

国際学会報告

Characteristics of dietary intake and serum albumin in head and neck cancer patients undergoing radiotherapy and chemotherapy
—10th Asia Pacific Congress on Clinical Nutrition
in Adelaide of Australia—

頭頸部がん患者の放射線・化学療法中の
食事摂取と血清アルブミンの特徴
—第10回アジア・パシフィック臨床栄養学会、
於アデレード・オーストラリア—

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キーワード：頭頸部がん患者、血清アルブミン、放射線療法、化学療法、食事摂取量

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要 旨

第10回 APCCN (Asia Pacific Conference on Clinical Nutrition) は、2017年11月26日～29日にオーストラリアの Adelaide Convention Center で開催され、メインテーマは Nutrition Solutions for a Changing World (変化する世界の栄養学的対応) であった。日本人の死亡率第一位のがん患者は栄養状態が悪化し、放射線療法、化学療法の併用によりさらに食事摂取量の減少、栄養障害をもたらしている。筆者らは「頭頸部がん患者の放射線・化学療法中の食事摂取と血清アルブミンの特徴」を見出すため調査・分析した結果、患者は放射線療法、化学療法を開始後に血清アルブミンが有意に低下した。頭頸部がん患者の放射線療法、化学療法開始後は、開始前よりさらにたんぱく質摂取の必要があることを確認したので、その結果を報告した。

I. はじめに

国際栄養科学連合 (IUNS) の加盟団体であるアジア・パシフィック臨床栄養学会 (Asia Pacific Congress on Clinical Nutrition: APCCN) は、オーストラリアで1981年に設立された。APCCNは、アジア太平洋地域の臨床栄養学研究に関する最大のイベントであり、会員は臨床栄養学研究に携わる医師、管理栄養士、薬剤師、看護師、研究者などである。臨床栄養学研究は、人間の栄養学的ニーズを明らかにするために、遺伝学、病歴、ラ

イフスタイル、検査結果などに基づいた評価、環境・食品の品質・安全性との関係など、これらの要因が健康と疾患に与える影響について追究している¹⁾。

第10回 APCCN (Asia Pacific Conference on Clinical Nutrition) は、2017年11月26日～29日にオーストラリアの Adelaide Convention Center で開催され、メインテーマは Nutrition Solutions for a Changing World (変化する世界の栄養学的対応) であった。アジア太平洋地域の急速な経済発展は、飽食の問題を多くの国にもたら

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し、特に2型糖尿病は、世界の人口の2つの大国である中国とインドで上昇を続けて (WHO、2016)、タイプ2の中国の成人の有病率10.5%、インドの成人は7.9%である¹⁾。一方で、日本人の死亡率第一位のがん患者²⁾は栄養状態が悪化し、放射線療法。化学療法の併用によりさらに食事摂取量の減少、栄養障害をもたらし、医療先進国の問題も抱えている。今回、筆者らがポスタープレゼンテーションで発表した「頭頸部がん患者の放射線・化学療法中の食事摂取と血清アルブミンの特徴」を紹介する。

II. Characteristics of dietary intake and serum albumin in head and neck cancer patients undergoing radiotherapy and chemotherapy³⁾

1. Introduction

Patients with head and neck cancer are suffering from sore throat, mouth dryness while undergoing radiotherapy or chemotherapy. They have often decreased dietary intake and serum albumin concentrations during these therapy^{4) 5)}.

In this study, we measured daily dietary intake and serum albumin concentrations inpatients with head and neck cancer (hypopharyngeal cancer and others) currently undergoing radiotherapy or chemotherapy.

2. Methods

The study participants included 13 inpatients undergoing radiotherapy (RT group) and 10 inpatients undergoing chemotherapy (CT group).

Data were collected at three time points: before therapy, during therapy (after 40-Gy radiotherapy or one-week chemotherapy), and following therapy (after 70-Gy radiotherapy or 2-week chemotherapy). The participants were surveyed 1-day intake of nutrients (total energy, protein, carbohydrate, fats) and food groups (grains, fish, and meat). Blood biochemical markers (serum albumin, TLC: total lymphocyte count and RBC: red blood cell count) were determined.

Data Analysis: The mean values of daily dietary intakes and blood biomarkers were compared between time points within each study group.

3. Results

The characteristics of the subjects are as shown in Table1. Protein intake was significantly lower after than during therapy in both groups (RT group, mean decrease of 45.4 ± 16.6 g; CT group, mean decrease of 44.1 ± 15.8 g).

