学 位 論 文 の 要 旨

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学　位　論　文　名	Diagnostic Difficulties and Factors Affecting Diagnosis in Acutely Ill Elderly Japanese Patients Living at Home
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論 文 内 容 の 要 旨

INTRODUCTION

The increase of the aged population is an urgent problem in Japan. The Japanese government has promoted home visits rather than inpatient admissions, to cope with this growing pressure on medical resources. In the Japanese health system, physicians need to consult elderly patients in their own homes or residential care twice monthly. If patients have acutely ill conditions, urgent consultations or emergency hospital admissions can be arranged. As morbidity and mortality from infections, adverse effects of drugs, and other complications are greater in the elderly, physicians must often make prompt diagnoses and manage them appropriately. However, deciding whether to admit patients can be difficult under the limited diagnostic tools available at a home visit. Functional disability, polypharmacy, lowered immunity, and other physiological decline may highlight the difficulty. On the other hand, hospitalization is a known risk factor for functional decline and other health problems in the elderly, unnecessary hospitalization should be avoided.

Pretest probability is an important element when physicians make a clinical decision. Information on incidence and prevalence of a disease and consideration of the risk factors are critical matters to improve diagnostic accuracy. We carried out a retrospective survey using the medical records of elderly patients hospitalized as emergencies, and considered the clinical significance of our findings.

MATERIALS AND METHODS

The study was conducted in a clinic providing primary-care home visits in a rural area of Okayama, Japan. The clinic was an outpatient family-medicine center with three to six doctors,

including family medicine residents. We reviewed medical records of patients receiving medical care in their own homes or care homes who were emergently admitted to hospital due to acute illness between January 1, 2011 and December 31, 2012. We defined emergency hospitalization as admission to the hospital within four days after additional home visits by primary-care physicians. We collected and analyzed data on age, sex, number of medications, physician's clinical experience, number of days between home visit and hospitalization, proportion of patients who returned home three months after admission to the hospital, whether patients lived alone or with family members, place of residence (own home or care home), activities of daily living (ADL), care need level according to the Japanese long-term-care insurance system, Charlson Comorbidity Index (CCI), updated CCI, catheterization (gastrostomy and/or urinary catheter), nutritional status (last serum albumin level in the six months prior to hospitalization), initial diagnosis, final diagnosis, history of pneumonia, hospitalization within the previous year, history of gastrointestinal disease (peptic ulcer disease, biliary calculus, or hepatitis), and history of cardiovascular disease (cerebrovascular disease, congestive heart failure, myocardial infarction, or peripheral vascular disease). In all patients, the initial diagnosis was defined as the diagnosis recorded in the medical records which includes a medical history, a physical examination, simple blood tests (complete blood count [CBC], C-reactive protein [CRP] and blood glucose levels), urine analysis, and electrocardiogram. The final diagnosis was defined as the diagnosis made in secondary or tertiary medical facilities. Diagnoses were classified according to the International Classification of Diseases, 10th Revision (ICD-10); the initial diagnosis was judged accurate when the initial and final diagnoses were the same, or when the same differential diagnoses were included in both initial and final diagnoses.

The study protocol was approved by the Ethics Committee of Shimane University. This Ethics Committee judged all participants were presumed to consent unless they contacted the study group to opt out and the requirement for written informed consent is waived because the study is retrospective.

RESULTS AND DISCUSSION

A total of 591 encounters were extra domiciliary visits. A total of eight primary-care physicians participated in the study. In total, 81 encounters resulted in patients' admission to the hospital within four days of the initial home visit. Cases where the final diagnosis was not known (n=4) were excluded, leaving 77 cases were eligible for this study. Patients were from 57 to 101 years old (mean age: 85±8.5 years). Primary reasons for emergency admission were pneumonia (n=28) followed by calculus of bile duct with cholangitis (n=5). Initial diagnostic accuracy was 80% (24/30) for respiratory diseases and 33.3% (6/18) for gastrointestinal diseases. There was a significant difference in diagnostic accuracy between respiratory diseases and gastrointestinal

diseases, and other diseases. The number of medications was associated with significantly low initial diagnostic accuracy (p=0.013 for trend); the median value was nine in the incorrect and six in the correct diagnosis groups. Significantly low initial diagnostic accuracy was found with patients taking eight or more medications (43% diagnostic accuracy with ≥8 medications, 74% in <8 medications; p=0.006). We did not find any association between the number of medications (≥8 medications) and updated CCI score, but there was a significant positive association with history of cardiovascular disease (p<0.001). We also found a significant association between patients taking eight or more medications and low initial diagnostic accuracy on multivariable logistic regression analysis.

Diagnostic accuracy of abdominal conditions is noted to be lower in the elderly, and as high as 40% of elderly patients with acute abdominal conditions have been reported as misdiagnosed. Our study also found that it became more difficult to reach an early, accurate diagnosis in elderly patients who were taking eight or more medications, even though they were more severely ill. There was a significant association between taking eight or more medications and history of cardiovascular disease because these patients tend to take more medications, which are usually difficult to reduce because of their importance in disease control. Although history of cardiovascular diseases was not directly related with poor diagnostic accuracy in our study, these patients take more medications, which may mask other conditions. Our study showed "taking eight or more medications" had a greater impact on accurate diagnosis than any other comorbidity in the patient's medical history.

Our study has several limitations including a retrospective study using medical records, the quality of the medical records depended on each physician, other drugs information such as alternative medicines or over-the-counter drugs is not sufficiently evaluated, and small number of patients at one medical facility.

CONCLUSION

Respiratory diseases, followed by gastrointestinal diseases, were the primary reasons for emergency hospital admissions in the elderly patients living at home and unable to visit medical facilities. Low initial diagnostic accuracy related with taking eight or more medications, possibly because signs of the disease were either masked or unusual. The number of medications was mainly dependent on past history of cardiovascular diseases. We recommend that primary care physicians pay close attention to subtle symptoms and offer prudent follow-up, consider the possibility of gastrointestinal diseases, and take into account polypharmacy and history of cardiovascular disease when making a diagnosis involving an acute change in an elderly patient.