

ASSESSMENT OF CONTRACTILITY OF THE PELVIC FLOOR – FROM THE CLINICAL PRACTICE OF SCIENTIFIC RESEARCH - IS THERE A CORRELATION BETWEEN THE METHODS OF FUNCTIONAL EVALUATION AND ELECTROMYOGRAPHY?

Hypothesis / aims of study

The female pelvic floor suffers lifelong, secondary damage to mechanical loads, muscle injuries or nerve-mediated and / or aggravated by impact activities, successive pregnancies, births, especially traumatic, among others. With the evolution of medicine and better able to understand more predisposing factors and crucial to dysfunctions resulting from the failure of the pelvic floor, which can lead to loss or diminution of the elastic function of these muscles, causing dysfunctions urogynecology. Changes in pelvic floor muscle function have been placed in evidence due to the evolution of methods and techniques that make their evaluation and prognosis very accurate. Bidigital vaginal palpation is a widely used method in clinical practice because it is simple, reproducible, low cost by not requiring special equipment, however, is considered a subjective method and must be performed by a trained professional (1). Another important aspect is that there are several recognized standardization, which ultimately did not allow inter-examiner comparisons when each one is based in one of them. In contrast, electromyography (EMG) is one of the most accurate and objective, to record the action potentials of muscle fibers. This allows more reliable comparison of parameters during the assessments and reassessments. As their electrical signals are transmitted to a computer screen, allows the patient greater understanding and perception of their ability to twitch. However, the EMG is also limited due to lower reliability of the EMG needle, but has greater acceptance among patients urogynecologic because it is not invasive. This method is more expensive compared to other forms of evaluation of the pelvic floor, requires a skilled professional to perform and especially to analyze their data, and therefore its use has been restricted to scientific research. The aim of this study was to investigate whether vaginal palpation bidigital correlates with clinical electromyography of the pelvic floor muscles and can be used in clinical practice with safety and practicality.

Study design, materials and methods

Controlled, clinical and observational trial. The sample consisted of 307 Brazilian women were enrolled in the Department of Health Care of Women in the city of Pocos de Caldas - MG - Brazil. The characteristics of the study population were: mean age of 23.93 (\pm 5.78) years, 39 nulliparous women, 117 women, 64 primiparous women in post-vaginal delivery with mediolateral episiotomy right 87 primigravid women undergoing after cesarean section delivery. Women who were training the pelvic floor muscles, women with multiple gestation, history of abdominopelvic surgery, suffering from myopathy, vaginal prolapse and those with presence of urinary infection Were not included in the study. mínimos (61,56%). As sociodemographic, prevailed among the 307 participants in the study: Caucasians (72.96%), married or living in a situation of stable (61.88%), education level of middle school / Medium (66 44%) in labor activity (49.51%) and family income greater than or equal to two minimum wages (61.56%). The used methods used in the study to measure the contractility of the pelvic floor muscles (MAP) were: (a) bi-digital vaginal palpation, making use of standardized Contreras Ortiz, Coya and Ibañez (1994) (2), also known as Ortiz Scale or functional assessment of the pelvic floor (AFA). Standardization gives six levels of scoring, which can vary from zero to five, where Grade 0 - no perineal function or palpation; Grade 1 - Function absent perineal objective, knowable only through palpation; Grade 2 - perineal function objectively weak recognizable palpation; Grade 3 - perineal function objectively, without opposing resistance to palpation; Grade 4 - perineal objective function and resistance to palpation opponent not maintained; Grade 5 - perineal objective function and resistance to palpation and sustained opposition by more than 5s. A contractility becomes better the higher the score given by the examiner. For the examination of vaginal palpation, the patient was positioned supine with the pelvis in neutral, flexion of hips and knees, with flat feet on the table. The examination was performed by a trained therapist, with hands protected by gloves and the index and middle fingers smeared with small amount of lubricant allergy KY (Johnson's & Johnson's © - Brazil). To graduate contractility the examiner asked the patient to contract the pelvic floor muscles against the middle phalanges of your fingers, for a time of 5 seconds. The protocol consisted of three voluntary contractions, with palpation of the posterior and lateral walls of the vagina and the range of 20 to 30 seconds between each one, in order to avoid fatigue. After examination, the score was assigned according to the functional assessment of the pelvic floor. (B) surface electromyography (EMG System, Brazil EMG400C © model) with transvaginal probe (Physio-Med Services) was carried out after 20 minutes of the AFA. The transvaginal probe was positioned by the examiner, positioned with the metal surfaces in contact with the side walls of the vagina (3) and the reference electrode positioned in the distal right upper limb of patients. As safety procedures, equipment and electromyography were fueled by notebook battery, avoiding contact with the electric grid. Each requested contraction, was performed with a rest period of twice the time of contraction performed in order to avoid muscle fatigue. All examinations were performed by the same researcher. For analysis of EMG data, we selected five seconds of each contraction and held an average of three RMS (*Root Mean Square*) each paciente. Para verify the correlation between the values of contractile force, obtained by two clinical methods chosen for measurement was Testing conducted Linear Coefficient of *Spearman*. It also investigated the correlation between the degrees of the bidigital vaginal palpation scale with the electromyographic findings, by *Jonckheere-Terpstra* test. Both tests were performed with a significance level of 1%.

Results

It was conducted examinations of AFA and EMG pelvic floor muscle contractility values found were grouped, following the parameters 0-5 and correlated with the electromyographic findings (Table 1).

Table 1 - Comparison between the findings in the AFA and EMG

AFA ^(a) (Degrees)	EMG (μ V) ^(a) Median \pm SD	P- Value ^(a)
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Patients (n=307)	0	19,11± 10,20	<0,01*	Correlation between methods (b)
	1	21,91±11,33		<0,01**
	2	24,77±10,75		
	3	34,42±8,99		
	4	49,68±12,09		
	5	62,71±16,32		

(A) Averages bidigital vaginal palpation (degrees Scale Ortiz - AFA) ratings and electromyographic (EMG), expressed in *microvolts*, distributed according to the frequency.

(B) Correlation between the methods of examination of the pelvic floor contractility.

* Jonckheere-Terpstra test.

** Spearman linear correlation test. P <0.01.

Interpretation of results

The strong correlation found between the two methods of assessment of contractility of the pelvic floor muscles indicates that both the EMG and the AFA may be used in everyday practice, whether clinical or scientific research, although both have their limitations and requirements for the method is acceptable. It is suggested therefore that the AFA can be widely used in clinical practice for its simplicity and accessibility, but that is always performed by trained and qualified. It is noteworthy that the additional assessment of muscle tone, functionality, presence of dysfunction is taken into consideration during an assessment clinic. Since the EMG, by its complexity and objectivity should be given to research practice, taking into account the need for improved methods and techniques for assessing and understanding only of the electrophysiological signals as well as the contribution that can perform during the EMG assessment and training of patients.

Concluding message

Considering the results of the study, there was a correlation between values of muscle contractility of the pelvic floor electromyography measured by palpation and vaginal bidigital, indicating that both methods are valid to measure the contractility of the pelvic floor muscles provided they are conducted by professionally trained and qualified.

References

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