

Impact of nail changes on daily living and motivation to continue cancer treatment using chemotherapy

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BACKGROUND

Severity of nail changes is classified in CTCAEver5.0¹⁾ and MASCC. However, they do not consider how activities of daily living (ADL) are affected. Patients with nail changes due to chemotherapy are reported to have low QOL²⁾. Those with Grade 2 or higher severity are particularly assumed to be under stress due to affected ADL and feel of shame about their nails³⁾. Thus, nail changes not only affect appearance, but also ADL, weakening motivation to connect with society⁴⁾.

AIM

This study aimed to clarify impact of nail changes on ADL and motivation to continue cancer treatment using chemotherapy.

METHODS

Study subjects were patients with nail changes from chemotherapy at 6 designated cancer hospitals in metropolitan areas in Japan. Nails of the hands and feet of the patients were photographed and their medical records were collected, followed by a self-administered paper questionnaire regarding impact of nail changes on ADL. After approval from the Ethics Committee and directors of the said hospitals, this study was carried out upon written consent from the subject patients, as well as verbal explanations. Finally, we used SPSS ver.27 to calculate significance probability of relation between descriptive statistics of study items, including morphological symptoms of nail changes observed on photographs (Fig5&6), and motivation to continue chemotherapy.

Table1. Impact of morphological symptoms on motivation to continue chemotherapy

Morphological symptoms	Impact on motivation		
	No n=25	Yes n=21	P-value of χ^2
Paronychia	24	17	0.198
Pigmentation	21	14	0.401
Discoloration	18	17	0.478
Onychomadesis	12	8	0.592
Keratinization, psoriasis or hangnail	15	13	0.895
Onychoschizia	4	6	NA
Ingrown nail	3	2	NA



Fig5. Nails of a non-affected patient

RESULT

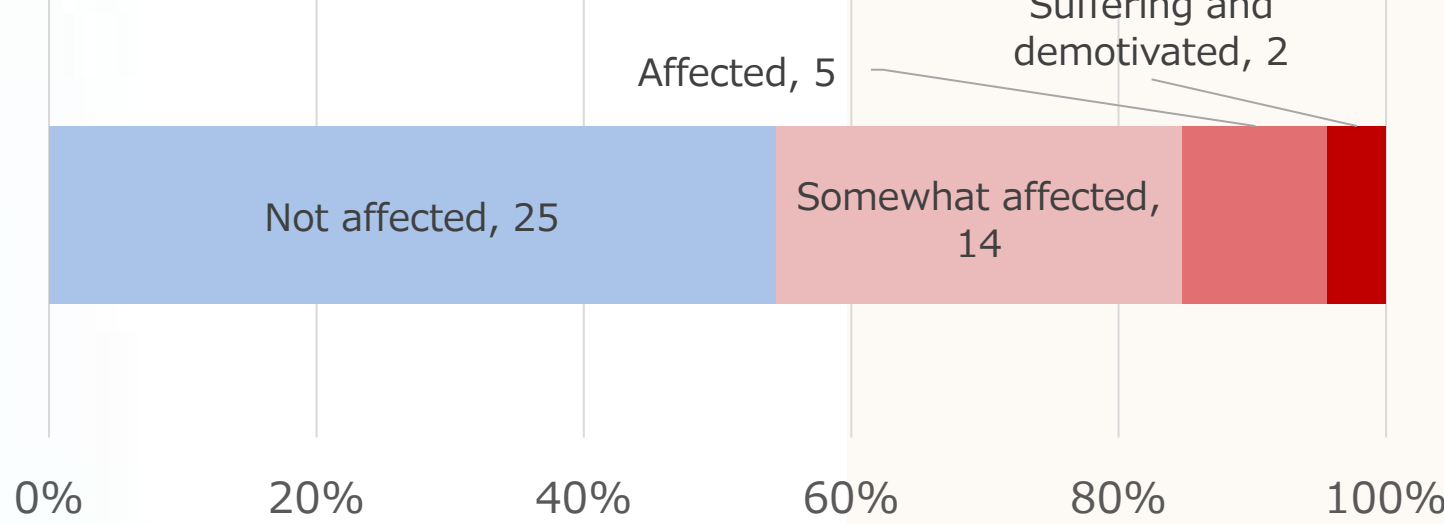
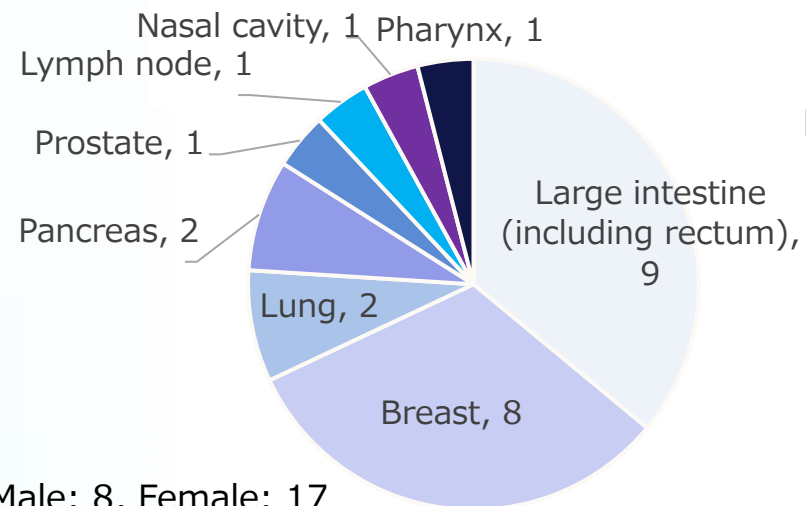


