Fecal properties and associated factors in elderly persons requiring care at a long-term care health facility for the elderly

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Fecal properties and associated factors in elderly persons requiring care at a long-term care health facility for the elderly

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Abstract

【Objective】 To clarify the current status of fecal properties and factors associated with those properties in elderly persons requiring care at a long-term health care facility for the elderly.

【Methods】 A questionnaire survey was conducted among 192 persons admitted to the facility, regarding their daily fecal properties over a month, urge to defecate, degree of intestinal peristalsis, frequency (days per month) and condition of defecation, status of defecation care such as drug use and disimpaction, and the nutritional condition.

【Results】 The mean age of the subjects was 87.4 years. Those at and above care level 3 accounted for 70%, those with dementia for 94%, those under tube feeding for 8.8%, and those using a diaper for defecation for 28%. Fecal properties were identified as soft stool group in 22.5%, and hard stool group in 10.9% of the subjects. Purgatives were used in 63% of the subjects, including laxatives in 27%, stimulant cathartics in 18%, and both in 18%. Antiflatulents and suppositories were used in 4 and 20%, respectively. Disimpaction and enema were performed in 35 and 2%, respectively. Factors associated with soft stools included a lower daily calorie intake, less frequent urge to defecate, a higher daily fiber intake, frequent urinary incontinence, and frequent use of stimulant cathartics. Factors associated with hard stools included less frequent defecation (13 days per month), absence of intestinal peristalsis, and frequent use of suppositories.

【Discussion:】 As a result of clarifying the fecal properties using the Bristol Stool Scale, an objective index for this purpose, and factors associated with soft stools, stimulant cathartics were suspected to be associated with the soft stools. This study suggested the necessity of using purgatives based on assessment of the fecal properties in each elderly person.

Key words

Long-term care health facility, elderly persons requiring long-term care, fecal properties, defecation care method

Introduction

The inability to defecate normally has a detrimental effect on human dignity. Elderly persons are especially at risk of dyschezia; this may lead to disuse syndrome because of physical pain and reduced self-esteem. Long-term care facilities promote the independence of elderly persons requiring long-term care by improving their capacity to self-care with the aim of returning the residents to their homes. However, the incidence of dyschezia in persons admitted to long-term care health facilities has been increasing,

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often aggravated by other factors such as the introduction of a gastrostomy, tube feeding, or progression of cognitive impairment. Mitoro et al.[1] defined chronic constipation as the absence of defecation for 3 days or longer occurring on two or more occasions per month. They reported a prevalence of 41% for chronic constipation in elderly persons living in long-term facilities. In surveys conducted at medical long-term care sanatoriums and long-term care facilities, as reported by Suyama et al.[2], a frequency of defecation of once every 3 days or less was observed in 32% of occupants, with 41.1% of subjects experiencing difficulty with defecation.

In studies examining the management of constipation, oral purgatives were used in 82% of cases. They also show that it is common practice to use immediate remedies to promote defecation, such as disimpaction and enema use; dietary changes or abdominal massage were performed in less than 5%[3·4]. Suyama et al.[2] observed that 79% of subjects were medicated with oral purgatives. Elderly persons using oral purgatives on a chronic basis, lose the urge and ability to defecate by themselves[5·6]. Studies on biofeedback therapy for fecal incontinence and the effect of protocols using this type of intervention have been performed[7·8]. The application of these methods for elderly persons admitted to long-term care health facilities is difficult because of the different medical and nursing-care systems that are in use; this has delayed the establishment of defecation care methods for dyschezia patients in Japan and other countries.

To select an appropriate defecation care method for individual patients, the objective assessment of fecal properties is necessary[9]. Defecation care methods for elderly persons admitted to Japanese long-term care health facilities have previously been investigated[4]. However, there are no studies that have recorded the properties their feces. To establish appropriate defecation care methods for elderly persons requiring long-term care, it is necessary to examine the fecal material to identify the relationship between its properties and the defecation care method used.

