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SHOULD WARM INSTILLATION FLUID BE USED FOR CYSTOMETRIC STUDY? A PROSPECTIVE RANDOMIZED STUDY

Hypothesis / aims of study

The temperature of instillation fluid that is used in cystometry is generally room temperature, which is different from that of the human body. ICS-IUGA recommends that the temperature should be as warm as the body temperature. There were some randomized studies which tried to show the impact of the temperature of distending fluid[1-3]. This research is to reconfirm the effectiveness of the usage of instillation fluids with a temperature that is close to that of the human body.

Study design, materials and methods

From August till December 2012, 46 patients participated in this research. Each participant took the cystometry twice using room temperature fluid (RTF) and body temperature fluid (BTF) in random order. They were classified into two groups. Group 1 (n=26) took cystometry twice using RTF first followed by BTF while group 2 took cystometry twice in the reverse order. The average temperature of RTF was 23.4°C and that of BTF was 36.1°C. The cystometric results were analyzed.

Results

The results obtained from group 1 showed that there was a significantly larger volume for RTF in the following four parameters: cystometric capacity, first desire to void, normal desire to void, and strong desire to void

Table 1. The parameters and comparative results of group 1 (n=26)

	RTF	BTF	patients (n)	*p* - value
Cystometric capacity (ml)	326.7	353.6	26	0.016
First desire to void (ml)	113.0	150.6	22	0.032
Normal desire to void (ml)	151.0	214.7	19	0.001
Strong desire to void (ml)	211.0	279.4	18	0.003
Urgency (ml)	283.0	307.4	17	0.063
Bladder compliance (ml/cmH_2O)	56.9	63.5	26	0.088
Maximum pressure (cmH_2O)	44.3	42.9	26	0.536
Pressure of uninhibited contraction (cmH_2O)	48.7	42.8	6	0.317

However, there was no significant difference of any parameter in group 2.

Table 2. The parameters and comparative results of group 2 (n=20)

	BTF	RTF	patients (n)	*p*- value
Cystometric capacity (ml)	247.6	252.9	20	0.716
First desire to void (ml)	101.5	117.1	19	0.278
Normal desire to void (ml)	167.3	194.1	15	0.163
Strong desire to void (ml)	210.5	224.2	14	0.338
Urgency (ml)	243.0	260.9	14	0.185
Bladder compliance (ml/cmH_2O)	38.8	37.0	20	0.783
Maximum pressure (cmH_2O)	46.8	49.6	20	0.361
Pressure of uninhibited contraction (cmH_2O)	61.6	59.7	9	0.692

When analyzing the results from the entire participants in terms of the fluid temperature, there was a significant difference between RTF cystometry and BTF cystometry in volume of strong desire to void.

Table 3. The parameters of all patients in terms of the instillation fluid temperature (n=46)

	RTF	BTF	patients (n)	*p* - value
Cystometric capacity (ml)	294.6	307.5	46	0.153
First desire to void (ml)	115.3	127.8	41	0.277
Normal desire to void (ml)	170.0	193.8	34	0.106
Strong desire to void (ml)	217.0	249.3	32	0.032
Urgency (ml)	273.5	278.7	31	0.570
Bladder compliance (ml/cmH_2O)	47.5	52.8	46	0.190
Maximum pressure (cmH_2O)	48.2	44.6	46	0.265
Pressure of uninhibited contraction (cmH_2O)	55.3	54.1	15	0.736

When analyzing the results from all the patients in terms of the study order, five parameters were significantly larger for the first cystometry: cystometric capacity, first desire to void, normal desire to void, strong desire to void, and urgency.

Table 4. The parameters of all patients in terms of the study order (n=46)

	First	Second	patients (n)	*p* - value
Cystometric capacity (ml)	292.3	309.8	46	0.049
First desire to void (ml)	107.9	135.1	41	0.016
Normal desire to void (ml)	158.2	205.6	34	0.001
Strong desire to void (ml)	211.0	255.3	32	0.002
Urgency (ml)	265.7	286.4	31	0.020
Bladder compliance (ml/cmH_2O)	49.0	52.0	46	0.383
Maximum pressure (cmH_2O)	45.4	45.9	46	0.766
Pressure of uninhibited contraction (cmH_2O)	56.4	52.9	15	0.323

Interpretation of results

The temperature of instillation fluid had an influence on volume of bladder sensation (only in strong desire to void; Table 3). The repetition of the test was more important factor which could influence urodynamic study (Table 4). When compared with the results from the test in which only one cystometric study with RTF is performed, the bladder seems to be more stable and volume related parameters are significantly larger when two cystometric studies are performed consecutively and when such test is performed once with BTF.

Concluding message

Although further studies on whether this stability in bladder indeed represents the pathophysiologic state of a patient are suggested, it seems to be more appropriate to use BTF in doing urodynamic study.

References

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