Burden among Caregivers of Elderly Patients with Osteoarthritis of Hip Joint

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原　　著

Burden among Caregivers of Elderly Patients with Osteoarthritis of Hip Joint

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Abstract The present study was conducted to investigate burden among caregivers of patients with osteoarthritis of hip joint. Caregivers and their elderly patients with osteoarthritis of hip joint were compared with caregivers and their frail elderly who received regular nurse visits or caregivers and their non-demented frail elderly with regular nurse visits. The patients with osteoarthritis of hip joint had less disability to perform ADL than the frail elderly with regular nurse visits. The caregivers of the patients spent less time on both caregiving and attending patients, and showed the shorter duration of caregiving than those of the frail elderly with regular nurse visits. They were less likely to consult with physicians for their own health and less likely to become ill health, and felt less burden than the caregivers of the frail elderly with regular nurse visits although they used less kinds of social services than their controls. Since none of patients with osteoarthritis of hip joint suffered from dementia, the non-demented frail elderly with regular nurse visits were used as another control. But the results did not changed. These finding suggest that caregivers of less disability to perform ADL may feel light burden when the patients do not suffer from dementia.

Key words : caregiver burden, osteoarthritis of hip joint, elderly, activities of daily living, dementia

Introduction

Improvement of public health and advances in medicine after World War II have given Japan the highest life expectancies in the world, i.e., 77.2 years for men and 83.8 years for women in 1997[11)]. This dramatic increase in the number of older people in this country is well documented, and it means an increase in the number of elderly in need of care (i.e., frail elderly). It is estimated that the number of the frail elderly will increase to 390 million in 2010 and 520 million in 2025[11)]. Since the frail elderly cannot perform their daily activities without help from family or professionals, family members are often both physically and mentally burdened with caring for

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them[11]. Therefore, ways to reduce the burden on caregivers looking after the frail elderly is an important issue for society.

Osteoarthritis of hip joint is a common disease among the elderly. Patients with osteoarthritis of hip joint suffer from not only pain but also disability to perform ADL because they have limited range of motion in hip joint or difference in length of bilateral lower extremities[6][7]. Therefore, reducing the caregivers' burden of these patients may be an important social problem as well. The present study is aimed at investigating perceived burden among caregivers caring for patients with osteoarthritis of hip joint in comparison with the frail elderly receiving regular nurse visits from a practice nurse clinic.

Methods

Subjects

Twenty-four pairs of patients with osteoarthritis of hip joint and their caregivers participated in this study as cases. Fifty pairs of frail elderly with regular nurse visits and their caregivers also participated in this study as controls. All of these patients with osteoarthritis of hip joint underwent operations at Saga Medical School Hospital from December 2000 to July 2001, and all of the frail elderly received regular nurse visits from O-practice nurse clinic from August 2000 to September 2000. Twenty seven frail elderly (54%) were diagnosed as cerebrovascular diseases, 12 (24%) as diseases of nervous system such as Parkinson disease, Alzheimer disease and other types of dementia, 6 (12%) as bone fracture, 2 (4%) as a chronic obstructive lung disease and 3 (6%) as others.

Measurements

The caregivers were asked to complete the following self-administered questionnaires in relation to their burden, depression and caregiving situation in the same manner as our previous studies[2][10][21]: (i) a Japanese version of the CES-D (Center for Epidemiologic Studies Depression Scale)[16][18]; (ii) a Japanese version of Zarit Caregiver Burden Interview (ZBI)[1][24] (iii) questions regarding demographic variables of the caregivers and their patients; (iv) questions regarding the time spent on physical care for their patients, the time used only attending their patients and the total duration of caregiving; and (v) the number of formal services the caregivers currently used. Caregivers were divided into two groups according to their CES-D score (i.e., the cut-off point of the CES-D being 16 as defined above): (i) those who were depressed, and (ii) those who were not.

The methods of assessment of physical disability were reported elsewhere[2][10][21]. In short, Barthel Index (BI)[9] was employed for physical disability.

Analysis

The characteristics of patients with osteoarthritis of hip joint and their caregivers were compared with those of controls and their caregivers. The frail elderly receiving regular nurse visits and their caregivers were used as controls (control 1). Among them, those without dementia were used another controls (control 2). Statistical analyses were performed using the Statistical Analysis System package (SAS Institute, Cary, USA)[17]. The Mann-Whitney U-test, the Chi-square test, the Mantel-Haenszel test or the Fisher exact test compared these two groups. A multiple logistic regression analysis was conducted to control for any confounding factor related the depression of the caregivers

among cases and control 2. The odds ratio (OR) and their 95% confidence interval (95% CI) were then calculated for each factor based on the logistic regression coefficient and standard error.

Results

Table 1 shows the characteristics of patients. Cases were older and had better ability to perform ADL than both of controls (1 and 2). None of cases or control 2 suffered from dementia while half of control 1 did.

