429

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PELVIC FLOOR SUPPORTIVE UNDERWEAR ENHANCES ALLEVIATING EFFECT OF PELVIC FLOOR MUSCLE TRAINING ON LOWER URINARY TRACT SYMPTOMS IN PELVIC ORGAN PROLAPSE PATIENTS

Hypothesis / aims of study

Pelvic organ prolapse (POP) occasionally causes bothersome lower urinary tract symptoms such as urgency and frequency of micturition, incontinence. To treat the urinary disturbance caused by POP, we developed a novel underwear supportive for frailly functioning pelvic floor (Adam medical LCC., Tokyo, Japan)（Fig1）. It's effectiveness in correcting anatomical position of the urinary bladder has been objectively demonstrated by urethrocystography in the POP patients at a standing position (REF1). The purpose of this study was to examine if the pelvic floor supportive underwear alleviates the lower urinary tract symptoms in subjective measurement of POP patients.

Fig1 new pelvic floor supportive underwear

Study design, materials and methods

This was a prospective intervention study. Female participants who were diagnosed as cystocele at Stage 2 to 4 were recruited between October 2015 and January 2017 at an outpatient clinic of a university hospital. The participants wore the supportive underwear during the daytime for 2 weeks. Then after the 2 weeks, pelvic floor muscle training was combined with the daily use of the supportive underwear for the next 2 weeks. Lower urinary tract symptoms of the participants was assessed before the intervention of the supportive underwear; immediately after the intervention of the supportive underwear only; and after combined intervention of the supportive underwear and pelvic floor muscle training. The symptom assessment were the Japanese version of the Prolapse Quality of Life Questionnaire (P-QoL), Pelvic Organ Prolapse Distress Inventory (POPDI-6), Frequency-Volume chart (FVC), and International Consultation on Incontinence Questionnaire-Short Form (ICIQ-SF).
Statistical analysis was performed using a Statistical Package for Social Science （SPSS) with Friedman test or one-way ANOVA, if applicable. All values are expressed as mean ± SD. For all analyses, $p<0.05$ was considered significant.

Results

Twenty-six participants were POP patients of average age at 69.8 year-old ranging from 54 to 88 year-old. Of these, 23 participants successfully completed the whole course of the study. Three patients who dropped out had mild dementia so that they were unable to execute daily routines including pelvic floor muscle training.

Compared with the baseline (i.e., before intervention), the supportive underwear alone improved P-QoL Physical limitations score and POPDI-6 score; and a combination of the supportive underwear and pelvic floor muscle training further improved the scores.(Table1)
The intervention of the supportive underwear reduced the number of urination per day from 11 ± 2.8 times to 8.4 ± 3.5 times. The supportive underwear increased maximum urination volume by 21% (from 306 ± 113 ml in the baseline to 371 ± 154 ml by the supportive underwear).

Table.1 Mean of P-QOL domains score , POPDI-6 score and ICIQ-SF (n23)

	Baseline	After2weeks	After4weeks	P-value
P-QOL general health perception	40.2	38.0	39.1	0.866[b]
P-QOL Prolapse impact	58.0	53.6	50.7	0.328[a]
P-QOL Role limitations	39.1	33.3	27.5	0.214[a]
P-QOL Physical limitations	53.6	37.7	31.9	0.002[b]*
P-QOL Social limitations	25.1	23.7	14.5	0.014[a]*
P-QOL personal relationships	7.4	11.1	7.8	0.846[a]
P-QOL Emotions	46.9	41.5	37.7	0.159[b]
P-QOL Sleep/Energy	29.7	19.6	21.0	0.055[a]
P-QOL severity measures	35.9	35.1	30.1	0.090[b]
POPDI-6 total score	32.2	25.9	23.1	0.028[b]*
ICIQ-SF	5.6	5.0	4.0	0.258[a]

Baseline: before intervention
After 2weeks: the supportive underwear alone
After 4weeks: combination of the supportive underwear and PFMT
[a]= Friedman test, [b]= one-way ANOVA *＝statistically significant.

Interpretation of results

The supportive underwear alone improved overall scores of P-QoL and POPDI-6 and decreased micturition frequency, compared with those of the baseline. The supportive underwear in combination with pelvic floor muscle training further ameliorated the outcome measured by P-QoL and POPDI-6, compared with the supportive underwear alone.

Concluding message

This study demonstrated that the novel pelvic floor supportive underwear is effective not only in correcting anatomical position of the urinary bladder (as shown in the previous study) but also in alleviating the lower urinary tract symptoms in the POP patient. A combination of the supportive underwear and pelvic floor muscle training leads to better outcome in treatment of POP symptoms. Thus, the pelvic floor supportive underwear is an easy and safe conservative option for treatment of the disease.

References

1. Taniguchi T,Kobayashi Y,Kobayashi H, et al:Evaluation of a novel underwear which supports the pelvic floor in pelvic organ prolapse patients,ICS2016.

Disclosures

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