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Author(s): TA Gluck, AS Wagg, CH Fry, JG Malone Lee

Institution, city, country: University College London UK

Title (type in CAPITAL LETTERS, leave one blank line before the text):

THE EFFECTS OF BIOCHEMICAL CHANGES IN THE URODYNAMIC INFUSATE ON CYSTOMETRIC VARIABLES IN REPEATED FILLING

Aims of study

Whole animal and *in vitro* experiments with detrusor muscle have shown contractility to be dependent on changes in osmolality, pH (intracellular and extracellular), and potassium concentration of bladder infusate and muscle superfusate [1,2,3]. All these are relevant to physiological and pathophysiological situations *in vivo* which could lead to misinterpretation of urodynamic testing. We have studied the effect of variations in filling media on interpretation of the cystometrogram

Methods

88 women, (22-82 yrs) who were being investigated for lower urinary tract symptoms were consented to a repeat fill procedure (2 or 3 fills). The filling phase of standard urodynamics was performed then repeated immediately following drainage. Filling solutions were at 37 C and are listed: (1) NaCl 252 mM, $NaHCO_3$ 24 mM; (2) NaCl 46 mM, $NaHCO_3$ 96 mM, gas 5%CO_2/ 95% O_2 (mean infusate pH 8.3); (3) and (4) NaCl 118mM, $NaHCO_3$ 24 mM, with gas 5%CO_2 / 95% O_2 (mean infusate pH 7.6) and 20%CO_2 / 80% O_2 (mean infusate pH 7.1) respectively; (5) NaCl 76mM, $NaHCO_3$ 24mM, KCl 54 mM. Filling solutions and controls of normal saline (mean pH 5.5) were used in random order. The effect of order was analysed.

Results

There were no significant effects of filling solution composition on bladder capacity

Intervention	Median difference in bladder capacity in mls Control-Test (interquartile range)	N
1. Hyperosmolar	0 (-40, 14.75)	29
2. Extracellular pH↑	0 (-60, 8.25)	28
3. 5%CO_2	-2 (-48.5, 25.5)	24
4. 20%CO_2	-4 (-25.5, 15.75)	18
5. High potassium	15 (-11.25, 60.25)	13

Similarly no significant differences were seen in other cystometric variables - volumes at first sensation of filling and first desire to void. Order of fill had no effect - the median differences between bladder capacities in first and second fills was 2 mls (interquartile range -13-61 mls)

Conclusions

The biochemical changes in bladder contents did not affect the microenvironment of detrusor muscle enough to produce changes to the urodynamic variables studied.

References

[1] J.Physiol. 432:1-21 (1991)

[2] J.Urol. 154:1921-1924 (1995)

[3] Eur.Urol. 11:127-130 (1985)