Fig1. Number responses to the question “Are your nail changes affecting motivation to continue chemotherapy?”: N = 46



Male: 8, Female: 17
Median Age: 63

Fig2. Cancer types seen among the non-affected group

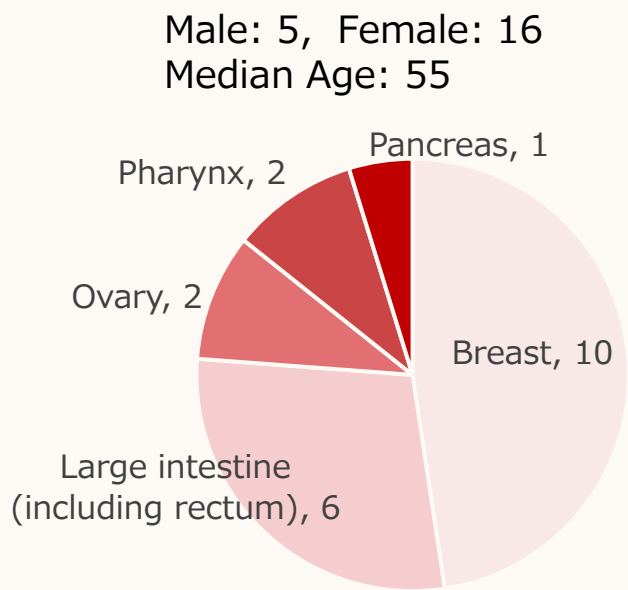
Table2. Impact of subjective symptoms on motivation to continue chemotherapy

Subjective symptoms	Impact on motivation		
	No n=25	Yes n=21	P-value of χ^2
H Pain	2	17	NA
H Nail bed separation	4	13	NA
F Pain	7	13	0.013
H Hangnail/paronychia	12	16	0.051
H Discoloration	21	21	0.055
F Ingrown nail	11	14	0.124
H Ridging	14	16	0.152
H Onychoschizia	7	9	0.292
F Thickened nail	10	12	0.246

© H: Hand, F: Foot



Patients who answered “Suffering and demotivated”
Fig6. Nails of an affected patient



Male: 5, Female: 16
Median Age: 55

Fig3. Cancer types seen among the affected group

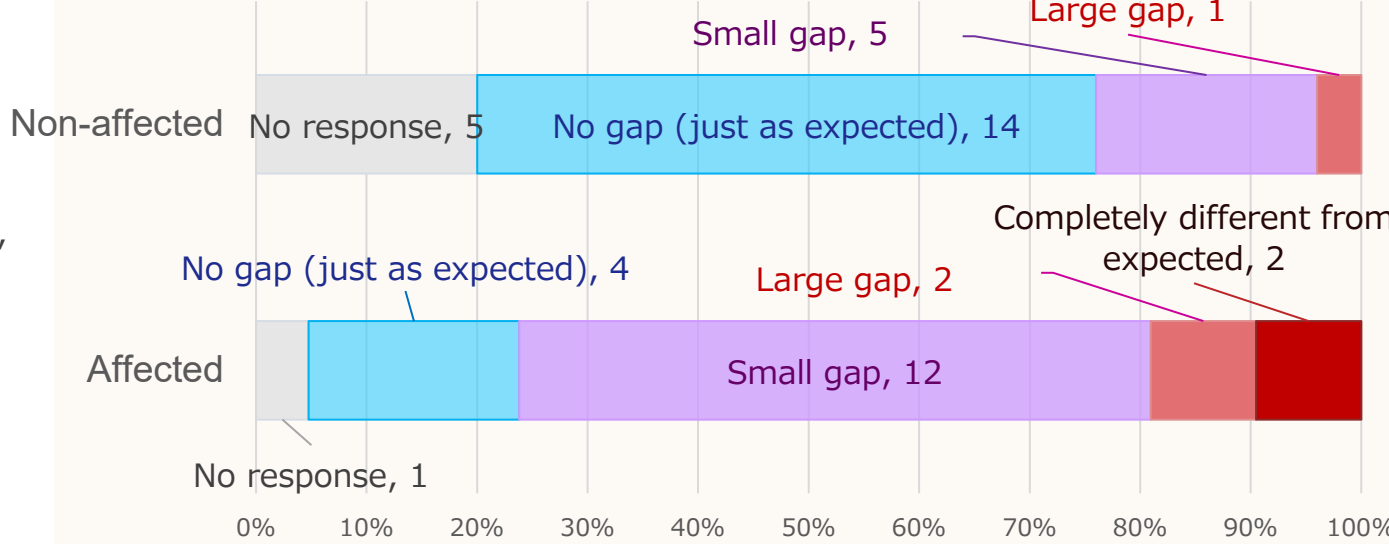


Fig4. Gap between explained nail changes and actual nail changes

Table4. Logistic regression analysis of ADL that impact motivation to continue chemotherapy

