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POSTURAL PELVIC PROFILE IN WOMEN WITH URINARY INCONTINENCE

Hypothesis / aims of study

An appropriate posture of the lumbar-pelvic segment can influence the activation of pelvic floor muscles, being a contributing factor to urinary continence. (1) The aim of this study is to compare the angular pelvic parameters of woman with and without urinary incontinence and correlate them with the pelvic floor muscles' electrical activity and function.

Study design, materials and methods

This is a cross-sectional study. Included were women aged between 18 and 59 years with urinary incontinence confirmed by a 1-hour pad test and woman without urinary incontinence [confirmed by a score of zero, using the International Consultation on Incontinence Questionnaire - (ICIQ)]. Excluded were women with neurological diseases, rheumatic diseases, congenital skeletal muscle disorders, use of prostheses or orthoses, pregnant women, obese women and / or woman submitted to orthopedic surgery. The 1 hour pad test was performed. Then, the participant was instructed to wear tight underwear that helps to mark the anatomical points: anterior superior iliac spine, posterolateral iliac spine, with white polystyrene balls fixed with double-sided tape. The pictures were taken in a room with white background. The digital camera was located three meters away from the participant, placed parallel to the floor, on a camera tripod level at half of the height of the participant. The images were sent to the computer and analyzed using the SAPO Postural Assessment Software version 0.68 by a blind examiner familiar with the program. (2)

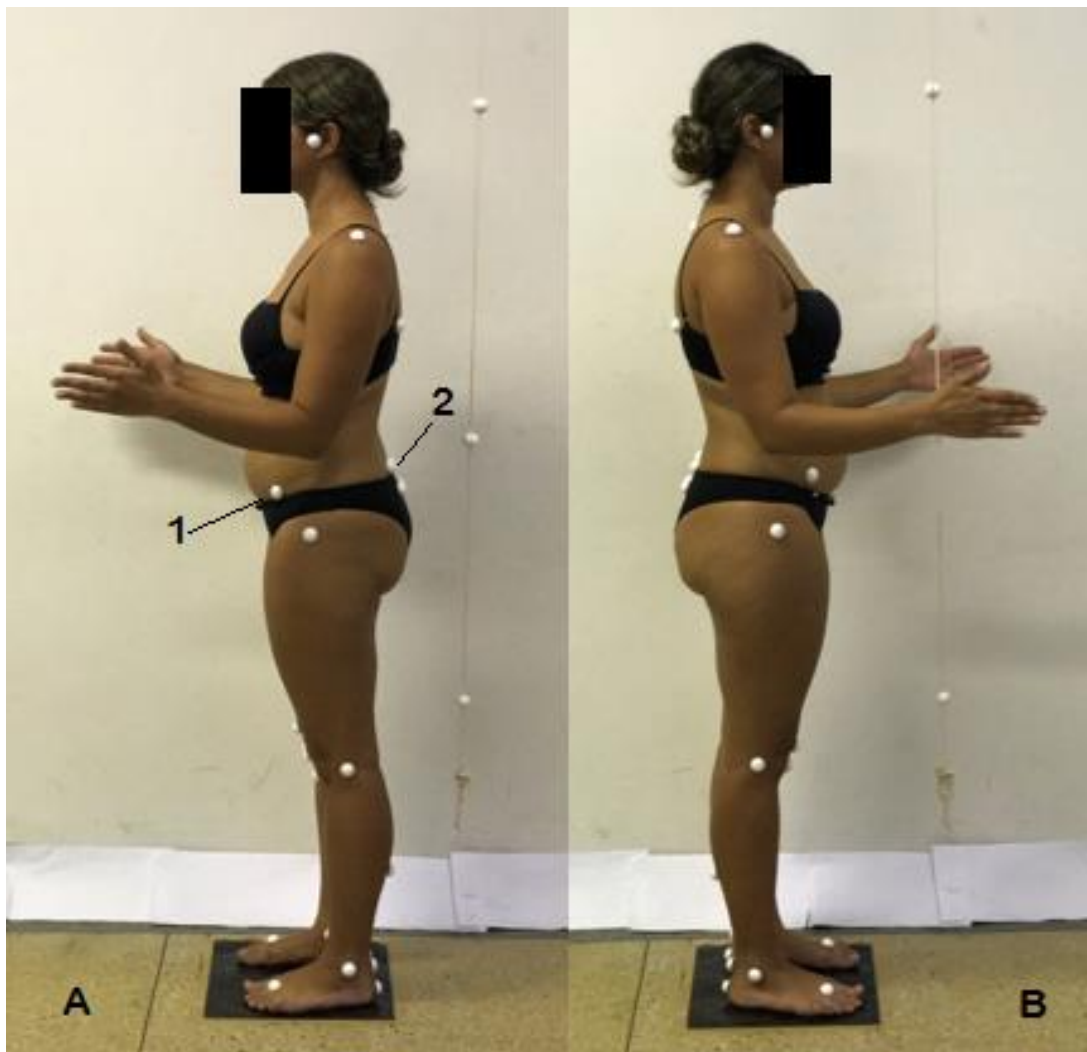


Figure 1 - Anatomical points and posture of the participants. A = left side view ; B= right side view; 1 = upper anterior iliac spine; 2= posterior inferior iliac spine

The evaluation of the Pelvic Floor Muscle (PFM) function was performed by bidigital vaginal palpation, following the recommendations of the International Continence Society, using the letters P, E, R and F of the PERFECT scheme. Then, electromyography (EMG) (New Miotool Uro™, Miotec) was performed. Both evaluations were performed in dorsal decubitus and in orthostasis. Two surface electrodes were attached in the perianal region (position of 3 and 9 o'clock), two on the right internal oblique muscle and one on the right anterior superior iliac spine. The EMG signal was recorded by the Miotec Suite software version 1.0. A 20Hz high-pass filter, 500Hz low-pass filter and 60Hz notch filter were used. Measured were the value of the

maximum voluntary contraction (MVC), the mean of the basal electric activity for one minute, the peak of the highest phasic contraction and the mean of the best tonic contraction.

