통증 및 근골격재활

게시일시 및 장소 : 10 월 18 일(금) 08:30-12:20 Room G(3F)

질의응답 일시 및 장소 : 10 월 18 일(금) 10:00-10:45 Room G(3F)

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Relationships of spinopelvic parameters and CSA of paraspinal muscles in Korean elderly.

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Objectives

Sarcopenia, characterized by generalized loss of skeletal muscle, is an emerging health problem in an aging society.In sarcopenia, muscular atrophy is caused by fatty infiltration and muscle degeneration, which leads to muscular and postural imbalances. Therefore, elderly with postural imbalances and gait disorders, sarcopenia should be considered. In these cases, examinations are only restricted to extremeties in the process of sarcopenia diagnosis. Therefore, these examinations are seems to have low association with spine and postural imbalances. Recently, studies about assessment tools of spinal sacropenia are actively progressing. Paraspinal muscle cross-sectional area(CSA) is known as assessment technique of spinal sacropenia. But MRI or CT used to measure cross-sectional area is difficult to examine repeatedly. On the other hand, spinopelvic parameters are assessment technique of postural disturbances and it can be examined easily. So the purpose of this study was to find out and utilize the relationships between spinopelvic parameters and paraspinal muscle CSA.

Methods

The medical records of 107 people, who participated in the health screeing program for elderly fishermen, were retrospectively reviewed. Spinopelvic parameters were measused in whole spine x-ray and CSAs of paraspinal muscle were measured in MRI. Among paraspinal muscles, psoas and erector spinae were selected in MRI(figure 1). Among various spinopelvic parameters, sagittal vertical axis(SVA), pelvic incidence (PI), sacral slope(SS), pelvic tilt(PT), perlvic obliquity(PO) and cobbs angle(CA) were measured. Correlations between CSA of paraspinal muscle and spinopelvic parameters were analyzed by Pearson correlation coefficient(Table 1). Participants were grouped by spinopelvic parameters respectively and statistical difference was confirmed between each groups by independent t-test. The cut off values were refered by normative values. (Table 2).

Results

SVA, SS and PT were significantly correlated with erector spinae CSA and psoas CSA. But there was no statistical correlation with PI, PO, CA and paraspinal muscle CSA. (Table 1). Participants were divided by spinopelvic parameters that have correlation with paraspinal muscle CSA. Each groups divided by SVA, PT and SS had statistically significant differences of paraspinal muscle CSA(Table2).

Conclusion

Among several spinopelvic parameters, SVA, SS and PT had statistically significant correlation with CSA of erector spinae and psoas. Measuring CSA esential but it is not cost-effective. Spinopelvic parameters, especially SVA, SS and PT, can be used as a screening for the candidate of MRI to evaluate sarcopenia and also as a followup for the effects of spinal exercise or rehabilitation therapy periodically.

Table 1. Correlations between paraspinal muscle CSA and spinopelvic parameters

	SVA	PI	SS	PT	PO	CA
Erector spinae	**-0.209***	-0.034	**0.265****	**-0.233***	0.119	-0.054
Psoas muscle	**-0.222***	-0.067	**0.207***	**-0.228***	0.150	0.013

SVA: sagittal vertical axis, PI: pelvic incidence, SS: sacral slope, PT: pelvic tilt, PO: perlvic obliquity, CSA: cross-sectional area. *P<0.05 and **P<0.01 by Pearson correlation coefficient

Table 2. Comparison between groups divided by SVA, PT and SS.

	SVA>10°	SVA≤10°	p-value
Erector spinae CSA (cm²)	53.2±10.3	57.5±10.6	**0.038****
Psoas muscle CSA (cm²)	13.4±4.9	16.2±5.2	**0.006****
	PT>22°	PT≤22°	
Erector spinae CSA (cm²)	50.9±8.7	56.0±10.8	**0.045***
Psoas muscle CSA (cm²)	12.6±5.5	15.13±5.4	**0.043***
	SS<21°	SS≥21°	
Erector spinae CSA (cm²)	50.8±10.5	56.5±10.2	**0.013***
Psoas muscle CSA (cm²)	12.0±4.2	15.5±5.2	**0.002****

*P<0.05 and **P<0.01 by Independent t-test

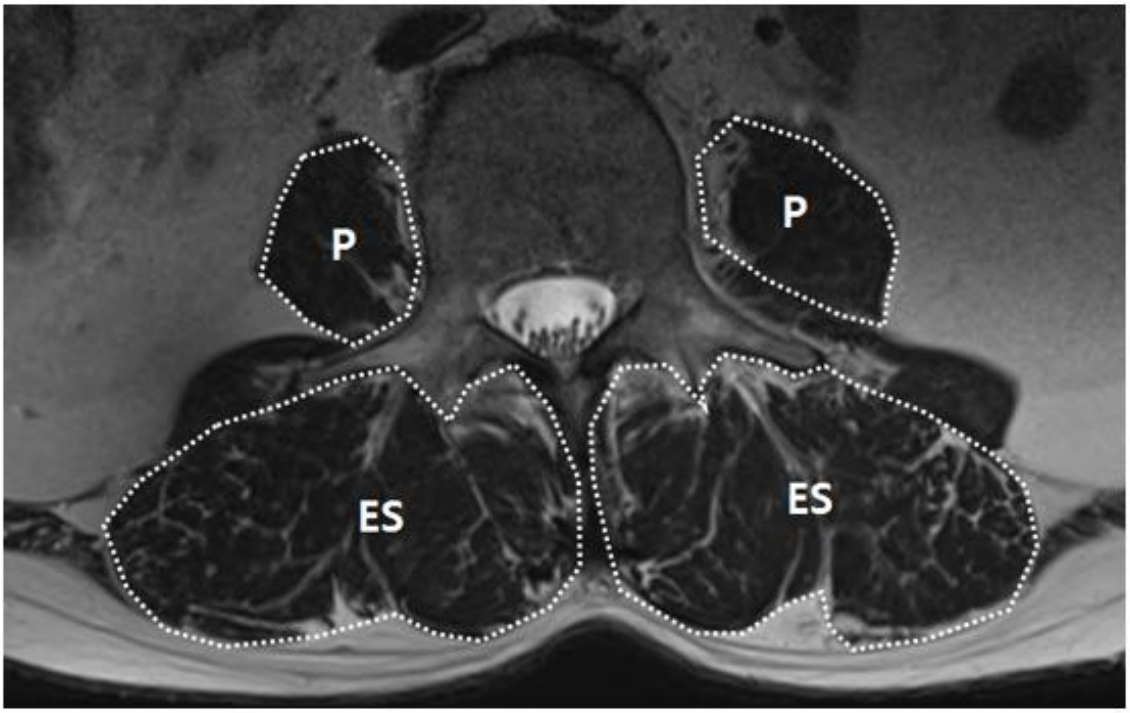

Figure 1. Erector spinae and psoas muscle CSA measurement by MRI