Perineometry usefulness in stress urinary incontinence (SUI) evaluation

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ABSTRACT

Introduction: It is a known fact that pregnancy can have an impact on pelvic floor musculature (PFM). The purpose of this study is to investigate pregnancy PFM impact evaluated by means of perineometry.

Materials and methods: From January 2006-2008 the case records of women seeking medical attention in the urology service were reviewed. The variables of age, number of births, perineometry, degree of stress urinary incontinence (SUI) and quality of life index (QOLI) were collected. The cases were arbitrarily divided into 2 groups: normal perineum (NP), perineometry ≥50 cm H2O and abnormal perineum (AP), perineometry 0-49 cm H2O. Chi-square test, 95% Confidence Interval, Student t test and univariate and bivariate analysis were calculated and data were processed using the SPSS program.

Results: A total of 172 case records were evaluated. There were 38 cases in the NP group, mean age was 48.5 years (SD 16.33) and 1.68 pregnancies (SD 0.98). There were 134 cases in the AP group, mean age was 53.99 years (SD 13.87) (P= 0.91) and 4.45 pregnancies (SD 2.31) (P= 0.002). QOLI in the NP group was 66.68 points (SD 20.82) and was 73.63 points (SD 21.68) (P=0.24) in the AP group. There were 13.15% cases (5/38) that presented with SUI in the NP group and 64.17% (86/134) (P 0.000) in the AP group.

Conclusions: Not considering age as a factor, the number of pregnancies affected the perineometry.

RESUMEN

Introducción: Se sabe que el embarazo puede impactar en las características de la musculatura del piso pélvico (MPP). El objetivo de los autores fue investigar el impacto del embarazo en la MPP evaluada por perineometría.

Material y métodos: de enero de 2006 a 2008, se revisaron los expedientes de mujeres que acudieron a evaluación urológica. Se recabó edad, paridad, perineometría, grado de IUE e índice de calidad de vida (IQOL). De manera arbitraria, se las dividió en dos grupos: pene normal (PEN): perineometría ≥ 50 cm H2O y perineo anormal (PEAN): perineometría de 0 a 49 cm H2O. Los datos se procesaron por X², intervalos de confianza al 95% (95% IC), t de student, así como por análisis univariado y bivariado con el programa SPSS.

Resultados: Un total de 172 expedientes fueron evaluables. En PEN, 38 casos, la edad media fue de 48.5 años (DS 16.33) y 1.68 gestas (DS 0.98); en PEAN, 134 casos, la edad media fue de 53.99 años (DS 13.87, p= 0.91), con 4.45 gestas (DS 2.31, p= 0.002). El IQOL en PEN fue de 66.68 puntos (DS 20.82) y en PEAN de 73.63 puntos (DS 21.68, p= 0.24). En PEN, 13.15% de los casos (5/38) presentó IUE y en PEAN, 64.17% (86/134, p≤0.000).

Conclusiones: No considerando la edad, el número de embarazos afecta la medida de la perineometría (p≤0.002). En la serie de esta investigación, 64.17% de los casos (p≤0.000) del grupo con perineometría <50 cm H2O...
measurement ($P \leq 0.002$). In the present series 64.17% of cases ($P \leq 0.000$) of the group with perineometry <50 cm H$_2$O, presented with SUI. These findings suggest the routine use of perineometry in SUI evaluation.

**Key words:** urinary incontinence; perineometry; pelvic floor; pregnancy.

**BACKGROUND**

The worldwide population is progressively living longer. According to the World Health Organization (WHO), in the next 50 years there will be three thousand million more human beings and a total of one thousand five hundred million inhabitants over 65 years of age and the greatest increase is expected in developing countries such as Mexico and regions such as Latin American. As a result there will be an increase in the number of incapacities from degenerative and age-related illnesses.

According to figures from the Latin American and Caribbean Economic Commission’s (CEPAL for its initials in Spanish) First Intergovernmental Regional Conference on Aging, in 50 years it is expected that 1 out of every 4 Latin Americans will be over 60 years of age. This represents 184 million people that will be requiring special health services. In 2003 in Mexico, 6.9% will be over 60 years old and the CEPAL projections for Mexico in 2050 place 23.3% of the population in that age group.

Research on the aspects of aging that have an impact on quality of life in older men showed them to be those related to the deterioration of health brought on by hormonal changes, as happens in women.

