学 位 論 文 の 要 旨

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論 文 内 容 の 要 旨

INTRODUCTION

The increase in the number of elderly requiring care in this super-aging society prompted Japanese officials to establish a long-term care insurance system in 2000. The number of individuals certified under this insurance system has tremendously increased since 2000. In particular, elderly requiring support was almost 26% of those under long-term care insurance. The care services provided to the elderly requiring support are called preventive care services. The aim of care services for the elderly requiring support is to improve the functioning and activities of daily living (ADL), rather than simply to alleviating the burden on care. However, it has been pointed out that while appropriate preventive care services are effective at maintaining and improving ADL, overuse of these services can lead to deterioration in ADL.

Frailty is associated with characteristics such as fall, gait difficulty, mild depression, being homebound and malnutrition, and these associated characteristics have received attention as factors necessitating support for the elderly. Frailty is present in 4%-27% of the elderly living at home and has been related to death due to sarcopenia, deterioration in ADL, and other causes. Therefore, it is important to elucidate the relationship between frailty, mortality, and the required level of care in the elderly requiring support; it is also important to improve the content of care services on the basis of this knowledge.

Therefore, in this study we aimed to elucidate the relationship between frailty, mortality and required level of care by conducting a prospective survey over a 4-year period targeting the elderly requiring support and independent elderly people matched for sex and age.

MATERIALS AND METHODS

We conducted a baseline survey of disease, lifestyle, and frailty in 75 elderly requiring

support newly certified as requiring support at levels 1 or 2 (the support level group) and 75 independent elderly people (the independent group). The independent group was matched for age, sex and residential area of the people to the support level group by Unnan city. We determined the mortality and required level of care (the support level group, n = 60; the independent group, n = 62) for four years. Trained public health nurses conducted the baseline survey in August 2007 through the interview at each subject's home. During the 4-year follow-up period, there were a total of 28 dropouts: 15 subjects in the support level group and 13 subjects in the independent group. Follow-up rate at 5 years was 80.0% for the support level group and 82.7% for the independent group.

The survey covered information regarding the following: sex, age, long-term care insurance certification, disease (current and previous history of hypertension, heart disease, dementia, fracture, and knee osteoarthritis), lifestyle (physical activity, smoking, and drinking) and frailty (fall, gait difficulty, mild depression, homebound, and malnutrition). The outcome variables were death and deterioration in the required level of care after four years. Information regarding time of death was collected from long-term care insurance certification information held by the Unnan Wide Area Union.

Fisher's exact probability test was used to compare the characteristics of the support level group and the independent group at baseline and follow-up. We used a prospective cohort study design to investigate death and deterioration in the required level of care after four years separately for each group. Odds ratios (OR) and 95% confidence intervals (CI) were then calculated using bivariate logistic regression analysis (stepwise, backward conditional) to analyses independent correlations between frailty at baseline, death and deterioration in the required level of care after four years, adjusted with sex, age, disease, and lifestyle.

RESULTS AND DISCUSSION

At the baseline, a comparison of the characteristics of the support level group and the independent group found no statistically significant regarding the differences between sex, age, current and previous history of heart disease and hypertension, physical activity, smoking, BMI, and fall. However, the support level group had significantly more frailty-related characteristics than the independent group. Gait difficulty, mild depression, and homebound were significantly higher in the support group than that those in the independent group.

With regard to deterioration in the required level of care, the number of individuals in the support level group was significantly higher [nine individuals (20.9%)] than the independent group [one individual (1.9%)], with $p = 0.004$ and OR = 14.03 (95% CI: 1.70–115.76). Regarding death, the percentage of individuals who died [seven (28.3%)] in the support level

group was significantly higher than the percentage of individuals [eight (12.9%)] in the independent group, and the OR was 2.67 (95% CI: 1.05–6.77). Previous research has shown that the risk of death and deterioration in the required level of care increases in the elderly as the required level of support increases, and that the elderly requiring support tend to have a higher mortality rate than the independent elderly. Furthermore, our study further demonstrated that death and deterioration in required level of care are more likely to occur for the requiring level of care in the elderly with mild impairments requiring daily care for only short periods of time as demonstrated by the long-term care insurance criteria.

In the support level group, death was significantly correlated with being aged ≥ 75-years (OR = 20.19), falls (OR = 4.82), sex (male; OR = 4.57) and no physical exercise (OR = 3.34). In the independent group, death was significantly correlated with smoking (OR = 52.50) and gait difficulty (OR = 8.24). The characteristics of frailty that were risk factors resulting in death were fall and gait difficulty in the support level and the independent groups, respectively. Because exercise habits, fall risk, and incidence of fractures and knee osteoarthritis were similar in both the support level and the independent groups, the gradual decline in walking ability with age was a problem persistent in individuals of both subject groups. Because of the decline in walking ability and instrumental activities of daily living (IADL) the elderly also tend to miss out on opportunities to participate in leisure activities and other aspects of social life. In particular, the elderly requiring support are often housebound and depressive. For the elderly, the support and the independence group will maintain functional ADL, and they require social or leisure activities that promote the maintenance of walking ability.

Deterioration in the required level of care in the support level group was significantly correlated with sex (male; OR = 75.45) and malnutrition (subjects with BMI < 18.5; OR = 29.62). Thus, malnutrition and body weight decrease lead to impairments in leg function and are effective predictors of death. Therefore, improving nutrition to prevent malnutrition is an important frailty prevention strategy for the elderly.

CONCLUSION

The frailty such as falls, gait difficulty, and malnutrition for the required level of care was independently associated with death and deterioration in the individuals of the support level groupkuni0919

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