



A Comparison of Fatigue among Resectable Colorectal and Pancreatic Cancer Patients

Hsuan-Ju Kuo¹; Jin-Tung Liang²; Yu-Wen Tien²; Shio-Ching Shun¹

¹Department of Nursing, College of Medicine, National Taiwan University, Taipei,

²Department of Surgery, College of Medicine, National Taiwan University and Hospital, Taipei

Purpose

Both colorectal and pancreatic cancer patients suffer from gastrointestinal associated symptoms that cause nutrition insufficiency. Under impaired nutritional status, cancer patients are prone to experience fatigue. However, there is currently no study that compares fatigue status between colorectal cancer and pancreatic cancer patients. Therefore, the aim of this study was to compare the perceived fatigue among patients with colorectal cancer and pancreatic cancer; and to explore the associated factors among demographic and clinical characteristics, functional lower extremity strength, and grip strength for fatigue in overall patients.

Methods

A cross-sectional research design was conducted. Data were collected using a structured questionnaire including demographic and clinical characteristic form, and the Chinese version of the Fatigue Symptom Inventory (FSI). Grip strength was tested by the Jamar[®] plus+ digital hand dynamometer (Figure 1). Functional lower extremity strength was evaluated with the 30-second chair stand test (Figure 2). A total of 64 preoperative cancer patients, including 32 with colorectal cancer and 32 with pancreatic cancer, were recruited from a medical center in northern Taiwan. The generalized estimating equation (GEE) was used to examine the significant associated factors with fatigue for overall patients.

Results

- There were no significant differences in demographic factors in the two groups. However, the disease characteristics including functional status ($p=.005$), cancer stage ($p=.005$), body mass index ($p=.020$), regular exercise habit ($p=.001$), and having comorbid chronic illness ($p=.003$) demonstrated significant statistical differences (Table 1).
- Pancreatic cancer patients had higher FSI score than colorectal cancer patients (Table 2). However, the statistical significance of cancer types disappeared after adjustment for functional status, cancer stage, body mass index, regular exercise habit, and having comorbid chronic illness (Table 3).
- In overall patients, the significant associated factor with fatigue was functional status. Patients who had lower KPS score ($\beta=-.976$, $p=.018$) reported higher score in FSI (Table 3).

Implication for practice

Healthcare providers should pay extra attention and assess potential fatigue conditions for cancer patients with lower preoperative functional status. Nursing education regarding fatigue management may be indicated for both cancer populations who experience impaired functional status. Further research with larger sample size should be done to examine fatigue characteristics among both groups and intervention should also be developed accordingly.

Acknowledgement

Thank for the patients and research team, and the grant supported from the Ministry of Science and Technology, R.O.C. (MOST 104-2314-B-002-097-MY3 & MOST 101-2314-B-002-138-MY3)



Figure 1. The Jamar[®] plus+ digital hand dynamometer



Figure 2. The 30-second chair stand test

Table 1. Demographic and Clinical Disease Characteristics in two groups (N=64)

Demographic and Clinical Disease Characteristics	Colorectal cancer (n=32)		Pancreatic cancer (n=32)		p
	n	%	n	%	
Age (Mean±SD)	59.22±10.06		60.69±12.14		.600
Years of education (Mean±SD)	11.72±4.99		12.16±4.19		.705
Body Mass Index (Mean±SD)	25.39±4.87		22.89±3.40		.005
Grip strength (Mean±SD)	29.58±11.50		26.51±9.19		.243
The 30-second chair stand test (Mean±SD)	16.81±7.10		18.29±5.93		.368
Gender					.599
Male	18	56.2	18	56.2	
Female	14	43.8	14	43.8	
Occupational Status					.597
Unemployed	17	53.1	16	50.0	
Part-time job	0	0.0	1	3.1	
Full time Job	15	46.9	15	46.9	
Marital status					.545
Single/Divorce/Widowed	6	18.8	8	25.0	
Married	26	81.2	24	75.0	
Religion affiliation					.351
No	5	15.6	8	25.0	
Yes	27	84.4	24	75.0	
Family status					.613
Live with family	29	90.6	31	96.9	
Live alone	3	9.4	1	3.1	
Functional status					<.001
80-100	32	100.0	24	75.0	
50-70	0	0.0	8	25.0	
0-40	0	0.0	0	0.0	
Chronic disease					.003
Yes	16	50.0	27	84.4	
No	16	50.0	5	15.6	
Cancer stage					.005
I	9	28.1	6	18.8	
II	8	25.0	19	59.4	
III	14	43.8	3	9.4	
IV	1	3.1	4	12.5	
Regular exercise					.001
Yes	29	90.6	14	43.8	
No	3	9.4	18	56.2	

Table 2. Fatigue Intensity, Duration, and Interference in two groups (N=64)