Definition of defecation care: The use of drugs such as purgatives, antiflatulents, suppositories, and enemas, and the performance of stool extraction

Objective

To clarify the current status of fecal properties and factors associated with those properties in elderly persons requiring care at a long-term care health facility for the elderly.

Methods

1. Subjects

Three long-term care health facilities in Ishikawa Prefecture were asked to participate in this study; consent was obtained after explaining the study objectives to the facility directors. A total of 198 persons were identified as having resided in these facilities for greater than one month. Consent for participation in the study was obtained from 194 persons; responses from 192 persons were used in the analysis.

2. Methods and survey

A survey form was developed to record the fecal properties, urge to defecate, degree of intestinal peristalsis, frequency of defecation (days per month), and the care and management of dyschezia. The survey method was explained to nurses and caregivers who performed defecation care in each of the facilities; they completed the survey forms after 2 weeks of training on observing fecal properties. The nutritional status was assessed by the facility's dietitian. The Functional Independence Measure (FIM) and independence in daily living activities (cognitive level) were surveyed by occupational therapists and physical therapists working in the facilities once trained in the survey methods. The subjects were surveyed daily for one month from April to May 2008.

(1) Attributes, urinary and skin conditions

The age at the time of survey completion, gender, duration of stay in the facility, care level of Long-term Care Insurance in Japan (care level), presence or absence of cognitive impairment, independence in daily living activities of dementia patients (cognitive symptoms), co-morbidities, body

mass index (BMI), and FIM attributes were surveyed. As a measure of urinary function, the presence or absence of urinary incontinence was surveyed. For skin condition, the presence or absence of bed sores was assessed.

(2) Nutritional conditions

Tube feeding status, mean daily calorie, fiber, and water intakes during the study period, and the presence or absence of eating disorders and dysphagia were also surveyed.

(3) State of defecation and defecation care methods

For the defecation-related conditions, urge to defecate, degree of intestinal peristalsis, fecal properties, amount of feces, frequency of defecation (days per month), and use of purgatives, intestinal function-controlling drugs, suppositories, glycerin enema, and disimpaction were investigated.

The fecal properties were surveyed employing the 7-types Bristol Stool Scale[10] (1: separated hard lumps, 2: hard stools, 3: slightly hard stools, 4: normal stools, 5: soft stools, 6: muddy stools, 7: watery stools). Prior to employing the Bristol Stool Scale, the facility staff received instructions on how to use it by the researchers. The actual judgment of fecal properties was performed based on the scale by two staff members reviewing each other's results. In the case of defecation in the washroom, two staff members who helped with elimination judged the fecal properties in the same manner.

Researchers and nurses from the facilities checked for incomplete responses once the forms were completed. To exclude changes in defecation patterns due to inter-current illnesses (e.g. fever), the medical records were checked by researchers and nurses.

3. Analysis methods

The fecal properties were investigated using an adapted the 7-types Bristol Stool Scale; the subjects were divided into four groups using the Rome III criteria of irritable bowel syndrome[11)·12)] and classification established by Imanishi et al.[13]:

Hard stool group: Separated hard lumps and hard stools accounted for 25% or more of the number of defecations per month; muddy and watery stools for 25% or less.

Normal stool group: Stools were slightly hard, normal, or slightly soft.

Soft stool group: Muddy and watery stools accounted for 25% or more of the number of defecations per month; hard and rabbit-like stools for 25% or less.

Mixed stool group: Muddy and watery stools accounted for 25% or more of the number of defecations per month; hard and rabbit-like stools for 25% or more.

Since no subjects were classified into the mixed stool group, the subjects were classified into three groups: hard, normal, or soft stool.

To identify the factors associated with the different fecal properties, the relationship between the fecal properties and Attributes were analyzed using Fisher's χ^2 test. The age, duration of stay in the facility, BMI, daily calorie, fiber, and water intakes, and number of days with defecation (per month) were compared between the hard and normal and between the soft and normal stool groups using t-test.

