

PELVIC FLOOR MUSCLES FUNCTION IN OBESE WOMEN WITH URINARY INCONTINENCE.

Hypothesis / aims of study

Epidemiological studies have shown that both overweight and obesity are important risk factors for the development of urinary incontinence, the suggested mechanism is that obesity acts through the added weight, that bear down on pelvic tissues, causing chronic strain, stretching and weakening of muscles, nerves and other structures of the pelvic floor (1). There are not published data about the relationship between pelvic floor muscles (PFM) function and BMI or abdominal obesity measured by waist circumference in obese women.

The aims of this study were: first, to study in obese women with symptoms of urinary incontinence (UI), if there are correlations between the strength of the PFM, measured on digital testing by Oxford scale and measures obtained using a perineometer and second, to investigate the correlation between the measures of the function of the PFM and the BMI and waist circumference.

Study design, materials and methods

We analyzed the baseline characteristics of 182 women with UI, that were seeking care for an obesity problem, in a third level hospital obesity unit, between October 2008 and September 2009. All 182 women participated in a prospective cohort study to investigate the impact of treatment for weight loss in UI and the changes in PFMF. We included only women with BMI of 30 kg/m² or more, women who accepted to participate, signed an informed consent. And baseline demographic information and medical and obstetric history, including presence of hypertension, diabetes, use of antidepressant medication, and hysterectomy was collected at the first visit to the obesity unit. Presence and severity of UI was assessed using a validated questionnaire, the International Consultation on Incontinence Questionnaire-Urinary Incontinence short form (ICIQ-UI-SF). Only women with a score of ICIQ-UI-SF>0 were included. Pelvic examinations were performed in dorsal lithotomy position, using a maximum straining effort, for the pelvic organ prolapse quantification. Patients with stages II or greater in any compartment (anterior, posterior, uterus-cervix, or the apex of the vagina) were excluded. Vaginal digital palpation was used to evaluate the PFMF and the strength was measured by the modified Oxford grading scale (2). This scale quantifies pelvic floor muscle strength as: 0, no contraction; 1, flicker; 2, weak; 3, moderate; 4, good; and 5, strong. Pelvic floor muscle strength was also measured with the Peritron™ perineometer (Cardio-Design, Victoria). This perineometer measures vaginal squeeze pressure through a conical sensor covered with a medical silicone rubber sheath. The sensor is connected to a handheld microprocessor with a latex tube, allowing measurement of squeeze pressure in centimeters of water (cmH₂O). The occlusive pressure readings from a manometer are a surrogate measure of strength. Vaginal digital assessment and Peritron™ perineometry have good correlation in non obese women (3). The PFMF and strength of patients were evaluated for a single examiner; she was a skilled therapist with more than 10 years of experience in conducting this type of examination.

Background variables were described as frequencies and percentages, and means and standard deviations as appropriate. The correlation between BMI, waist circumference and modified Oxford scale, and perineometry strength measures was assessed by calculating Spearman correlation coefficients for ordinal variables and Pearson correlation coefficients for continuous variables. Statistical significance was set at p-values<0.05.

Results

The mean age of the 182 studied women was 48.7 (12.1) years and ranged from 18 to 80 years. BMI ranged from 30 Kg/m² to 69.9 Kg/m², with a mean of 44.2 (6.7) Kg/m². Mean abdominal perimeter was 126.4 (12.7) cm.

The mean score of ICI-UI-SF was 9.5 (5.2); distribution of the patients according to the severity of the UI measured by the ICI-UI-SF total score was: 27.5% light, 44.5% moderate, 22.5% severe and 5.5% very severe.

The strength of the pelvic floor muscles measured by the modified Oxford Grading Scale in 92 women was <3 in 39.4% of them; that means that these women had no ability for voluntary contraction or a flicker or weak contraction.

Measures obtained during perineometry were: mean vaginal squeeze pressure of three contractions for the whole group, 23.7 cmH₂O (95% CI: 19.5 to 27.9) and mean of the highest of the three measurements for vaginal squeeze pressure, 37.6 cmH₂O (95% CI: 32.3 to 42.9).

The correlation coefficients for the strength of the PFM, measured on digital testing by Oxford scale and measures obtained using the Peritron™ perineometer were 0.743 (maximal pressure), 0.731 (mean pressure) all p-values<0.001. Correlations were also statistically significant when PFM strength was analyzed dichotomously (<3 and ≥3) by means of the Spearman's coefficient.

There was no correlation between measures of PFM strength (digital testing by Oxford scale and measures obtained using the manometer) and BMI and waist circumference.

Interpretation of results

The findings from this study demonstrated that the measurements of the PFM strength, both on digital testing and perineometry, in obese women with UI, have moderate, but significant correlations.

Although there are some opinions in the literature about how obesity may stress the pelvic floor secondary to a continuous increased abdominal pressure, according to our results, the measures of PFM strength and the BMI and waist circumference are not correlated when measured in obese women with UI.

Concluding message

The strength of the PFM, measured by modified Oxford scale, and all the measures of with a perineometer, have moderate, significant correlations in obese incontinent women, as it has been demonstrated in women with IU without obesity.

Statistical association between the strength measures of PFM and BMI and waist circumference cannot be found in this study. Further explorations are required to understand the nature of the relationship between obesity and pelvic floor dysfunction.

References

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Disclosures

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