Table 2 presents the characteristics of caregivers. Caregivers of cases were younger and felt less perceived burden than controls (1 and 2). Compared with controls (1 and 2), caregivers of cases were less likely to consult with physicians for their own health and less often became ill health. Males were more commonly seen in cases than control 1. Compared with control 1, caregivers of cases showed less prevalence of depression and were less depressive. Relationship of caregiver to patients or the rate of those with any life event did not differ between cases and controls (1 or 2).

Table 3 gives the setting of care. The duration of caregiving, time of physical caregiving, and time of attending their patients were shorter in cases than in controls (1 and 2) although caregivers of cases used less kinds of social services than caregivers of controls (1 and 2). More caregivers were able to go out without their patients in cases than control 1.

Table 4 shows the result of a multiple logistic regression analysis regarding the depression of caregivers among cases and control 2. Barthel index was negatively related to the depression of caregivers among those without dementia (cases and control 2). Since there was a close relationship between time of physical caregiving and time of attending their patients ($r=0.749$, $p=0.0001$), time of physical caregiving was not used in a multiple logistic regression analysis.

Discussion

Caregiver's burden is frequently assumed to be strongly related to the severity of the patient's disability[23]. In our previous studies, caregivers who took care of the

Table 1 Comparison between patients with osteoarthritis of hip joint and frail elderly with regular nurse visits: patients characteristics

Patients	Patients with osteoarthritis of hip joint (Cases, n=24)	Frail elderly with regular nurse visits (Control 1, n=50)	Frail elderly with regular nurse visits without dementia (Control 2, n=24)
Age (year old)[a,b]	65.0 (11.1)	81.8 (10.7)	78.7 (9.7)
Male/Female	4/20	31/19	7/17
Dementia	0 (0%)	26 (52.0%)	0 (0%)
Barthel Index[a,b]	93.8 (8.8)	34.9 (33.0)	52.7 (31.4)

Each set of values represents mean (SD) or number (%).
The Mann-Whitney U-test, Chi-square test, or the Fisher exact test was used to compare between cases and controls (control 1 or 2).
a: $p<0.05$, cases vs. control 1, b: $p<0.05$, cases vs. control 2.

Table 2 Comparison between patients with osteoarthritis of hip joint and frail elderly with regular nurse visits: caregivers characteristics

Caregivers	Patients with osteoarthritis of hip joint (Cases, n=24)	Frail elderly with regular nurse visits (Control 1, n=50)	Frail elderly with regular nurse visits without dementia (Control 2, n=24)
Age (year old)[a,b]	51.7 (14.7)	64.4 (12.2)	63.0 (13.7)
Male/Female	10/13[#1]	10/40	8/16
Relationship of caregiver to patients: [#2]			
Wife	3	16	5
Husband	8	7	6
Daughter	4	16	7
Son	2	2	2
Daughter-in-law	4	6	2
Other	1	3	2
Life event	4 (17.4%)[#1]	14 (28.0%)	8 (33.3%)
Depression[a]	6 (25.0%)	28 (56.0%)	11 (45.8%)
CES-D[a]	13.7 (8.3)	18.9 (11.2)	17.7 (11.2)
ZBI[a,b]	13.6 (12.3)	41.5 (18.7)	36.5 (16.9)
Consult with physicians about their own health[a,b]	7 (33.3%)[#3]	40 (80.0%)	17 (70.8%)
Become ill health[a,b]			
Never	4	3	1
Seldom	15	15	11
Sometimes	3	19	7
Often	0	13	5

Each set of values represents number or number and percentage (%).
The Chi-square test, the Mantel-Haenszel test or the Fisher exact test was used to compare between cases and controls (control 1 or control 2).
Life event: an event which may cause depression within 6 months, e.g., death of family member, divorce.
#1: n=23, #2: n=22, #3: n=21.
a: $p<0.05$, cases vs. control 1, b: $p<0.05$, cases vs. control 2.

elderly with more limited ADL felt less care burden[3]. Ogata and her coworkers[13] reported that family members caring for the elderly with partially limited ADL felt more burden than either the elderly with totally limited ADL or the elderly without limitation in ADL. In the present study, caregivers of cases caring for the patients with few limitations in ADL felt less burden than those of controls caring for the elderly with severely limited ADL (control 1) or the elderly with moderately limited ADL (control 2).

