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MAGNETIC RESONANCE BASED PELVIC BIOMETRY- USEFUL METHOD FOR REVEALING RISK FACTORS OF PELVIC FLOOR DAMAGE

Hypothesis / aims of study

Vaginal childbirth is now positively identified as a major factor in the etiology of pelvic organ descent. The fundamental method of investigation to assess the degree of damage to the pelvic fascia and the musculus levator ani (MLA) in nuclear magnetic resonance (MRI). The aim of our study is to assess the basic biometric parameters of bony pelvis correlated with the degree of damage of levator ani muscle in patients with severe pelvic organ descent.

Study design, materials and methods

The total number of patients enrolled is 218. Inclusion criteria are: age over 18 years, symptomatic pelvic organ descent POP-Q stage 2 or more according to ICS, signed informed consent. Exclusion criteria are: pregnancy, pelvic malignancy, condition after radiation therapy in the female pelvis and reconstructive surgery. All included patients underwent urogynecological examination along with scoring the descent according POP-Q system, dynamic pelvic floor MRI scan in the sagittal, axial and coronal projection, sliced per 1mm. The images obtained were evaluated for the presence of levator ani (MLA) avulsion injury and its severity according to the deLancey classification (major / minor trauma), sacrococcygeal-interpubic distance(SCIP), bispinal distance (BSD), bituberal distance (BTD), interpubic angle (IP) , levator plate angle (LAP) at rest and during Valsalva maneuver. At the level of interpubic line in axial projection we measured the thickness of obturatorius internus muscle (OIT) at right and left. The obtained values were then compared using T-test and independent samples test with values of deLanceys' levator ani avulsion severity classification.

Results

Mean age of patients is 63.6 years (min 48, max 88), mean BMI 28.2 (min 20.8, max 38.6). Mean number of delivered children 1, 99 (min 0, max 5), their average weight 3484 gr (min 0, max 4500 gr). Mean value of the SCIP is 11.83 (min 9.96, max 14.99), mean value of BSD 11.21 (min 9.22, max 13.22), mean value of BTD is 12.39 (min 9, 24, max 15.25). IP angle mean value is 89.40 (min 64, max 105), mean value of LAP is 34, 39 at rest (min 4.6, max 59), at strain 46.76 (min. 15, max 90). These results were obtained regardless of the presence or absence of MLA avulsion. Avulsion injury was present in 198 (90.8%) patients, of which at the right in 17 (7.8%), 35 (16.1%) at the left and 146 (67%) were bilateral MLA avulsion. DeLancey's classification of avulsion had 43 patients (19.7%) score 1, score 2 in 28 (12.8%) patients, score 3 in 31 patients (14, 2%), score 4in 50 patients (22.9%)and finally score 5 in 39 patients (17.9%) and score 6 in 7 (3.2%) patients. Compared with one another is shown to be statistically significant values of BSD and BTD as well as IP, that were higher in patients with avulsion (SD .008) and LAP values at rest and during strain as well as OIT, that were lower in patients with avulsion injury (SD .002, SD.009).

Interpretation of results

An interesting result is the association of major levator trauma to the bony pelvic parameters. Another interesting result is the high incidence rate of injury severity in patients suffering from levator ani clinically proved pelvic organ descent.

Concluding message

The results contribute significantly to the process of searching for risk factors of severe pelvic peripartal trauma.

Disclosures

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