Results

The sample consisted of 40 women, 20 with UI, the incontinence group (IG) and 20 without UI in the continence group (CG). The groups were matched for age. The mean age of the CG was 43.5 ± 8.4 years, while in the IG it was 47.1 ± 7.8 years ($p = 0.16$). There was no difference in the sociodemographic variables, only the variable 'childbirth' presented a difference between the groups, in which vaginal delivery was more frequent in IG ($p = 0.01$). Among incontinent women, 14 (70.0%) presented Stress Urinary Incontinence (SUI) and six (30.0%) Mixed Urinary Incontinence (MUI), and presented a median of 06 (3.0 - 13.0) grams of urinary loss.

When assessing muscle function, only P (power), in dorsal decubitus, presented a difference between the groups ($p = 0.04$). The median CG was 4.0 (3.0 - 4.0) while the IG was 3.0 (3.0 - 3.0). A greater electrical activity was observed in the CG women, with a significant difference between the groups in the measurements of the basal electric activity and tonic contraction in dorsal decubitus and orthostasis ($p = 0.01$).

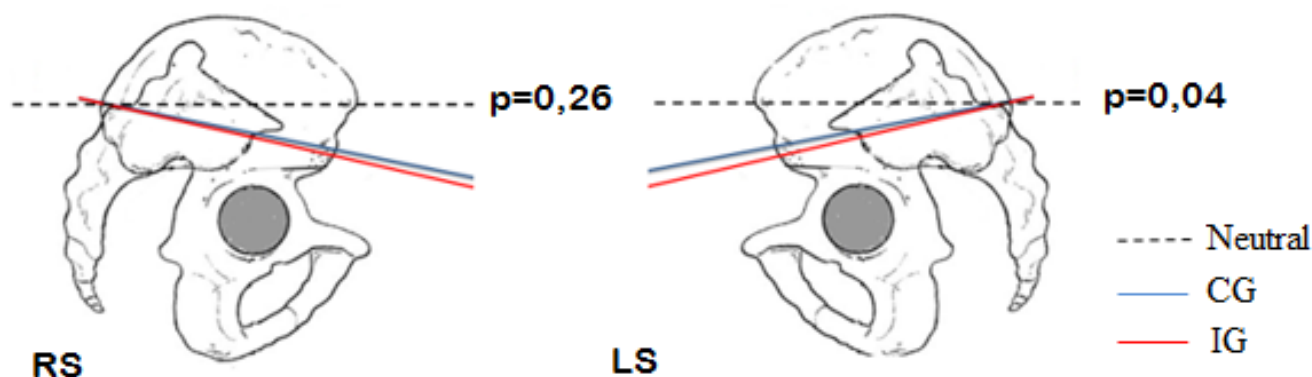


Figure 2 - Angle of the pelvis of incontinent and not incontinent women, in right side (RS) and left side (LS) views. CG = Continence Group; IG = Incontinence Group. Independent Student T test.

In the postural evaluation, the pelvic angle observed through the right side view (RS) presented a mean of -14.6 ± 5.1 in the CG and -16.3 ± 4.5 in the IG ($p = 0.26$). While, on the left side (LS), a difference in the degree of the angle of the CG and IG was found, the CG average being -14.0 ± 4.2 and the IG -16.9 ± 4.5 ($p = 0.04$) (Figure 2).

Analysed was the correlation between the degree of left and right pelvic anterior inclination with the muscular strength and the electrical activity of the PFM in the IG and CG. There was a moderate correlation between the anterior pelvic inclination (LS) and the repetition ($p = 0.05$). The electrical activity of the basal pelvis in orthostasis and the angles of anterior pelvic inclination in the views were: RS $r = 0.51$ ($p = 0.02$) and LS $r = 0.46$ ($p = 0.04$). No correlation was found in the CG.

Interpretation of results

It was evidenced that IG has a greater left anterior pelvic inclination. A greater electrical activity was observed in women of CG, with a significant difference between the groups, in the measurements of basal electrical activity and tonic contraction in dorsal decubitus and orthostasis. CG also had a higher strength than IG. A moderate correlation was found in the IG, indicating that the higher the degree of anterior slope (in both views), the greater the electrical activity of the PFM during orthostatic rest. And, the greater the anterior slope in the right side, the lower the dorsal decubitus repetition.

Concluding message

It appears that incontinent women have a greater anterior slope of the pelvis. The greater the degree of anterior slope, the greater the electrical activity of the PFM during rest in orthostasis. And the greater the anterior slope in the right side the less contraction repetition in the dorsal decubitus one makes.

References

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Disclosures

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