Research on medication in the geriatric health services facility

【Abstracts】

[Background]

” Research on Appropriate Medical Services for the Elderly” under the Health Labor Sciences Research Grant（Comprehensive Research on Aging and Health）clarified that since the elderly may have multiple chronic conditions or symptoms from the geriatric syndrome, they have risks of adverse drug interactions and nonadherence to medication due to polypharmacy. Therefore, it has an obligation to take appropriate measures for the use of medicine, such as reducing the number of lower priority drugs.

On the other hand, the Association of Geriatric Health Services Facility in Japan currently provides courses on polypharmacy and appropriate drug use. We hoped that those lectures would make physicians aware of the situation on polypharmacy, duplicate medication errors and adverse drug interactions among the elderly in geriatric health care facilities (Roken). In other words, we thought that the problems caused by polypharmacy could be solved while the patients stayed at a geriatric health service facility.

Professionals working in Roken obtain information regarding polypharmacy, duplicate medication errors and the adverse drug reactions of patients at the time of their entrance. The symptoms of the patients improve during their stay at facilities by adequate treatment and rehabilitation. Change of the care environment such as improvement in diet and temperature as well as the patients' adherence to medication facilitates alleviating symptoms as well. All of which results in the reduction of their medication.

In some cases, the elderly require additional medication when they have a new diagnosis of diseases or syndromes at the facility. Pain control especially is vital for the improvement of QOL in the elderly and to encourage them to participate in rehabilitation activities. However, there are only a few facilities using the pain control manual and its standardized assessment scale for conducting entrance and regular pain assessments, especially regarding control of pain brought about by cancer. Better medication in all helps to improve patients' quality of life.

[Purpose]

The primary aim of this study is to understand the current prescription pattern in the geriatric health care facilities. The second objective is to measure changes in the prescription after the admission to geriatric facilities. The third is to examine the appropriateness of their medication from a viewpoint of geriatric medicine, especially regarding the medicines often used in polypharmacy,

This study also focused on the psychotropic drugs such as sleep medication and hypotensive drugs, as well as antithrombotic medication (anticoagulant, antiplatelet), diabetic medication.

Through surveying and analyzing the contents of medication and reasons for the change in medication at the facility, we were able to examine how the doctors of geriatric health service facilities manage medications and their consequence.

[Method]

By using a questionnaire survey and obtaining copies of medical prescriptions, we collected the information relating to the prescription of the patients at the time of entrance to the facility and just before returning home.

For this purpose, we developed a software program to standardize the medicine names in the questionnaire that enables us to match the data to Standard Simplified Pharmaceutical Pricing Chart (Drug Master database).

[Result]

The number of the doctors responded was 770, and their average age was 68.2, with the average length of being employed in the geriatric health service facilities was 7.8 years.

In this survey, 42.1% of the doctors reconsidered all of the patient's medication at the facilities and 40.0% of the doctors revised medications for certain cases. In total, about 80% of the doctors reconsidered the patient's medication. Only 1.7% of the physicians responded that they do not reconsider. The physician amended the use of hypotensive drugs most frequently; 55.1%. On the other hand, antiplatelet and anticoagulant had a relatively lower rate of reconsideration. Moreover, 20.8% of the doctors answered that they write the reasons for the reduction of medicine in the patient referral documents for all related cases when the patients return home, whereas 20.4% hardly ever did this.

In the survey of the facility patients, we obtained the data from 1,375 cases with the average age of 84.9 years old. Their prime location before entering the facilities was the local hospital and second to that was home. The place to where patients returned to after the facility was home. Regarding the results according to the chronic condition, high blood pressure was most common, with 56.8% followed by Alzheimer dementia (30.3%), cerebral infarction (28.5%), diabetes (16.9%) and atrial fibrillation (11.9%).

Regarding matching between medicine taken by the patients and the medicine database, in cases using only original data, 47.7% were matched. However, this figure achieved 94.5% utilizing the newly developed software.

The average number of medicine types was 5.89 at the time of admission to the facility. One month after it reduced to 5.05, and two months after, it showed a slight increase to 5.35. The rate of generic medicine use showed a constant increase; 46.6% at the time of entrance, 52.8% after a month, 57.8% after two months.

