

심폐재활

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Physical performance in elderly patients with chronic heart failure versus healthy senile

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Background

Heart failure (HF) is chronic and exhausting disease. Previous studies demonstrated that patients with HF impaired either cardiac function and physical performance. It is not known how much the physical performance has been impaired in these populations compared to healthy people in Korea.

Method

This study is a single-center, cross-sectional observation study. Ninety healthy control subjects (45 females, 71.0 [7.0] year-old (median [IQR]), body mass index (BMI) 24.6 [3.3] kg/m²) and 52 HF patients (22 females, 70.5 [7.0] year-old, BMI 23.2 [5.1] kg/m²) participated in this study. HF was defined by the syndrome of dyspnea, fatigue and congestion related to an altered cardiac function caused by cardiomyopathy or valve diseases and NYHA class I to III. Body composition analysis, grip strength (GS), knee extensor strength (KES) and 6-minute walk test (6MWT) were conducted and compared inter-groups.

Results

HF group weighted less and showed lower BMI($p=0.010$, 0.042 , respectively). In body composition analysis, HF group showed lower skeletal muscle index (7.44 [1.02] kg vs 6.16 [1.80] kg, $p=0.000$) and 50kHz whole body phase angle (PA) (5.50 [1.02] vs 4.83 [0.96], $p=0.000$). Also, GS was 26% lower in HF group($p=0.000$). In 6MWT, HF group walked 389.5 [150.0]m and healthy group walked 532.5 [85.0]m ($p=0.000$) (Table 1). Pre- and post- blood pressure and post-oxygen saturation was lower in HF group ($p=0.000$). 6-minute walk distance (6MWD) was correlated with SMI, PA, GS, KES but not with left ventricular ejection fraction and E/E'. Sarcopenia using Asian working group criteria was showed as 43.7% in HF subjects and 0% in healthy senile ($p<0.001$).

Conclusion

Elderly patients with HF showed lower physical performance than healthy senile. Apart from left ventricular function, sarcopenia is significant impact factor on physical performance in elderly HF subjects.

Table 1. Parameters of 6-minute walk test

	Healthy subject (n=90)	HF subjects (n=52)	P
6MWD, m [Median, IQR]	532.5, 85.0	389.5, 150.0	0.000 [†]
6MWD, % [Median, IQR]	92.3, 15.9	68.6, 25.8	0.000 [†]
Pre-SBP, mmHg [Median, IQR]	132.0, 15.0	121.0, 26.0	0.000 [†]
Pre-DBP, mmHg [Median, IQR]	75.5, 11.0	70.0, 15.0	0.005*
Post-SBP, mmHg [Median, IQR]	156.0, 30.0	144.5, 28.0	0.012*
Post-DBP, mmHg, [Median, IQR]	74.0, 12.0	79.5, 15.0	0.000 [†]
Pre-HR, bpm [Mean±SD]	82.2±13.3	73.3±14.9	0.000*
Post-HR, bpm [Median, IQR]	84.0, 16.0	100.50, 23.0	0.000 [†]
Pre-Sat, % [Median, IQR]	98.0, 2.0	97.0, 2.0	0.060
Post-Sat, % [Median, IQR]	96.0, 2.0	95.5, 4.0	0.000 [†]

6MWD, 6-minute walk distance; m, meter; IQR, interquartile range; HF, heart failure; SBP, systolic blood pressure; DBP, diastolic blood pressure; mmHg, millimeter of mercury; HR, heart rate; Sat, saturation; SD, standard deviation

*p<0.05, student T test

[†]P<0.05, Mann-Whitney U test