In women, pelvic floor dysfunction is the main health problem with a risk of up to 11% of having to undergo urinary incontinence surgery and/or of suffering pelvic organ prolapse. The prevalence of incontinence symptoms in the U.S. was 49.6% in a sample of 4,229 women between the ages of 20 and 60 years (Stress Urinary Incontinence 49.8%, mixed incontinence 34.3% and Emergency Urinary Incontinence 15.9%). Incontinence relative risk (RR) is 2.5 times higher in Mexican Americans than in black women. The WHO estimates that around 200 million persons will present with urinary incontinence. Sexual dysfunction prevalence in Mexican women has been reported at 34% and urinary incontinence is a very important risk factor. Women with lower urinary symptoms can have neurological alterations that must be ruled out with appropriate pelvic floor musculature study. In a literature review it was found that childbirth is associated with a variety of muscular and neuromuscular pelvic floor injuries that are related to the development of anal and urinary incontinence as well as pelvic organ prolapse. Cesarean section as a protective factor has not been completely demonstrated. These findings have stimulated the study of the impact of pelvic floor rehabilitation with good results.

There are no epidemiological data on perineometry in the Mexican woman or on change in pelvic floor musculature after pregnancy.

Perineometry is the measure of the strength of the pelvic floor muscles by means of a catheter-balloon positioned 3.5 cm inside the introitus connected to a pressure transducer and expressed in cubic centimeters of water.

All studies related to pelvic floor pathology, its diagnosis, treatment and preventive measures are justified in accordance with “The Madrid Declaration” which includes the physician’s mission to carry out the WHO recommendation for active ageing defined as “the process of optimizing opportunities for health, participation and security of older people in order to enhance quality of life as people age.”

It is clear that without adequate preventive medicine, longevity will be the cause of an enormous quantity of incapacitated older adults. Health professionals must take on advising roles in order to have a positive impact on lifestyles and habits of children and young adults in order to prevent disease, make opportune diagnoses and limit damage.

**OBJECTIVE**

The objective of the present article is to determine the relation between pregnancy, alterations of the pelvic floor musculature and SUI.

**MATERIALS AND METHODS**

Case records from January 2006 to 2008 of women having urological evaluation were reviewed. The
registered variables were: age (years), number of births, perineometry (in centimeters of H\textsubscript{2}O), degree of SUI and quality of life index (QOLI).

The cases were arbitrarily divided into 2 groups:
- Normal perineum (NP): Perineometry = $>50$ cm H\textsubscript{2}O
- Abnormal perineum (AP): Perineometry= $0<49$ cm H\textsubscript{2}O

Data were processed by chi-square, 95% Confidence Interval (95% CI) and univariate and bivariate analysis using the SPSS program.

Perineometry technique: Perineometry measures the strength of the pelvic floor musculature with the patient in the lithotomy position.\textsuperscript{14}

A balloon catheter is introduced intravaginally and is positioned 3.5 cm inside the vaginal introitus and is connected to a pressure transducer.\textsuperscript{11} Pelvic floor musculature is tested both at rest and in maximum contraction asking the participant to “tighten your perineum as much as you can as if you were trying to avoid passing gas” and results are registered\textsuperscript{15} (Image 1).

**RESULTS**

A total of 172 case records contained sufficient information and were able to be evaluated (Table 1).

There were 38 cases (22.09%) in the NP group. Mean age was 48.5 years (SD 16.33) with 1.68 pregnancies (SD 0.98).

There were 134 cases (77.90%) in the AP group. Mean age was 53.99 years (SD 13.87) $p=0.91$, with 4.45 pregnancies (SD 2.31) $p=0.002$.

QOLI was 66.68 points (SD 20.82) in the NP group and 73.63 points (SD 21.68) $p=0.24$ in the AP group. SUI presented in 13.15% of PN cases (5/38) and 64.17% (86/134) $p=0.000$ in the AP group.

**DISCUSSION AND CONCLUSIONS**

There was significant difference ($p=0.002$) in the relation between number of pregnancies and perineometry measurement. In the present series 64.17% of cases (P$=0.000$) of the perineometry group $<50$ cm H\textsubscript{2}O presented with SUI. This suggests that the number of pregnancies has a direct relation to the state of pelvic floor musculature and more frequently correlates with SUI.

As can be seen in Table 1 the results show that 64% of women with 2 or more births have SUI and their perineometry measurement is under 50 cm H\textsubscript{2}O, suggesting important deterioration of pelvic floor musculature due to multiple births.

These results allow for the conclusion that regardless of the age, the number of pregnancies affects perineometry measurement ($p=0.002$). In the series reported here, 64.17% of cases ($p=0.000$) from the group with perineometry under 50 cm H\textsubscript{2}O presented with SUI. This suggests that the number of pregnancies has a direct relation on the state of the pelvic floor musculature and correlates with greater SUI frequency.

These findings suggest routine use of perineometry in SUI evaluation.
BIBLIOGRAPHY