The effect of diet on levodopa malabsorption in patients with advanced Parkinson's disease

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Abstract

Patients with Parkinson's disease gradually develop a circadian rhythm of symptoms, dyskinesia, neurological manifestation. As for levodopa, the absorption from the bowels is inhibited by dietary neutral amino acid. Nutrition therapy measures include the protein redistribution diet. We investigate the effect of the diet on patients individually, and the value of introducing the protein redistribution diet is evaluated. The subjects were 27 patients with Parkinson's disease whose symptoms were not well controlled by levodopa therapy. The association of blood levodopa levels two hours after the diet with motor function or diet was examined. From the 27 patients, there was a possibility that protein derived from the diet influenced 16 patients. For nine of the 16 people, the effect of the diet was thought about to one meal. As for the remaining seven people, the effect of the diet was thought about than two meals. It is not practical to perform the diet of the protein more than two meals per day. It was thought that the introduction of the protein redistribution diet was worth trying with nine of the 27 people in this study.

Keywords : malabsorpsorption, Parkinson's disease, a circadian rhythm, Nutrition therapy

Introduction

Parkinson's disease is an extrapyramidal disease, which is characterized by an intracerebral lack of dopamine and a relative increase of acetylcholine. Therapy for Parkinson's disease includes medical therapy, diet, motor, lifestyle, rehabilitation, and surgery. Since levodopa competes with dietary neutral amino acids, and it is absorbed by the bowels, malabsorption of the L- dopa is involved in the circadian rhythm of the motor symptoms of Parkinson's disease [1]. Factors of malabsorption include a fall in gastric acid concentrations, extension of the gastric emptying time, and the presence of dietary neutral amino acid. Nutrition therapy includes protein redistribution to lower the level of
protein in blood when levodopa is taken. The protein redistribution diet reduces the quantity of protein with many moving a body in the
daytime, and protein is increased for supper. By these measures, daytime movement becomes easy. However, there are many patients who do not last long because the protein redistribution diet is very different from the normal diet [2]. Also, a side effect includes the report that dyskinesia occurred. Therefore, the introduction requires careful examination. We introduced the protein

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redistribution diet, and the actual situation of the patients in terms of their prospects for improvement, and their symptoms was investigated.

Materials and Methods

The subject takes levodopa for a long term; 27 inpatients with Parkinson's disease with "wearing- off" phenomenon and the "on-off" phenomenon (11 men and 16 women)
Mean age was 67.3 years old (52-81), mean Hoehn & Yahr stage was 3.6 (3-4.5), the length of the disease period, was 9.3 years (7-23). A summary of the patients is shown in Table. Blood levodopa levels were measured two hours after breakfast, lunch, supper, and the relationship with the motor function of the time was examined. The blood levodopa levels defined at least drug concentration or more that became effective as High surely. Levels under this were defined as Low. The motor function was shown with four phases from 0 to 3.
The smallest daytime motor function was assumed to be OFF, and a further motor function was defined as ON. The statistics held Student's-t authorization.

Results

Nine patients (C1, C2, d, l, n, q, r, t, and w) had a problem than two of three meals. Nine patients (fb, f, i, j, m, r, s, v, and aa) had a problem with one of three meals. Their motor symptom was OFF, and the blood levodopa levels showed Low. No statistically significant difference was found in protein levels whenever the motor function was ON or OFF, and levodopa levels were HIGH or LOW.

Discussion

There is a possibility that nine patients were affected by the protein derived from the diet from one of three meals, and for nine other patients, it was more than two of three meals. It is difficult to introduce the protein redistribution diet more than two meals of 1st. We can intervene by a diet in only one meal. Therefore, it can be introduced into nine patients. The motor function improvement and the relationship with the protein intake could not be proved. Introduction of the protein redistribution diet requires care.
Protein redistribution food is known as a diet cure of patients with Parkinson's disease. However, this diet is usually accompanied with quite a few difficulties unlike the pattern that a Japanese takes in to continue this constantly. It is less clear how effective the measures are. We examined if the diet had any adverse influence on patients with advanced Parkinson's disease. In the protein redistribution diet, the quantity of the protein of breakfast and lunch is reduced, and that of supper increased. The neutral amino acids derived from the diet competes with the levodopa absorption from the bowels. As a result, blood levodopa levels decrease, and the motor function of the patients decreases. Therefore, it is rational to reduce the protein of the diet on a day when the physical activity is high [3]. However, it is unknown how effective protein redistribution foods are because bowel absorption varies among individuals. Furthermore, it is also unknown how much the need to introduce protein redistribution food into is. In this study, five possible patients whom protein derived from a diet influenced were present in nine Parkinson patients that control was difficult. In three of the five people, the effect of the diet was thought about only to one meal. In the remaining two people, the effect of the diet was thought about than two meals. Patient c was similar results together for two days when it was observed. It is nutritionally undesirable to adopt a protein redistribution diet for more than two meals in one day [4].

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Table1. Summary of patients

Patient	M/F	Age	H & Ystage	Duration of disease (y)
a	F	70	3.5	8
b	F	63	3.5	10
c	M	69	4	23
d	M	59	4	7
e	M	70	4.5	10
f	F	72	3.5	6
g	M	65	3.5	8
h	F	64	3	8
i	F	63	4	12
j	F	64	3.5	11
k	M	75	4	10
l	F	66	4.5	16
m	F	70	4	17
n	F	70	4	11
o	F	52	3	10
p	M	62	3	4
q	M	73	3.5	12
r	M	71	3	2
s	F	64	3.5	4
t	M	64	3.5	9
u	M	68	3.5	10
v	F	81	3.5	5
w	F	67	3	4
x	F	76	3.5	8
y	F	72	4	13
z	F	62	3.5	12
aa	M	65	3	2