

IS THERE CORRELATION BETWEEN THE PELVIC FLOOR MUSCLES STRENGTH AND PELVIC TILT IN POSTMENOPAUSE WOMEN?

Hypothesis / aims of study

The aim of the study was to investigate the correlation between pelvic floor muscles (PFM) strength and pelvic tilt angle in postmenopause women.

Study design, materials and methods

A cross-sectional, observational and exploratory study including 46 postmenopausal women with a mean age of 60.69 (± 8.87) years old and average body mass index $27.22 \pm (3.96)$ kg / m². A physical evaluation was performed by digital palpation (Modified Oxford Scale) and vaginal dynamometry (kgf) (1). Also, pelvic tilt angles was assessed by photogrammetry (2) in which a evaluator demarcated the angle between the line of intersection that joins the anterior superior iliac spine to the posterior inferior iliac spine using Corporis Pro® 3.1.3 software. Additionally, validated questionnaires were used and recommended by the International Consultation on Incontinence Questionnaire (ICIQ): ICIQ Urinary Incontinence - Short Form (ICIQ-UI SF) to quantify and qualify the urinary loss; ICIQ - Overactive Bladder (ICIQ-OAB) that evaluates the impact of the symptoms of overactive bladder in the quality of life; and the Female Sexual Function Index (FSF) that evaluates the female sexual functioning in its entirety.

Statistical analysis was performed using Spearman' s test with a significance level of 5%.

Results

Participants were women in postmenopausal period ($11.87 \pm 7,63$ years old) and 45.65% of them were using hormonal spare. Also, all participants were multiparous (mean of 3.24 ± 2.62 births). Among the participants, 34 (73.91%) had mixed urinary incontinence (UI) (ICIQ-UI SF score 7.56 ± 6.12 ; ICIQ-OAB score 3.72 ± 2.78). Additionally, it was observed a mean score of 11.22 ± 11.01 in the FSF.

On investigating the pelvic tilt angles, it was observed that 21 showed anterior pelvic tilt (mean angle 5.82), while 25 of them showed posterior pelvic tilt (mean angle -5.75). It was observed weak correlation between the pelvic tilt angle and PFM strength by both of the methods, digital palpation ($r = 0.11$) and vaginal dynamometry ($r = -0.19$).

Interpretation of results

The hypothesis that there might be a relationship between the pelvic tilt angle and the PFM strength was considering the important function of MAP in urinary continence mechanism and support the pelvic organs. Although having found weak correlation between data, we consider that investigations should also be targeted of studies.

According to Integral Theory of Continence (3) each component of which, organs, ligaments, muscles, central and peripheral neurological control contributes interactively to normal function. Tension changes applied by muscles and ligaments to vaginal wall adjacent to the fascia determines the opening or closure of the bladder neck and urethra, and may also determine premature activation of the micturition reflex, triggering involuntary detrusor contractions.

The analysis of pelvic tilt angle characterizes posture in posterior and anterior pelvic tilt, which tends to influence the abdominopelvic dynamics; however, the position of the sacrum can not be directly influenced by the pelvic tilt angle, which sets up an indirect analysis.

A weak correlation was observed between the pelvic tilt angle and the PFM strength using digital palpation as a more objective exam and vaginal dynamometry.

Although dynamometry is more reliable, postmenopause women shows characteristics of urogenital changes in this period, it can cause discomfort and consequently difficult to achieve an efficient contraction of the PFM.

The low score found in FSF refers to the presence of sexual dysfunction, which also characterizes the postmenopausal phase. Among the urinary symptoms, mixed UI was prevalent in 67.39% of women and is more prevalent among women with posterior pelvic tilt posture.

Evaluate the relationship between the pelvic tilt angle and urogynecologic symptoms in women at different stages of feminine life cycle may turn out to clarify if there is a direct relationship between them, which could contribute to proposals for treatment of pelvic floor dysfunctions.

Concluding message

In conclusion, the study found a weak correlation between the pelvic floor muscles strength (measured by both, digital palpation and vaginal dynamometry) and the pelvic tilt angle in postmenopause women. However, it does require investigations about the relationship between the pelvic tilt angle and function of pelvic floor muscles.

References

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Disclosures

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