Variable	Colorectal cancer(n=32)			Pancreatic cancer (n=32)			p
	Mean±SD	Min	Max	Mean±SD	Min	Max	
Fatigue intensity							
Worst fatigue	1.53±2.19	0	6	3.69±3.14	0	10	.002
Average fatigue	1.03±1.49	0	4	2.28±2.00	0	6	.006
Fatigue duration							
Number of days fatigued	1.19±2.00	0	7	3.28±2.95	0	7	.002
How much of the day fatigued	0.91±1.40	0	5	2.72±2.69	0	10	.001
Perceived interference with functioning							
General daily activities	0.41±0.91	0	3.4	1.78±2.49	0	8.8	.006
Ability to bathe and dress	0.53±1.41	0	5	2.13±3.28	0	10	.015
Work activity	0.44±1.24	0	5	2.16±3.24	0	10	.008
Ability to concentrate	0.38±1.00	0	4	1.28±2.20	0	8	.040
Relations with others	0.25±1.01	0	5	1.75±2.75	0	10	.006
Enjoyment of life	0.41±1.32	0	5	2.56±3.36	0	10	.002
Mood	0.88±1.66	0	6	1.84±3.12	0	10	.128

Table 3. Exploring the Associated Factors among demographic and clinical characteristics, the 30-second chair stand test, and grip strength for fatigue in the Generalized Estimating Equations Analysis^a

Variables	Coefficient	Std. Err.	Wald chi-square	p-value
Pancreatic cancer /Colorectal cancer	4.441	6.828	.423	.515
Chronic disease yes/no	-4.568	5.379	.721	.396
Regular exercise yes/no	-8.235	6.923	1.415	.234
Cancer stage IV/ stage I	-6.334	6.809	.865	.352
Cancer stage III/ stage I	-2.056	6.122	.113	.737
Cancer stage II/ stage I	5.495	6.034	.829	.362
KPS	-.976	.413	5.589	.018
BMI	-.683	.617	1.226	.268
Grip strength	.159	.474	.112	.737
30-second chair stand test	.282	.366	.592	.442
Intercept	417.44	29.005	1.055	.819

Note: ^ageneralized estimating equation was based on unstructured working correlation matrix

Contact

Shio-Ching Shun
National Taiwan University
Email: scshun@ntu.edu.tw
(O): +886-2-23123456 ext. 88439

References

- Barsevick, A. M., Dudley, W. N., & Beck, S. L. (2006). Cancer-related Fatigue, Depressive Symptoms, and Functional Status: A Mediation Model. *Nursing Research*, 55(5), 366-372.
- Goedendorp, M. M., Giessen, M. F., Verhaagen, C. A., Peters, M. E., & Bleijenberg, G. (2008). Severe fatigue and related factors in cancer patients before the initiation of treatment. *Br J Cancer*, 99(9), 1408-1414. doi:10.1038/sj.bjc.6604739
- Husson, O., Mols, F., van de Poll-Franse, L. V., & Thong, M. S. (2015). The course of fatigue and its correlates in colorectal cancer survivors: a prospective cohort study of the PROFILES registry. *Support Care Cancer*, 23(11), 3361-3371. doi:10.1007/s00520-015-2802-x
- Lai, Y. H. (2016). Perspectives on Cancer Survivorship: Care and Challenges. *J Nurs Res*, 24(2), 190-192. doi:10.1097/jnr.0000000000000163
- Ockenga, J., & Valentini, L. (2005). Review article: anorexia and cachexia in gastrointestinal cancer. *Aliment Pharmacol Ther*, 22(7), 583-594. doi:10.1111/j.1365-2036.2005.02628.x
- Oh, H. S., & Seo, W. S. (2011). Systematic review and meta-analysis of the correlates of cancer-related fatigue. *Worldviews Evid Based Nurs*, 8(4), 191-201. doi:10.1111/j.1741-6787.2011.00214.x
- Olson, S. H., Xu, Y., Herzog, K., Saldia, A., DeFilippis, E. M., Li, P., ... Kurtz, R. C. (2016). Weight Loss, Diabetes, Fatigue, and Depression Preceding Pancreatic Cancer. *Pancreas*, 45(7), 986-991. doi:10.1097/MPA.0000000000000590
- Paiva, C. E., & Paiva, B. S. (2013). Prevalence, predictors, and prognostic impact of fatigue among Brazilian outpatients with advanced cancers. *Support Care Cancer*, 21(4), 1053-1060. doi:10.1007/s00520-012-1625-2
- Shih, Y.-C., & Hurria, A. (2014). Preparing for an Epidemic: Cancer Care in an Aging Population. *American Society of Clinical Oncology*, 133-137.
- Spichiger, E., Muller-Frohlich, C., Denhaerynck, K., Stoll, H., Hantikainen, V., & Dodd, M. (2012). Prevalence and contributors to fatigue in individuals hospitalized with advanced cancer: a prospective, observational study. *Int J Nurs Stud*, 49(9), 1146-1154. doi:10.1016/j.ijnurstu.2012.03.003
- Tung, H. Y., Chao, T. B., Lin, Y. H., Wu, S. F., Lee, H. Y., Ching, C. Y., ... Lin, T. J. (2016). Depression, Fatigue, and QoL in Colorectal Cancer Patients During and After Treatment. *West J Nurs Res*, 38(7), 893-908. doi:10.1177/0193945916630256