Variables that showed a significant association with the fecal properties on univariate analysis were subjected to multivariate analysis. Care level, daily fiber intake, and presence or absence of suppository treatment, which were not significantly associated but considered to clinically influence the fecal properties, were also subjected to multivariate analysis. To investigate independence, 'yes' for all multicollinearity items were changed to '1', and a correlation matrix prepared using Spearman's rank correlation coefficient. When $r \geq |0.7|$ in both categories, either category was selected. To identify factors causing soft stools (comparing the soft and normal stool groups) and factors causing hard stools (comparing the hard and normal stool groups), logistic regression analysis was performed setting the p-values for the addition and elimination of variables at 0.15 using a stepwise method; JMP® 7 statistical analysis software was used.

Ethical considerations

This study was approved by the Medical Ethics Committee of Kanazawa University (receipt number

Ho-115). The study objectives and methodology were explained to the facilities using the study protocol and explanatory documents; written consent was obtained from the representatives of the facilities. The study was explained to the subjects and their families by facility staff, and consent obtained. Study data were processed and analyzed quantitatively to avoid identification of the individuals and facilities.

Results

1. Attributes, nutritional, urinary, and skin conditions of the subjects (Table 1)

The mean age of 192 subjects was 87.4 years; 77% were female. Those on tube feeding for 8.8%, and those using a diaper for defecation for 28%. The mean duration of stay in the facility was 13 months. Care level was 3 or higher in 70%. Cognitive impairment was present in 94%; subjects with cognitive symptoms of grade II, or greater, accounted for 77%.

The mean daily calorie and fiber intakes were 1260 Kcal and 12.7 g respectively.

2. Defecation condition, Fecal properties, and Use of drugs and application of disimpaction (Table 2)

Urge to defecate and intestinal peristalsis were absent in 27 and 29% respectively. The mean number of days with defecation per month was 20 (5–31).

Table 1. Attributes, nutritional, urinary, and skin conditions of the subjects

n=192

	Item		Number of subjects or mean ± SD	
Attribute	Age (years)		87.4 ± 7.3	
	Gender	Male	44 (22.9)	
		Female	148 (77.1)	
	Duration of stay (months)		13.2 ± 16.3	
	Care level[1)]	1, 2	57 (29.7)	
		3, 4, 5	135 (70.3)	
	FIM	Motor item	40.5 ± 22.3	
		Urinary management	3.0 ± 2.2	
		Defecation management	3.8 ± 2.2	
		Cognitive item	17.4 ± 8.9	
		Total	58.1 ± 29.0	
	Cognitive symptoms[2)]	Present	174 (90.7)	Ⅰ 25 (13.0)
				Ⅱ 65 (33.9)
				Ⅲ 56 (29.2)
				Ⅳ 27 (14.1)
				M 1 (0.5)
		Absent	18 (9.3)	
	Disease	Sequelae of cerebrovascular disorder	86 (44.8)	
		Sequelae of fracture	64 (33.3)	
		Digestive disease/surgery	61 (31.8)	
		Diabetes	31 (16.8)	
		Mental disorder	28 (14.6)	
		Others	36 (18.8)	
Nutritional condition	Daily calorie intake	(Kcal)	1260 ± 231	
	Daily fiber intake	(g)	12.7 ± 3.7	
	Daily water intake	(cc)	1033 ± 321	
	Eating/swallowing disorder	Present	43 (22.4)	
		Absent	149 (77.6)	
	Tube feeding	Present	17 (8.8)	Gastrostomy 16 (8.3)
				Intestinal stoma 1 (0.5)
		Absent	175 (91.2)	
Urinary condition	Urinary incontinence	Present	117 (60.9)	
		Absent	75 (39.1)	
Skin condition	Bed sores	Present	8 (4.7)	
		Absent	163 (95.3)	

