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Report

The Cases on the Application of Touch Panel Type Screening Check for Early Detection of Dementia Conducted at a Community Pharmacy Near a Community Medical Hospital to an Advanced Treatment Hospital

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The purpose of this study is to construct the consultation system based on the touch panel type screening check for dementia (TPCD) results from a pharmacy to psychiatric specialists at an advanced treatment hospital, and to evaluate the effectiveness of resulting in dementia diagnosis. We herein report three cases that demonstrate the significance of TPCD in the course of study. Cases 1 was successful case from a 78-year-old man in which pharmacists recommended individuals scored 11 on the TPCD to visit psychiatrists at Fukuoka University Hospital, an advanced medical hospital, based on the results of TPCD. He was practically diagnosed with mild cognitive impairment (MCI). Cases 2 was partially successful case from a 78-year-old woman. Her TPCD score resulted only 9. The pharmacist effectively utilized tracing report to notify the patient's cardiologist about the results of the TPCD performed at the pharmacy as she wished. On the other hand, Case 3 showed that patient whose TPCD score resulted 2 could receive no treatment due to advanced stage of dementia despite our consulting with family doctor based on the TPCD scores. These cases suggest that the pharmacy near an advanced medical hospital should play a role to provide accessibility between the patients with suspected dementia and psychiatric specialists and make opportunities to consult specialists earlier before progressing towards a dementia following MCI collaborated with community interprofessionals.

Key words touch panel screening check for dementia, family doctor, advanced medical hospital

INTRODUCTION

In Japan, the population of patients with dementia is growing every year. The Ministry of Health, Labor and Welfare has reported that the number of elderly people with dementia is now estimated to be 4.62 million, which amounts to 8.46 million people with mild cognitive impairment (MCI). The Comprehensive Strategy to Accelerate Dementia Measures (New Orange Plan) encourages pharmacists to contribute to the early detection of suspected dementia and to care for them in cooperation with their family doctors.¹) Recent report from Black *et al.* concerned the interval between the first consultation with their family doctors and formal diagnosis with dementia after visits to neurology specialists is more than three months in Japan.²)

We have already practiced the early detection of suspected dementia using a touch panel screening check for dementia (TPCD) in a community pharmacy in collaboration with family doctors and community interprofessionals in Kurashiki City.^{3,4)} TPCD is a simple procedure that does not require specific techniques or experience, and requires a short examination time of less than four minutes. The TPCD uses a semiquantitative scale, which makes it easy for participants to understand. Our study suggests that TPCD is an effective tool for dementia screening by pharmacists and access to psychiatric specialists. In this clinical study, we challenged to set out to apply the TPCD to a pharmacy near an advanced treatment hospital. We tried to construct the consultation system based on the TPCD results from a pharmacy to psychiatric specialists at an advanced treatment hospital, and to evaluate the effectiveness of resulting in dementia diagnosis in this study. We herein report three cases that demonstrate the significance of TPCD in the course of study.

METHODS

This our clinical study was approved by the Ethics Committee of Fukuoka University (2017M179) and the Fukuoka Pharmaceutical Association (2018.003). The study was performed in accordance with the ethical standards laid down in the Declaration of Helsinki. Informed consent was obtained from all participants before the inclusion in this study.

To evaluate the cognitive function of participants, we



Fig. 1. The Flowchart of Results for the Touch-Panel Screening Check for Dementia of the 81 Participants

The touch panel screening check for dementia (TPCD) was performed on 81 people (33 men). One was excluded because of agreement withdrawal, and another was excluded because he had already been under treatment for dementia at another clinic. Of the 79 participants who underwent the TPCD, 17 (21.5%, eight men) were suspected of having dementia and were it was recommended to consult the psychiatric specialists, FU-Hospital. Two participants visited psychiatric specialists at FU-Hospital and were diagnosed with mild cognitive impairment (MCI). Four participants consulted with their family doctors but had not visited psychiatric specialists. Eleven participants refused consultation at the FU-Hospital.

scored immediate and recent memories of words, time orientation, and figure recognition using the Forgetfulness Consultation Program MSP-1100 (Nihon Kohden, Tokyo).5) When the score was 12 or less out of 15 points, participants were suspected to have dementia with a sensitivity of 96% and specificity of 97%.⁴⁾ Unlike the Mini Mental State Examination and Hasegawa Dementia Scale-Revised often used in clinical setting, the TPCD do not require an operator and can be administered in a short period.⁵) The participants with scored 12 or less out of 15 points was recommended psychiatric consultation at Fukuoka University Hospital (FU-Hospital). On the next visit to Fukuoka City Pharmaceutical Association pharmacy in Nanakuma (N-Pharmacy), the participants or their families were asked whether they had received consultation with psychiatric specialists at FU-Hospital. The recommendation of psychiatric consultation based on TPCD results had been prearranged between N-pharmacy and psychiatric specialists at FU-Hospital in our clinical study. We also could inquire about the results of diagnosis, within that arrangement. Data on participant characteristics were obtained from the medical chart of FU-Hospital and the drug history book of N-Pharmacy. A definite diagnosis was confirmed using the medical chart of FU-Hospital.

Our cases include adult visitors to the N-Pharmacy near the FU-Hospital that is an advanced treatment hospital in Fukuoka City from January 17, 2019, to January 16, 2020. The 81 adult individuals were prospectively registered, who visited N-Pharmacy and satisfied the following inclusion criteria; (1) individuals who voluntarily request a TPCD after reading the poster/leaflet in the pharmacy: (2) individuals or their family complained of forgetfulness or dementia during the first interview or medication instruction: and (3) individuals who were considered in need of a dementia check during the first interview or medication instruction (Fig. 1). Exclusion criteria were individuals already diagnosed with dementia, and fail to understand how to operate the TPCD device.