Caregivers are often burdened with caring for the demented elderly[14]. Caregivers of the demented elderly with behavioral disturbances feel a heavier burden than caregivers of the bed-ridden elderly[14]. Our previous study[4] revealed that, compared with elderly with severely limited ADL, caregivers of the elderly with moderately limited ADL were more likely to give up caregiving. In the

Table 3 Comparison between patients with osteoarthritis of hip joint and frail elderly with regular nurse visits: setting of care

Setting of Care	Patients with osteoarthritis of hip joint (Cases, n=24)	Frail elderly with regular nurse visits (Control 1, n=50)	Frail elderly with regular nurse visits without dementia (Control 2, n=24)
Duration of caregiving[a,b] (months)	21.6 (66.4)	78.3 (65.5)	88.3 (88.8)
Time of physical Caregiving (hours/day)[a,b]	0.8 (1.6)	10.8 (8.4)	7.6 (7.7)
Time of attending their patients (hours/day)[a,b]	0.8 (2.8)	14.1 (8.9)	11.0 (8.7)
Have family member to help them caregiving	12 (57.1%)[#1]	21 (43.8%)[#2]	17 (70.8%)
Able to go out without their patients[a]	20 (83.3%)	28 (56.0%)	15 (62.5%)
No. of family members	3.7 (2.0)	3.2 (1.9)	2.8 (2.0)
No. of social services used by caregivers[a,b]	0.3 (0.6)	4.4 (2.2)	4.1 (2.4)

Each set of values are expressed as the mean (SD) or number (%).
The Mann-Whitney U-test, Chi-square test, or the Fisher exact test was used to compare between cases and controls (control 1 or control 2).
#1: n=21, #2: n=48.
a: $p<0.05$, cases vs. control 1, b: $p<0.05$, cases vs. control 2.

present study, however, caregivers of cases showed less burden of caregiving than controls although cases had better ability to perform ADL than controls. These findings may be explained by the fact that none of cases in the present study suffered from dementia while half of patients did so in our previous study[4]. In the present study, a multiple logistic regression analysis revealed that ability to perform ADL (Barthel index) was negatively related to the depression of caregivers among those without dementia (cases and control 2).

In the present study, caregivers of cases

Table 4 The multiple logistic regression analysis in relation to the depression of caregivers among the patients with osteoarthritis and the frail elderly with regular nurse visits without dementia

Factors	Odds ratio	95% CI
Barthel Index (per 1 point)	0.951	0.908 to 0.996
Time of attending their patients (per 1 hour)	0.911	0.792 to 1.047
Age of caregivers (per 1 year)	0.997	0.942 to 1.055
Saga Medical School Hospital (vs. Regular nurse visits)	0.437	0.131 to 1.456
Life event yes vs no	2.434	0.937 to 6.323

Life event: an event which may cause depression within 6 months, e.g., death of family member, divorce.

were less likely to consult with physicians for their own health and less often became ill health, and felt less burden than those of controls (either control 1 or 2). These findings consistent with our previous study[8].

There have been many reports which showed that fatigue of caregivers[12] or a large amount of time spent in caregiving[15)19)20)23] was related to the onset of depression in caregivers. In our previous studies, time of physical caregiving as well as time of attending the frail elderly was related to the depression or perceived burden of caregivers. In the present study, caregivers of cases (i.e., patients with osteoarthritis of hip joint) spent less time with their patients as well as in physical caregiving, and showed less burden on caregiving than controls (i.e., the frail elderly with regular nurse visits).

The level of caregiver's service utilization of social services is known to be related caregiver's depression[5]. In the present study, however, caregivers of cases used less social services than their counterparts although they felt less burden than their counterparts. This finding is consisted with the result of our previous study[22], which showed that heavily burdened caregivers of the frail elderly with regular nurse visits used more social services than lightly burdened caregivers. These findings suggest that the need of social services may be related to the perceived burden of caregivers.

In summary, the patients with osteoarthritis of hip joint had higher scores of Barthel index than the frail elderly with regular nurse visits. The caregivers of the patients spent less time on both caregiving and attending patients, and showed the shorter duration of caregiving than those of the frail elderly with regular nurse visits. They were less likely to consult with physicians for their own health and less likely to become ill health, and felt less burden than the caregivers of the frail elderly with regular nurse visits although they used less kinds of social services than their controls. None of patients suffered from dementia. Even after controlling confounding factors, the ability to perform ADL (Barthel index) was negatively related to the depression of caregivers among those without dementia (cases and control 2). These findings suggest that caregivers of cases with less disability of ADL may feel light burden when the patients do not suffer from dementia.

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（和文抄録）

変形性股関節症患者の介護者における介護負担

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佐賀医科大学整形外科で2000年12月から2001年7月に手術を受けた変形性股関節症の患者の主介護者に介護負担に関する質問票を配布し，2000年8月と9月に訪問看護ステーションを利用した要介護高齢者の主介護者に配布した介護負担に関する質問票と比較検討した．訪問看護を受けている要介護高齢者に比べ，変形性股関節症の患者は日常生活動作の障害の程度が軽度であった．要介護高齢者の介護者に比べ，変形性股関節症の患者の介護者は，社会的サービスの利用が少ないにもかかわらず，身体的介護の時間や見守りの時間，介護期間が短く，病気で医者にかかっている者の割合や，体調を崩す頻度が少なく，介護負担が少なかった．変形性股関節症の患者には痴呆を伴う者は一人もなかったため，痴呆のない要介護高齢者だけに限定した比較も行ったが，結果は変わらなかった．痴呆がない場合には要介護者の日常生活動作の障害は程度が軽度な方が，介護負担は少ないことが示唆された．