1) Long-term Care Insurance in Japan
2) Demented elderly person's daily life independence criteria

Table 2. Defecation condition, Fecal properties, and Use of drugs and application of disimpaction n=192

Item			Number of subjects or mean ± SD		
Defecation condition	Urge to defecate	Present	140 (72.9)		
		Absent	52 (27.1)		
	Intestinal peristalsis	Present	137 (71.4)		
		Absent	55 (28.6)		
	Number of days with defecation (in 31 days)		20.2 ± 11.4		
Fecal properties	Fecal properties[1)]	Soft stools[2)]	49 (25.5)		
		Normal stools[3)]	122 (63.5)		
		Hard stools[4)]	21 (10.9)		
Use of drugs and application of disimpaction	Purgatives	Present	121 (63.0)	Laxatives	51 (26.6)
				Stimulant cathartics	35 (18.2)
				Mixed use	35 (18.2)
		Absent	71 (37.0)		
	Intestinal function-controlling drugs	Present	7 (3.6)		
		Absent	185 (96.4)		
	Suppositories	Present	38 (19.8)		
		Absent	154 (80.2)		
	Enemas	Present	3 (1.6)		
		Absent	189 (98.4)		
	Disimpaction	Present	67 (34.9)		
		Absent	125 (65.1)		

1) Fecal properties:Bristol Scale steps for all instances of defecation
2) Bristol Scale steps 6 and 7 accounted for 25% or more; 1 and 2 accounted for 25% or less
3) Steps 3, 4, and 5
4) Steps 1 and 2 accounted for 25% or more; 6 and 7 accounted for 25% or less

Fecal properties were classified as soft, normal, and hard in 26, 64, and 11% respectively; no mixed stools were noted. Purgatives were used in 63%, laxatives in 27%, stimulant cathartics in 18%, and both types in 18%. Intestinal function-controlling drugs were used in 4%, suppositories in 20%, disimpaction in 35%, and enemas in 2%.

3. Factors associated with the fecal properties (Table 3)

To identify factors that prevent soft and hard stools (leading to normal stools), each item of the attributes, urinary, skin, nutritional, and defecation conditions and defecation care methods were compared between the soft (49 subjects) and normal stool groups (122 subjects), and between the hard (21 subjects) and normal stool groups by t- or χ^2 test.

(1) Attributes

There were no significant differences in any attribute between the soft and normal stool groups or between the hard and normal stool groups.

(2) Nutritional conditions

Significant differences were noted in all items between the soft and normal stool groups. The daily calorie intake was lower in the soft stool group ($p = 0.008$), and the rates of subjects with eating/swallowing disorder ($p = 0.006$) and tube feeding ($p = 0.003$) were higher in the soft stool group.

(3) Skin and urinary conditions

The rates of subjects with bed sores ($p = 0.003$) and urinary incontinence ($p = 0.010$) were higher in the soft compared with the normal stool group.

(4) Defecation conditions

The rate of subjects without an urge to defecate was higher in the soft than in the normal stool group ($p = 0.011$).

The rate of subjects without intestinal peristalsis was higher in the hard compared with the normal stool group ($p = 0.016$); the number of days with defecation was 13 days per month in the hard stool group ($p = 0.0005$).

(5) Use of drugs and application of disimpaction

The subjects were classified based on purgative use as: 1) treated with no purgatives, 2) treated with stimulant cathartics, 3) treated with laxatives, 4) treated with a mixture of purgatives.