RESULTS

Case 1: A 78-year-old man who had visited the Respiratory medicine and Otorhinolaryngology department at FU-Hospital for the treatment of bronchopulmonary aspergillosis, then received prescriptions from both departments and came to N-Pharmacy. He took the TPCD encouraged by his wife. Consequently, we concluded that he should be provided a psychiatric consultation because he scored only 11 on the TPCD. Among his symptoms, his chief complaint was forgetfulness. He immediately forgot what he was talking about and asked the same question repeatedly. In addition, poor self-management of his medicine often led to forgetting the medication or incorrect medicine taking. We contacted the psychiatric physician at FU-Hospital, and set up an appointment for his getting psychiatric consultation.

Finally, he was diagnosed as the MCI at the FU-Hospital Psychiatric department (Fig. 2). The Hasegawa Dementia Scale–Revised was scored 18 out of 30, and the Mini Mental State Examination was scored 23 out of 30. Brain computed tomography (CT) or magnetic resonance imaging showed bilateral parietal lobe atrophy and mild hippocampal atrophy. Cerebral blood flow SPECT showed decreased blood flow in the bilateral parietal lobe. The treatment was to follow up on cognitive function on a regular basis, as it could develop into Alzheimer's disease in the future. At the pharmacy, we followed up if he had any problems in daily life due to his forgetfulness everytime he visited the pharmacy. The problem of incorrect medicine taking was solved by one-dose packaging.

Case 2: A 78-year-old woman who visited the Cardiology department at FU-Hospital and came to N-pharmacy to receive the prescribed medicines with her son. The purpose of visiting the Cardiology department was to receive periodical examination of congestive heart failure and aortic regurgitation. Her medical history included a right breast tumor and type 2 diabetes. During the pharmacy interview, we recommended her TPCD because the son was very worried about her critical forgetfulness. Her TPCD score resulted 9. Even though



Fig. 2. The Medical Diagnostic Evaluation for the Patient Shown in Case 1

The left panel shows an original text of medical diagnostic evaluation for the patient shown in Case 1 from psychiatric specialist in FU-Hospital. The right panel shows the points of evaluation in English. CT; computed tomography: MRI; magnetic resonance imaging: VSRAD; Voxel-base specific regional analysis system for Alzheimer's disease.

we recommended to getting psychiatric consultation, they first wanted to consult her reliable cardiology doctor rather than psychiatric doctor. However, we found that they could not themselves consult anything. Therefore, we reported her TPCD results to her cardiology doctor using tracing-report with her approval. The cardiology doctor replied that he would carefully continue to observe her cognitive function. At the pharmacy, her son bought a medication calendar to help her correctly taking the medicine. We also followed up her medicine taking situation and forgetfulness.

Case 3: An 82-year-old man visited the N-Pharmacy with his wife. He visited the Ophthalmology department of FU-Hospital to treat dry eye symptom with a referral from his family doctor. He had a history of strokes and was treated by his family doctor for chronic kidney disease, hypertension, and benign prostatic hyperplasia. His wife consulted with the pharmacist about her husband's serious forgetfulness. His TPCD score resulted 2. Because his wife did not wish to contact a psychiatric doctor, we consulted with his family doctor about the TPCD results and his suspected dementia. However, his family doctor did not treat his dementia because there is no effective treatment for his current dementia condition. Thus, we followed up his forgetfulness and medicine taking. However, he left out our follow-ups since he was transferred to his family doctor.

DISCUSSION

In this study, we performed a simple screening for dementia at a community pharmacy near an advanced medical hospital. We detected suspected dementia in 17 (21.5%) of the 79 participants (Fig. 1). Among them, two cases successfully achieved the diagnosis of dementia by psychiatric specialists at FU-Hospital, and four other cases consulted their family doctors instead of visiting psychiatric specialists.

The reason why only two patients visiting FU-Hospital can

be considered that many of the patients have their own family doctor other than FU-Hospital. Our previous study in Kurashiki city resulted that most of the participants recommended visiting family doctor have utilized the hospital near our pharmacy as their family hospital.^{3,4}) On the contrary, the data from Fukuoka city resulted that 74 of the 79 participants have their family doctor other than FU-Hospital (data not shown). Some of them actually desired to prioritize only the treatment of their current disease in advanced treatment hospital. Thus, we should have encouraged the patients with suspected dementia to consult their family doctors at first, rather than recommending to visit psychiatric specialist.

Utilizing tracing report system to communicate the TPCD results is promised to be an effective tool. In addition, considering the problems in unsuccessful cases, it is suggested that a strengthening of cooperation among geriatric care managers, health nurses, and nursing care and welfare officers in the communities, in addition to those with family doctors and psychiatric specialists is certainly required.

The importance for community-based integrated care system in urban areas in Japan has been raised awareness for a while.⁶⁾ We have successfully practiced the early detection of suspected dementia using a TPCD in a community pharmacy in collaboration with family doctors and community interprofessionals in Kurashiki City.^{3,4)} Therefore, we are certain that the community pharmacy near an advanced medical hospital should close the gap by improving access to specialists and own family doctors to make opportunities to consult specialists earlier before progressing towards a dementia following MCI collaborated with community interprofessionals.

There are some limitations in this study. First, this was a single-center study with a small number of participants. Next, the selection bias may exist because most participants were patients from FU-Hospital, an advanced treatment hospital. We envision to proceed this study to multicenter study to demonstrate how pharmacy pharmacists should be involved in cooperation between family doctors and psychiatric specialists for the early detection of dementia in urban areas in Japan.

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