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The resting and augmented maximum urethral closure pressure (MUCP) in female with stress urinary incontinence (SUI)

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Hypothesis / aims of study

Maximum urethral closure pressure (MUCP) is one of the most crucial urodynamic parameter to detect stress urinary incontinence (SUI). Resting MUCP reflected intrinsic urethral sphincter function is measured for SUI commonly, however augmented MUCP reflected external urethral sphincter function is rarely measured in urethral pressure profile (UPP) in practical thus far. Therefore, we investigated resting MUCP and augmented MUCP in same female patients with SUI.

Study design, materials and methods

resting MUCP and augmented MUCP



24 female were recruited who underwent urodynamics study including UPP (median age 68.0 [62.8-76.0] years old), urodynamics were performed in standardized and reproducible manner, according to Good urodynamic practice (catheter size was 6Fr, infusion speed was 50 mal/min). For each patient, both resting MUCP and augmented MUCP were recorded respectively: resting MUCP was recorded in stable condition in supine position and augmented MUCP was recorded in patients asked to contraction their urethral at maximum urethral pressure in UPP in supine position. We compared resting MUCP and augmented MUCP with/without Valsalva leakage. Moreover we assessed augmented MUCP and the detection ratio of Valsalva leakage using cut-off value of resting MUCP (20cmH2O), which is used for detect SUI conventionally.



Results

Median resting MUCP was 41.5 (31.8–60.8: IQR) cmH2O and median augmented MUCP was 70.0 (50.5–94.5: IQR) cmH2O in female patients with SUI respectively, there was statistically significant (p< 0.001). The median difference value between resting MUCP and augmented MUCP was 26.5 (13.8-42.0:IQR) cmH2O and the median division which augmented MUCP divided by resting MUCP was 1.63 (1.27-2.29:IQR). In addition, Five patients (20.8%) were detected Valsalva leakage. Median resting MUCP and augmented MUCP with Valsalva leakage were 36.0 (31.0-39.0:IQR) cmH2O and 64.0 (52.0-78.0:IQR) cmH2O, median resting MUCP and augmented MUCP without Valsalva leakage were 44.0 (32.5-61.5:IQR) cmH2O and 71.0 (49.0-98.0:IQR) cmH2O (not statistically significant respectively). The detection ratio of Valsalva leakage was 20.0% (1/5 patients) using cut-off value of resting MUCP (20cmH2O).



Interpretation of results

We investigated that resting MUCP reflected intrinsic urethral sphincter function and augmented MUCP reflected external urethral sphincter function in same female patients with SUI in this study. Augmented MUCP was significantly higher than resting MUCP in same female patients (p<0.001). We described the tendency that resting MUCP and augmented MUCP without Valsalva leakage was higher than that with Valsalva leakage (not statistically significant). The detection ratio using conventional cut-off value of resting MUCP, 20cmH2O was low.

Conclusions

We showed that augmented MUCP reflected external urethral sphincter function was significantly higher than resting MUCP reflected intrinsic urethral sphincter function. These results suggested that measurement of resting MUCP and augmented MUCP in same patient is beneficial to understand SUI and lower urinary tract dysfunction.

Background of patients

| | N =24 | Valsalva leakage(+) n=5 | Non-Valsalva leakage(+) n=19 | P-value |
|-----------------------------------------------------|---------------------|----------------------------|---------------------------------|---------|
| age(years old) | 68.0 (62.8-76.0) | 73.0 (67.0-74.0) | 66.0 (56.0-76.0) | 0.406 |
| FUL(mm) | 29.0 (27.0-35.0) | 27.9 (22.3-28.4) | 30.6 (27.6-32.3) | 0.406 |
| Pves with voluntary Valsalva maneuver(cmH2O) | 52.5 (42.8-67.0) | 57.0 (51.0-76.0) | 51.0 (42.0-64.0) | 0.406 |
| Pves with Valsalva maneuver using syringe(cmH2O) | 86.5 (73.8-111.0) | 85.0 (77.0-106.0) | 88.0 (67.5-112.5) | 0.362 |
| the number of births | 2.0 (2.0-3.0) | 2.0 (2.0-2.0) | 3.0 (2.0-3.0) | - |
| BMI | 24.7 (23.0-26.0) | 24.8 (22.2-25.3) | 24.5 (23.2-26.0) | 0.406 |
| Height(cm) | 153.2 (149.0-158.4) | 150.0 (146.0-152.6) | 155.0 (149.4– 160.1) | 0.406 |
| Weight(kg) | 60.0 (55.4-67.0) | 59.0 (52.9-80.0) | 60.0 (56.3-65.9) | 0.406 |

References

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