	p	Exp(B)	95% CI EXP(B)	
			Lower	Upper
Peeling of packaging film	0.047	11.477	1.037	127.017
Cooking	0.009	21.810	2.162	219.990

Covariate: Peeling off exterior, opening pull tab cans, peeling off tapes, zipping up, wearing stockings/socks, carrying heavy things, cooking

Of 46 patients with nail changes, 25 responded nail changes did not affect their motivation to continue chemotherapy (non-affected group), while 21 were affected (affected group) (Fig1). Median age of non-affected group was 63, while affected group was slightly younger at 55 with more females than the non-affected group (Fig2&3). However, no statistical significance was found between the 2 groups.

As shown in Table1, morphological symptoms observed on photographs were found to have no significant impact on motivation to continue chemotherapy. Major subjective symptoms which affected motivation to continue chemotherapy based on the questionnaire are listed in Table2.

Table3. Activities of daily living affected by nail changes and impact on motivation to continue chemotherapy

Affected ADL		Impact on motivation		
		No n=25	Yes n=21	P-value of χ^2
Food & drug	Taking out tablets	9	20	<0.001
	Peeling off package film	9	20	<0.001
	Peeling off seals of containers (e.g. yogurt)	7	18	<0.001
	Peeling mandarin orange	7	17	<0.001
Hygienic care	Opening pull tab cans	13	20	0.001
	Peeling off tapes (e.g. medical tapes)	5	15	<0.001
	Changing underwear	2	11	NA
	Disinfecting hands with sanitizer	3	10	NA
Clothing	Wiping bottom	1	6	NA
	Washing hair	5	9	0.093
	Others (washing face, toothbrushing, shaving, etc.)	4	7	NA
	Dressing/undressing loose-woven clothes	4	13	NA
Housework & jobs	Zippping up	6	15	0.001
	Doing buttons up	9	17	0.002
	Wearing socks/stockings	5	14	0.002
	Wearing elastic stockings	5	12	0.009
Leisure	Wearing brooch/pendant	6	9	0.174
	Wearing tie	1	1	NA
	Carrying heavy things	10	19	<0.001
	Cooking	7	20	<0.001
	Doing laundry	5	14	0.001
	Sawing	5	14	0.001
	Cleaning	7	15	0.003
	Weeding	3	9	NA
	Shopping	7	13	0.021
	Engaging in hobbies/activities	22	20	0.385
	Staying overnight (travel)	3	9	NA
	Using public transportations	3	10	NA
	Traveling nearby (walking, shopping, etc.)	3	12	NA

The most statistically significant conditions were “Pain (H)”, “Nail bed separation”, “Discoloration”, “Pain (F)”, and “Hangnail/paronychia” (Table2). Statistical significance was also found in many ADL which affected motivation to continue chemotherapy (Table3). Logistic regression analysis shown in Table4 clarifies that having trouble in “Peeling off package film” and “Cooking” possibly demotivated the patients to continue chemotherapy. Despite lack of statistical significance due to limited respondents of the questionnaire, the affected group tended to experience nail changes that were considerably different from what was explained before chemotherapy started (Fig4).

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

FUNDING

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DISCUSSION

Subjective symptoms were found to be more impactful than morphological symptoms on motivation to continue chemotherapy, and the affected group felt inconvenience in ADL. Preceding studies clearly states that feeling inconvenience in ADL is linked to suffering⁴⁾ 5). Moreover, the affected group was assumed to be demotivated to continue chemotherapy due to unexpected symptoms and trouble with ADL caused by nail changes. This study suggests necessity of pre-chemotherapy orientation, including notification of expected symptoms of nail changes and their impact on ADL, to minimize the gap between explanation and reality. Among the ADL affected from nail changes, “Peeling off package film” and “Cooking” may particularly need verification on whether patients require support or not for maintaining motivation to continue chemotherapy. Since this study did not consider variables, such as age, gender, underlying disease, medication, and dosage, we need to examine more cases to clarify causing factors of nail changes.

CONCLUSION

To find out impact of nail changes on motivation to continue chemotherapy, a cross-sectional investigation was conducted on patients with nail changes due to chemotherapy by utilizing medical records, photographs and questionnaire.

- Subjective symptoms affected motivation to continue chemotherapy than morphological symptoms.
- The affected group felt a large gap between explained and actual symptoms of nail changes and impact on ADL.
- The affected group felt inconvenience in many ADL.

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