Comparing the soft and normal stool groups, the

Table 3. Association between the defecation care methods and defecation conditions when comparing soft and normal stool groups and hard and normal stool groups

Number of subjects or mean ± SD

	Item		Soft stool group n=49	Normal stool group n=122	Hard stool group n=21
Attribute	Age (years)		85.8 ± 1.1	87.8 ± 0.6	88.8 ± 1.5
	Gender				
		Male	15 (30.6)	26 (21.3)	3 (14.3)
		Female	34 (69.4)	96 (79.7)	18 (85.7)
	Care level				
		1, 2	9 (18.4)	81 (66.4)	7 (33.3)
		3, 4, 5	40 (81.6)	41 (33.6)	14 (66.7)
	Cognitive symptoms				
		Present	28 (57.1)	74 (60.7)	16 (76.2)
		Absent	21 (42.9)	48 (39.3)	5 (23.8)
Nutritional condition	Daily calorie intake	(Kcal)	1192.6 ± 31.3	1294.2 ± 19.8	1226.7 ± 50.1
				1)**	
	Daily fiber intake	(g)	13 ± 4	12.5 ± 0.32	12.6 ± 0.78
	Daily water intake	(CC)	967.6 ± 45.6	1064.3 ± 28.9	1011.9 ± 68.8
	Eating/swallowing disorder				
		Present	18 (36.7)	21 (17.2)	4 (19.0)
		Absent	31 (63.3)	101 (82.8)	17 (81.0)
				**	
	Tube feeding				
		Present	10 (20.4)	6 (4.9)	1 (4.8)
		Absent	39 (79.6)	116 (95.1)	20 (95.2)
				**	
Urinary condition	Urinary incontinence				
		Present	38 (77.6)	69 (56.6)	10 (47.6)
		Absent	11 (22.4)	53 (43.4)	11 (52.4)
				*	
Skin condition	Bed sores				
		Present	6 (12.2)	2 (1.6)	0 (0)
		Absent	43 (87.8)	120 (98.4)	21 (100)
				**	
Defecation condition	Urge to defecate				
		Present	29 (59.2)	97 (79.5)	14 (66.7)
		Absent	20 (40.8)	25 (20.5)	7 (33.3)
				*	
	Intestinal peristalsis				
		Present	37 (75.5)	90 (73.8)	10 (47.6)
		Absent	12 (24.5)	32 (26.2)	11 (52.4)
					*
	Number of days with defecation (in 31 days)		22.2 ± 1.6	20.6 ± 0.9	12.9 ± 2.2
					1)***
	Stimulant cathartics				
		Present	25 (51.0)	35 (28.7)	10 (47.6)
		Absent	24 (49.0)	87 (71.3)	11 (52.4)
				*	
	Laxatives				
		Present	26 (53.1)	53 (43.4)	7 (33.3)
		Absent	23 (46.9)	69 (56.6)	14 (66.7)
Defecation care method	Intestinal function-controlling drugs				
		Present	4 (8.2)	3 (2.5)	0 (0)
		Absent	45 (91.8)	119 (97.5)	21 (100)
	Suppositories				
		Present	16 (32.7)	15 (12.3)	7 (33.3)
		Absent	33 (67.3)	107 (87.7)	14 (66.7)
				**	**
	Enemas				
		Present	2 (4.1)	0 (0)	1 (4.8)
		Absent	47 (95.9)	122 (100)	20 (95.2)
				*	*

χ^2-test *p<0.05 **p<0.01 ***p<0.001
1) t-test

rate of subjects treated with no purgative was higher in the normal stool group ($p = 0.033$), and the rate of those treated with stimulant cathartics was higher in the soft stool group ($p = 0.006$). No significant differences were noted in the rates of subjects treated with laxatives, mixed use, or intestinal function-controlling drugs. The rates of subjects treated with suppositories ($p = 0.002$) and enemas ($p = 0.025$) were higher in the soft stool group.

Comparing the hard and normal stool groups, the rates of subjects treated with suppositories ($p = 0.014$) and enemas, ($p = 0.016$) were higher in the hard stool group.

4. Logistic regression analysis of factors inducing soft stools when comparing the soft and normal stool groups (Table 4).