Intake of meat and fish decreased significantly in the RT group following therapy, whereas intake of fish decreased significantly in the CT group at during therapy. (Table 2, Fig 1)

Table1 Characteristics of subjects (n=23)

	RT group (n=13)		CT group (n=13)	
	Mean	± SD	Mean	± SD
Age(Y)	64.5	± 9.5	61.3	± 7.3
Gender	Male	13		9
	Female	0		1
Disease	Hypopharyngeal cancer	6	Hypopharyngeal cancer	7
	Laryngeal cancer	3	Oropharynx cancer	2
	Oropharynx cancer	2	Oral floor cancer	1
	Oral floor cancer	1		
	Tongue cancer	1		
Stage(%)	I	1 (7.7%)	0	(0%)
	II	2 (7.8%)	2	(20.0%)
	III	1 (7.9%)	0	(0%)
	IV	9 (7.10%)	8	(80.0%)

Table 2 Changes in dietary intakes in patients undergoing Radiotherapy and Chemotherapy

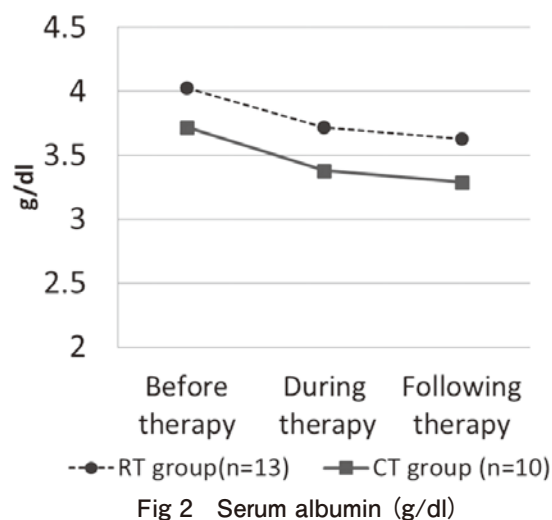
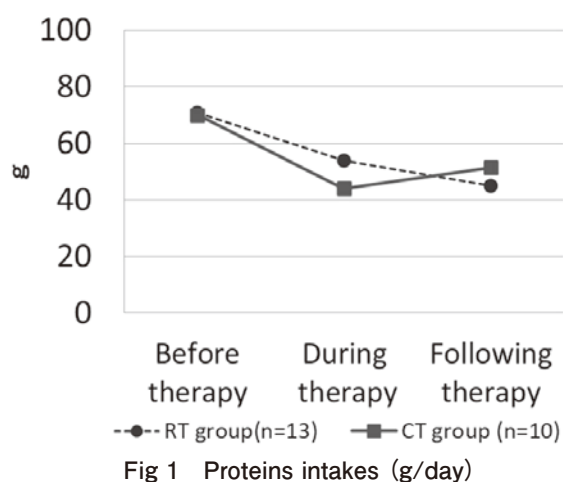
Nurtriants/day	Dietary Reference Intakes for Japanese (2015)	RT group (n=13)			CT group (n=10)			P value §	P value §
		Before therapy	During therapy (after 40Gy)	Following therapy (after 70Gy)	Before therapy	During therapy (one-week chemotherapy)	Following therapy (2-week chemotherapy)		
		Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD		
Total energy (Kcal)	2100	1756.8 ± 182.0	1404.4 ± 592.3	1146.8 ± 385.7	1696.9 ± 259.3	1136.4 ± 368.2	1258.7 ± 382.7	0.001 3)	0.002 1)3)
Proteins (g)	60	71.3 ± 6.4	54.9 ± 26.1	45.4 ± 16.6	70.8 ± 8.7	44.1 ± 15.8	51.5 ± 17.4	0.000 1)3)	0.000 1)3)
Fats (g)	46.7~70 (20~30%energy)	38.2 ± 12.8	34.8 ± 20.5	26.3 ± 9.3	37.9 ± 11.0	23.9 ± 14.7	25.7 ± 9.4	0.038 3)	0.020 1)
Carbohydrates (g)	262~341 (50~65%energy)	275.8 ± 23.3	214.4 ± 79.9	179.7 ± 65.0	263.4 ± 34.2	181.4 ± 53.4	186.3 ± 74.0	0.001 1)3)	0.002 1)3)
Food intakes/day									
Grains (g)	520	257.9 ± 41.7	182.4 ± 41.7	128.2 ± 92.5	248.6 ± 48.9	174.7 ± 50.8	220.1 ± 127.9	0.001 1)2)3)	0.010 1)
Green or yellow Vegetables (g)	140	141.0 ± 50.8	103.5 ± 50.8	69.6 ± 66.7	161.9 ± 54.3	111.7 ± 59.6	146.2 ± 89.8	0.011 3)	0.095
Pulses (g)	75	42.9 ± 26.6	36.5 ± 26.6	44.8 ± 71.5	91.9 ± 94.4	37.7 ± 41.3	36.5 ± 60.7	0.925	0.097
Fish and shellfish (g)	100	90.9 ± 33.6	50.7 ± 33.6	43.6 ± 34.4	81.1 ± 18.9	32.8 ± 29.8	43.9 ± 26.7	0.001 1)3)	0.000 1)3)
Meat (g)	90	42.3 ± 13.9	46.2 ± 13.9	14.6 ± 19.0	51.8 ± 28.2	29.9 ± 23.9	33.3 ± 28.7	0.002 3)	0.030
Eggs (g)	55	39.7 ± 30.9	47.0 ± 30.9	26.7 ± 29.0	33.0 ± 37.5	45.4 ± 33.4	25.3 ± 25.4	0.310	0.649
Dairy Product (g)	210	176.6 ± 90.9	143.1 ± 90.9	150.0 ± 108.2	179.5 ± 75.7	123.7 ± 44.0	171.9 ± 97.0	0.503	0.041
Fats and Oils (g)	12	8.7 ± 5.5	5.0 ± 5.5	3.1 ± 3.1	8.7 ± 3.7	5.4 ± 4.8	4.4 ± 4.3	0.010 3)	0.033 3)
Oral alimention drink (ml)		0.0 ± 0.0	166.7 ± 0.0	307.7 ± 459.1	0.0 ± 0.0	0.0 ± 0.0	163.3 ± 209.8	0.024 2)	0.252

