

Impaired functional recovery in subacute stroke patients with sarcopenia : pilot study

Kyungmin Kim, Woosup Song, Sujin Choi
Department of Rehabilitation Medicine,
Dong Eui hospital, Busan, Korea

Background

For a long time, old age has been considered an important risk factor for sarcopenia. And stroke has been thought to have the same risk factors, too. Because stroke and sarcopenia have the same risk factor which is aging, these two diseases can affect each other's conditions. Muscle atrophy and decreased strength can affect on the functional recovery of stroke, especially on controlling body trunk and functional ambulation. However, In the patients with subacute stroke, it is not reasonable to regard sarcopenia as a consequence of stroke. So, by comparing the subacute stroke group of with sarcopenia and without sarcopenia, we can consider the medical effect of sarcopenia on functional recovery in stroke patients.

Method

Patients were selected who diagnosed with hemiplegia from a stroke for the first time, who are subacute stage within 1 week to 6 months of onset and poor standing balance. Patients who have other musculoskeletal or nervous diseases which can affect to function on the unaffected side or who are difficult to cooperate due to poor cognition were excluded. Sarcopenia was evaluated by the muscle atrophy and muscle strength at a admission. For muscle atrophy measurement, Skeletal muscle Index(SMI) was calculated by bioelectrical impedance analysis. Cut-off values were less than 7.0 for men and 6.0 for women. For muscle strength measurement, hand grip strength was measured with grip dynamometer, by unaffected side. Cut-off values were less than 27kg for men and 16kg for women. Functional status was evaluated with Berg Balance Scale(BBS), Korean version of Trunk Impairment Scale(K-TIS), Functional Ambulation Category(FAC), Motricity Index on Lower extremity(MOT). All patients were evaluated each categories at the time of admission and 3 months after admission.

Result

Finally, 40 patients were recruited. After measuring SMI and hand grip strength, patients were classified into two groups: 15 is sarcopenic group(SG), the other 25 is non-sarcopenic group(NSG). They all showed improvement in BBS, K-TIS, MOT. In addition, NSG showed improvement in FAC.(Table 1.) Comparing improvements between the two groups, NSG showed more improvement in K-TIS than SG. (Table 2.) If more sample is secured, it seems that NSG will show obvious improvement in FAC than SG, too.

Conclusion

Sarcopenia measured through SMI and hand grip strength has negative effects on functional recovery in subacute stroke patients. To overcome the negative effect of the sarcopenia, some treatment strategies are available. Active resistance training and well organized nutritional supplement can improve muscle strength, muscle mass and physical function. And these may be an important key to functional recovery in subacute stroke patients with sarcopenia. However, it is true that the number of samples of this study is not enough. Accordingly, the authors have plan to progress further study by adding the patients who qualified those conditions.

	SG		NSG	
	Baseline	After 3 months	Baseline	After 3 months
BBS	21.06±9.36	28.73±11.57*	29.52±11.51	36.96±11.33*
K-TIS	4.07±3.45	8.27±4.54*	8.36±4.71	14.2±4.85*
FAC	1.07±0.26	1.27±0.59	1.88±0.73	2.44±0.77*
MOT	46.6±16.43	52±14.96*	59.20±14.69	65.84±12.70*

Table 1. Changes of measurements after rehabilitation treatment in SG and NSG. SG : Sarcopenic group, NSG : Non-sarcopenic group *p<0.05 by Wilcoxon signed-rank test

	SG	NSG	p-value
△BBS	7.67±3.60	7.44±5.35	0.044*
△K-TIS	4.20±3.76	5.84±2.29	0.038*
△FAC	0.2±0.56	0.56±0.65	0.161
△MOT	5.47±4.90	6.64±7.37	0.942

Table 2. Comparison of improvements between SG and NSG. SG : Sarcopenic group, NSG : Non-sarcopenic group *p<0.05 by Mann-Whitney U-test