Factors in which significant differences were detected regarding the occurrence of soft stools between the soft and normal stool groups on univariate analysis, were subjected to analysis of independence using multicollinearity; all the factors were independent. Measures relating to the daily calorie intake, presence or absence of an eating/swallowing disorder, tube feeding, urinary incontinence, bed sores, urge to defecate, and treatment with stimulant cathartics, suppositories, and enemas (in which significant differences were detected) and items that were not significantly different but considered to clinically influence the fecal properties (i.e. gender, age, care level, cognitive symptoms, daily fiber and water intakes, presence or absence of intestinal peristalsis, treatment with laxatives and intestinal function-controlling drugs), were treated as independent variables, and the soft stool group treated as a dependent variable. Logistic multiple regression analysis was performed setting the p-values for the addition and elimination of variables at 0.15 using a stepwise method. The following 10 items were extracted: care level, daily calorie and fiber intakes, with or without tube feeding, water intake, presence or absence of

Table 4. Logistic multiple regression analysis (stepwise method) of factors causing soft stools

n=171 (Soft stool group; n = 49, Normal stool group; n = 122)

Item	Odds ratio Soft/normal stools	95%CI	p-value
Care level 1, 2	0.95	0.62 - 1.45	0.82
Daily calorie intake	0.99	0.99 - 0.99	0.02*
Daily fiber intake	1.26	1.09 - 1.46	0.00***
Daily water intake	0.99	0.99 - 1.00	0.06
With tube feeding	2.02	0.98 - 4.38	0.06
With urinary incontinence	3.73	1.52 - 10.02	0.00**
No urge to defecate	0.31	0.11 - 0.83	0.02*
With intestinal peristalsis	0.54	0.20 - 1.51	0.24
Treated with stimulant cathartics	3.61	1.54 - 8.90	0.00**
Treated with suppositories	1.91	0.69 - 5.24	0.21

*p < 0.05 **p < 0.01 ***p < 0.001

Table 5. Logistic multiple regression analysis (stepwise method) of factors causing hard stools

n=143 (Hard stool group; n = 21, Normal stool group; n = 122)

Item	Odds ratio Hard/normal stools	95%CI	p-value
Care level 1, 2	0.57	0.31 - 1.02	0.06
With cognitive symptoms	1.50	0.83 - 3.08	0.17
Daily calorie intake	0.99	0.99 - 0.99	0.02*
Daily fiber intake	1.23	0.99 - 1.53	0.06
Daily water intake	0.99	0.99 - 1.00	0.05
No urge to defecate	0.23	0.05 - 1.14	0.07
No intestinal peristalsis	0.12	0.02 - 0.44	0.00**
Number of days with defecation (in 31 days)	0.90	0.76 - 0.94	0.00***
Treated with stimulant cathartics	3.00	0.85 - 11.60	0.09

*p < 0.05 **p < 0.01 ***p < 0.001

urinary incontinence, urge to defecate, intestinal peristalsis, and stimulant cathartic and suppository treatments ($R^2 = 0.24$).

The daily calorie intake was lower (odds ratio: 0.99) in the soft stool group; the daily fiber intake was higher (odds ratio: 1.26), urinary incontinence was present (odds ratio: 3.73), the urge to defecate was absent (odds ratio: 0.31), and stimulant cathartics were used (odds ratio: 3.61) in this group.

5. Logistic regression analysis of factors inducing hard stools when comparing the hard and normal stool groups (Table 5)

Factors in which significant differences were detected regarding the occurrence of hard stools between the hard and normal stool groups on univariate analysis were subjected to the analysis of independence using multicollinearity; all the factors were independent. Significant differences were noted in the presence or absence of intestinal peristalsis, number of days with defecation (frequency), and presence or absence of suppository and enema treatment between the hard and normal stool groups on univariate analysis; these measures and items, which were not significantly different but considered to clinically influence the fecal properties (i.e. gender, age, care level, cognitive level, daily fiber and water intakes, and the presence or absence of treatment with laxatives and intestinal function-controlling drugs), were treated as independent variables, and the hard stool group treated as a dependent variable. Logistic multiple regression analysis was performed setting the p-values for the addition and elimination of variables at 0.15 using a stepwise method. The following nine items were extracted: care level, cognitive level, daily calorie, fiber, and water intakes, presence or absence of the urge to defecate, intestinal peristalsis, the number of days with defecation (frequency), and stimulant cathartic treatment ($R^2 = 0.31$).