§ Repeated measures ANOVA followed by Bonferroni test was used to calculate the statistical significance (<0.05).
 Level of significance: 1) Before therapy vs During therapy 2) During therapy vs Following therapy 3) Before therapy vs Following therapy

Table 3 Changes in blood biochemical markers in patients undergoing Radiotherapy and Chemotherapy

Blood biochemical markers	RT group (n=13)			CT group (n=10)			P value §	P value §
	Before therapy	During therapy (after 40Gy)	Following therapy (after 70Gy)	Before therapy	During therapy (one-week chemotherapy)	Following therapy (2-week chemotherapy)		
	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD		
TP (g/dl)	7.05 ± 0.34	6.57 ± 0.39	6.54 ± 0.79	6.67 ± 0.59	6.08 ± 0.39	6.10 ± 0.49	0.006 1)	0.030 1)3)
Alb (g/dl)	4.03 ± 0.28	3.77 ± 0.32	3.63 ± 0.43	3.72 ± 0.41	3.38 ± 0.37	3.29 ± 0.43	0.035 1)3)	0.040 1)3)
RBC (x 10 ³ /μl)	3.89 ± 0.66	3.77 ± 0.64	3.78 ± 0.61	3.86 ± 0.28	3.77 ± 0.35	3.56 ± 0.38	0.401	0.030 3)
Hb (g/dl)	11.83 ± 1.82	11.58 ± 1.55	11.70 ± 1.82	12.11 ± 1.17	11.70 ± 1.36	11.04 ± 1.04	0.644	0.011 3)
TLC (x 10 ³ /μl)	1.28 ± 0.59	0.56 ± 0.32	0.76 ± 0.31	1.04 ± 0.59	1.12 ± 0.64	1.26 ± 0.56	0.001 1)2)3)	0.316

§ Repeated measures ANOVA followed by Bonferroni test was used to calculate the statistical significance (<0.05).
 Level of significance: 1) Before therapy vs During therapy 2) During therapy vs Following therapy 3) Before therapy vs Following therapy



Serum albumin concentrations were significantly lower after than before therapy in both groups (RT 3.63 ± 0.43 g/dl, CT 3.29 ± 0.43 g/dl). (Table 3, Fig 2)

4. Conclusion

The increasing intake of protein-rich foods (e.g., soft boiled egg, tofu (soybean curd) that are easy to dissolve well in the mouth with a mild taste⁶⁾) during therapy will be able to increase serum albumin concentrations in patients with head and neck cancer⁷⁾.

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