the weight of one day’s dose. In the case of those prescriptions for which one day’s dose is heavy, it is hard to discover at the time of the final weight confirmation if a small amount of medicinal herbs were forgotten.

**J:** The pharmacist who is in charge does the final check of the medicine’s history, prescription, the contents of prescription, weight, number, and the way of decocting. At this point, if the inspection of the contents and the weight of the medicinal herbs are not thorough, errors may occur. F and J show that it is necessary to carefully confirm the ingredients. We showed the existing procedure for dispensing decocting formulae. Based on the results of this research, the following dispensing inspection should be added to prevent dispensing errors.

**H:** After packing the decocting formulae, check the contents and weight of each bag.

**K:** After inspection, show the contents of the decocting formulae to the patient. If the prescription has been previously given, check for mistakes in the
contents of the medicinal herbs. If the prescription is different from before, explain the difference, i.e., whether the ingredients were changed or the basic prescription was changed. The pharmacist should do the final confirmation of the decocting formulae with the patient together.

Discussion

Above we showed the measures for preventing dispensing errors during the dispensing procedure. However, to prevent dispensing errors it is necessary to have knowledge of Kampo medicine and herbs, and to understand the composition of the formulae. In other words, one must have a basic knowledge of Kampo medicine to understand the purpose of each formula.

The most essential basic knowledge for dispensing decocting formulae is to know the morphologies and colors of medicinal herbs. The morphologies and colors of medicinal herbs used in decocting formulae have their own features. This can be readily observed when medicinal herbs not included in the prescription are mixed in. A decocting formula that consists of various medicinal herbs can also be viewed as a pattern. At the inspection after the final dispensing it is possible to prevent errors by rechecking the prescription and confirming the medicinal herbs added to or removed from the basic prescription.

Hereinbefore, we investigated the dispensing errors during the dispensing procedure. However, to prevent dispensing errors it is necessary to have knowledge of Kampo medicine and herbs, and to understand the composition of the formulae. In other words, one must have a basic knowledge of Kampo medicine to understand the purpose of each formula.

The most essential basic knowledge for dispensing decocting formulae is to know the morphologies and colors of medicinal herbs. The morphologies and colors of medicinal herbs used in decocting formulae have their own features. This can be readily observed when medicinal herbs not included in the prescription are mixed in. A decocting formula that consists of various medicinal herbs can also be viewed as a pattern. At the inspection after the final dispensing it is possible to prevent errors by rechecking the prescription and confirming the medicinal herbs added to or removed from the basic prescription.

Hereinbefore, we investigated the dispensing errors during the dispensing procedure. However, to prevent dispensing errors it is necessary to have knowledge of Kampo medicine and herbs, and to understand the composition of the formulae. In other words, one must have a basic knowledge of Kampo medicine to understand the purpose of each formula.
Errors that occur in Kampo medicines, and reviewed dispensing procedures. The recommend improvement for preventing dispensing errors of decocting formulae was rechecking each package’s contents and weight after the decocting formulae was packed. Unlike the pills and capsules of Western medicine, the contents of decocting formulae are not inspected ahead of time. That is why it is important to inspect the ingredients. For this reason, decocting formulae should not be wrapped like tea packs, but in clear plastic bags that allow inspection of the contents. Due to these improvements, during the four-year period from 2000 to 2003 only 5 errors occurred. The average number of errors for each year decreased from 5.4 to 1.25, and the incidence of errors was vastly decreased from 0.012% to 0.004%.

From 2004, many medical schools and universities started education in Kampo medicine. Pharmaceutical schools also started improving education in Kampo medicine. For this reason, it can be forecast that Kampo medicines will become more and more important in contemporary medical services, and the chances for pharmacists to dispense Kampo medicines will continue to increase. It can be expected that this report will be helpful for preventing dispensing errors of Kampo medicines by pharmacists.

References
5) The Kampo formulation book : Oriental Medicine Research Center, the Kitasato Institute, 2003