The daily calorie intake was lower (odds ratio: 0.99), intestinal peristalsis was absent (odds ratio: 0.12), and number of days with defecation were fewer (odds ratio: 0.12) in many subjects in the hard stool group.

Discussion

1. Importance of this study

There have been no previous studies about the defecation characteristics of elderly persons requiring long-term care over a period of one month. There are no reports on the fecal properties of this group being recorded using an objective index like the Bristol Stool Scale, in Japan or any other country. It is desirable to maintain a normal fecal consistency, rather than too soft or hard, in elderly persons requiring long-term care; the identification of factors associated with normal stools is required to avoid these people suffering soft and hard stools.

This study yielded valuable data that clarifies the fecal properties, defecation conditions, and defecation care methods for elderly persons admitted to long-term care facilities. These data are highly reliable given the researchers and facility staff performed the survey after receiving training about the observation and description methods.

2. Factors associated with soft stools

Stools were soft (muddy and watery) in 26% of the subjects. Suyama et al.[2] reported that muddy and watery stools were observed in 44% of elderly persons in care facilities where the mean age of the subjects was 81 years (younger than the study participants in our study), more subjects were independent, and nurses and caregivers selected the most frequent fecal properties over a similar time period. The different methodologies may explain the variation in the incidence of soft stools between the studies.

This study also demonstrated that tube feeding was one of the causes of soft stools, since the subjects who had soft stools were often tube-fed due to eating/swallowing disorders. Thus, it may be necessary for those on tube feeding to be reviewed regarding the drip count and the selection of nutrient preparations. The daily calorie intake was 100 kcal lower in this group compared with those with normal stools, suggesting that an increased daily calorie intake may have avoided the soft stools. There were also many subjects with urinary incontinence and loss of the urge to

defecate; these factors require further investigation.

To promote defecation, 63% of the subjects were treated with purgatives and 20% treated with suppositories; many subjects with soft stools were treated with stimulant cathartics or suppositories. Two types of purgatives, laxatives and stimulant cathartics, were widely used at the study facilities. Laxatives increase the water content and soften the feces due to osmotic pressure. Since stimulant cathartics promote intestinal movement and rapidly produce soft stools; these agents should be administered with care to elderly persons. Because the defecation patterns vary between individuals, treatments should be used that are appropriate for the person's fecal properties. There are many cases reported where stimulant cathartics are administered for prolonged periods without careful consideration despite being unfavorable for long-term use in chronic constipation[14]. Our findings suggest that stimulant cathartics are implicated in the occurrence of soft stools; the fecal properties should always be assessed to investigate if their use is necessary and justified.

3. Factors associated with hard stools

Factors influencing hard stools have not previously been investigated. The definition of constipation varies; in this study constipation was surveyed based on the number of days per month with defecation－this is consistent with many other studies. Mitoro et al.[1] surveyed the prevalence of chronic constipation in elderly persons admitted to facilities. They defined chronic constipation as the absence of defecation for three days or longer, on more than two occasions per month; they observed it in 41% of study participants. Suyama et al.[2] investigated the status of constipation based on the frequency of defecation employing the Rome II criteria (widely used as a constipation criteria), and observed that the defecation frequency was less than once every three days in 30% of subjects. We paid attention to the fecal properties employing the Bristol Stool Scale and noted hard stools in 11% of subjects. The number of days with defecation in our subjects was fewer than reported by Mitoro et al.[1] and Suyama et al.[2]; this may have been due to differences in the study methods: constipation was the focus in their studies, while our research focused on fecal properties. Existing care methods concerning constipation should be reviewed; the investigation of methods to avoid hard stools is needed. We observed that intestinal peristalsis was absent in many subjects with hard stools. This also requires further investigation to ascertain its relationship with poor toileting outcomes.

