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NORMAL VALUES FOR PELVIC ORGAN DESCENT IN HEALTHY NULLIGRAVID YOUNG CAUCASIAN WOMEN

Aims of Study

Translabial ultrasound is increasingly being used for the assessment of women presenting with pelvic floor dysfunction and incontinence (1,2). However, there is little information on normal values for bladder neck descent, with the two available studies disagreeing widely (3,4). No data has so far been published on mobility of the central and posterior compartment which can now also be assessed by ultrasound (5). This study presents normal values for urethral, bladder, cervical and rectal mobility in a cohort of young, stress continent, nulliparous nonpregnant women.

Methods

118 nonpregnant nulliparous Caucasian women between 18 and 23 years of age were recruited for an ongoing twin study of pelvic floor function. Translabial ultrasound assessment of pelvic organ mobility was undertaken supine and after bladder emptying (6,7). The best of at least three effective Valsalva manoeuvres was used for evaluation, with no attempts at standardization of Valsalva pressure. Parameters of anterior compartment mobility were obtained by the use of on-screen calipers; cervical and rectal descent were evaluated on printouts. All examinations were carried out under direct supervision of the first author or by personnel trained by him for at least 100 consecutive assessments.

Results

The median age of participants in this study was 20 (range 18- 23). Mean body mass index was 23 (range 16.9- 36.7). Of 118 women, 2 were completely unable to perform a Valsalva manoeuvre despite repeated efforts at teaching and were excluded from analysis, as were ten women who complained of urinary stress incontinence, leaving 106 datasets. Average measurements for the parameters 'retrovesical angle at rest' (RVA-R) and on Valsalva (RVA-S), urethral rotation, bladder neck mobility, cysto-cele descent, cervical descent and descent of the rectal ampulla are given in Table 1.

Parameter	Mean	StD	Range
RVA-R	114	10.6	90 -130 degrees
RVA-S	145	23.3	100 - 180 degrees
Urethral rotation	32.1	23.5	0 - 90 degrees
Bladder neck mobility	17.3	8.8	1.2 - 40.2 mm
Cystocele descent	13.7	9.4	30.3 - -10 mm
Uterine descent	31.5	13.4	59 - 0 mm
Rectal descent	8.6	16.1	54 - -22 mm

Table 1: Ultrasound parameters of pelvic organ mobility in 106 nulligravid, stress continent Caucasian women of 18-23 years of age. Urethral rotation and Bladder neck mobility are calculated by comparing measurements at rest and on Valsalva. Cystocele, uterine and rectal descent signify lowest positions reached on Valsalva relative to the symphysis pubis, with negative measurements implying descent below the symphysis pubis.

Conclusions

In this large series of young nulligravid women, wide ranges of values were obtained for all parameters of pelvic organ mobility. As regards the central and posterior compartments, the authors are not aware of any other study using modern imaging methods to determine descent in a cohort of healthy nulliparous women. For bladder neck descent on Valsalva, the most commonly reported indicator of anterior compartment descent, the average was 17.3 mm (range 1.2- 40.2 mm). This is markedly higher than a recently reported series (3) on 51 continent nulliparous volunteers of 20-56 years of age (median bladder neck descent 5.1 mm), but closer to a second, smaller series (4) in younger women (mean bladder neck descent 14 mm).

The lack of agreement between studies is likely due to differences in methodology (i.e., patient position and bladder filling, Valsalva strength/ standardization, concomitant levator activation). The authors would propose that, in the interests of reproducibility and simplicity, assessments should be standardized to maximize pelvic organ descent. This would imply that translabial ultrasound be performed supine, after bladder emptying, and with careful attention to avoiding levator co- activation.

The wide variation in measurements observed in this study implies that there is likely to be a significant congenital contribution to the phenotype of female pelvic organ prolapse. Together with recent work defining the effect of childbirth and delivery on pelvic organ mobility (7), this study supports the concept that pelvic organ prolapse observed in any given woman may be congenital, traumatic or due to a combination of those factors. This may have significant implications for treatment and underscores the potential for a molecular genetic approach to pelvic organ prolapse.

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