Regarding the average total price of the surveyed medicine (the result did not reflect the frequency of taking medicine), decreasing after one month and then slightly increasing later; 326.9 yen on admission, 207.4 yen, a month after and 220.1 yen two months after. Regarding the average price of medicine according to the chronic conditions, in the case of diabetes and atrial fibrillation, the price decreased both at one and two months after entrance. With Alzheimer's disease and high blood pressure, the cost of medication reduced during the first month and then increased slightly during the second month. These different trends for different ailments, seem to be due to doctors reconsidering medication depending on the health problems of their patients.

The rate of adverse drug reactions caused by increased medication while the patients were staying at the facilities, was 3.4% during the first month and 3.9% during the second month. And in the case of decreased medicine, 4.7% and 3.1% during the first and second month respectfully.
Regarding side effects of the increased medicine according to each chronic conditions, atrial fibrillation showed a relatively higher rate of adverse reactions with 21.7% for the first month and 13.5% for the second month. The most adverse events recorded at the facilities were falls and delirium. However, these events

might not be directly caused by medication.

[Conclusion]
It is well known that the occurrence of various adverse drug reactions is higher if the elderly take more than six medications. As a trial to reduce polypharmacy and duplicate medications, the Japan Geriatrics Society has started a training program for doctors working at geriatric health service facilities since 2012. Moreover, the Society has issued the "Safe Medical Treatment Guideline for the Elderly" in Autumn 2015.

This research showed that physicians at geriatric health service facilities are actively trying to reduce the amount of medication. The average number of drug types was 5.9 at the time of entrance to the facility, and after one month from the date of admission had reduced to 5.1, however, two months after, it slightly increased to 5.4. This increase indicated that patients received treatment according to the patient's symptoms. On the other hand, the use rate of generic medicine showed a constant increase after admission. Although the analysis of medication costs was not precise in this report, we could at least understand the pattern: a decrease in the first month, and the slight increase in the second month. Moreover, some chronic conditions showed the changed pattern. These data asserted that the supervising doctors of the facilities are controlling the content and amount of medication depending on the situation of each patient.

Adverse drug reactions, caused by increases in medication was 3-4%. And for decreases in medication, it was also 3-4%. The most reported adverse events at the facilities were falls and delirium. However, these events are not necessarily caused by medication. Even so, this study showed the ability to observe and report adverse drug reactions caused by changes in medication at the facilities. Therefore, we considered that controlling the type and amount of medicines can be reduced more safely during the patients' stay at the facilities.
About 20% of the doctors did not inform of the change in medication to the family physicians for their patients, which might cause an increase in medication again. Therefore, there is room for improvement regarding information sharing between facility physicians and home doctors.

There are a few limitations to this study. The analysis period was relatively short,

and we could not perform adequate data cleaning, and many problems remain. For example, this study could not reflect the frequency of medication the calculation of medicine costs was not complete. The effects of increase and decrease in medication were not analyzed according to symptoms and types of medicine. Moreover, how the doctor's participation in the courses and their experiences can benefit the situation has not been discussed yet. These will be treated in the future. We can expect that patients recover faster and shorten their stay at the facilities by shifting from polypharmacy to control appropriate medications. However, we did not track their returning home in this survey. Therefore, investigation regarding medication after the patient's return home or regarding follow-up in collaboration between the facilities and family doctors are subjects for the future.

Even so, we could improve the precision of data analysis based on prescriptions, and perform matching of over 90% of the prescriptions, which is a significant improvement from less than half. As a result, we could clarify the reduction patterns of medication by the supervising doctors of the facilities. Also, we could make it clear that geriatric health service facilities play a significant role regarding duplicate medications and polypharmacy. From a macroscopic viewpoint, physicians working in the Roken can reduce medication costs for the patients during their stay at Roken.

Proposals

1. It is said that the occurrence rate of adverse drug reactions will be higher if the elderly take drugs of over 6 types. While their staying at geriatric health service facilities, the average number of drug types will be reduced from about 6 to 5.
2. It is easier to observe adverse drug reactions in geriatric health service facilities.
3. However, medication increases again after returning home. Moreover, some doctors don't pass on enough information about the changes in the medication of the patients to the family physicians. Training for the roken physicians and improvement in their reporting methods are required.
4. To realize the above objectives, we hope that the training for supervising doctors

of Roken provided by the Japan Geriatrics Society will become better known and appreciated.

5. Since the changes of reduction in medications and replacement to generic medicine influence　medicine costs, decrease in medical costs can be expected.