Oral purgatives were taken by 80% of the subjects with hard stools; this rate was as high as those previously reported by Mitoro et al.[1] and Toyama et al.[2]. More than 50% of subjects with soft stools in this study were given purgatives; this suggests that the fecal properties were not accurately assessed in these people. We believe that fecal properties must be taken into consideration when delivering defecation care for elderly persons living in care facilities.

4. Proposal for practice of care

The fecal properties of elderly persons admitted to care facilities need to be investigated. We suggested that it is necessary to increase the daily calorie intake, decrease the fiber intake, and reduce the use of stimulant cathartics when treating soft stools. For hard stools accompanied by fewer days with defecation, intestinal peristalsis should be promoted by increasing the daily calorie intake.

Our findings suggest that defecation care methods should be individualized for elderly persons through assessment of the defecation cycle, paying particular attention to the fecal properties.

Limitations of the study

The subjects were persons admitted to three long-term care health facilities, which limits the generalizability of the results. However, only a few studies on fecal properties have previously been reported, and no associated factors have been identified.

Since this study suggests that soft stools and the use of stimulant cathartics are linked, training involving all facility staff that focuses on defecation care methods using assessment of the defecation cycle, and paying attention to the fecal properties, may contribute to improving the quality of

defecation care for elderly persons requiring long-term care.

Conclusions

The fecal properties and defecation care methods were surveyed in 192 elderly persons admitted to long-term care health facilities, with the following results:

1. The frequency of soft stools was 25% or higher during a 30-day period in 26% of the subjects.
2. The frequency of hard stools was 25% or higher during a 30-day period in 11% of the subjects.
3. Factors associated with soft stools included: a lower daily calorie intake, an absence of the urge to defecate in many subjects, an elevated daily fiber intake, high incidence of urinary incontinence, and many subjects were medicated with stimulant cathartics.
4. Factors associated with hard stools included: number of days with defecation of only 13 per month (lower frequency), absence of intestinal peristalsis, and many subjects were treated with suppositories.

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介護老人保健施設における要介護高齢者の便の性状と関連要因

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要　　旨

【目的】介護老人保健施設に入所している要介護高齢者の便の性状の実態と便の性状に関連する要因を明らかにする。

【研究方法】入所者192人を対象とし調査を行った。１ヶ月間の毎日の便の性状、便意、腸蠕動排便日数、排便状態や薬剤等の使用の使用と摘便の実施状況の排便ケア状況、栄養状況等について調査した。

【結果】対象者の平均年齢は87.4歳で、要介護度は３以上が70%、認知症は94%、経管栄養は8.8%、オムツ内で排便している人は28%だった。軟便群は22.5%、硬便群は10.9%だった。下剤を使用していた人は63%で、そのうち緩下剤の使用が27%、刺激性下剤の使用が18%、緩下剤と刺激性下剤の両方を使用していた人が18%だった。整腸剤の使用は４%、坐薬の使用は20%だった。摘便は35%、浣腸は２%だった。軟便に関連する要因は、１日摂取カロリーは少なく、便意がある者は少なく、１日繊維量が多く、尿失禁が多く、刺激性下剤を使用している者が多かった。硬便に関連する要因は、排便日数が１ヶ月に13日と少なく、腸蠕動がなく、坐薬の使用者が多かった。

【考察】便の性状をBristol Stool Scaleという客観的な指標で明らかにし、軟便との関連要因を明らかにした結果、刺激性下剤が軟便に影響していることが考えられた。下剤の使用にあたっては、個々の高齢者の便の性状をアセスメントした上で使用する必要性が示唆された。