The Ice Water Test in Modern Urodynamic Testing: Feasibility and Patient Tolerance

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Abstract

OBJECTIVE: Though the Ice Water Test (IWT) has been used historically, limited information exists regarding patient tolerance to this test. Thus, the objective of this study was to assess patient tolerance of the IWT and to investigate results in non-urge urinary incontinence (UUI) versus UUI patients.

METHODS: For this prospective pilot study, we started recruiting patients from the Duke Division of Urogynecology in April 2012. Our goal is to recruit 20 controls without UUI (i.e. with stress incontinence (SUI)) in the 1st phase and then 20 UUI patients in the 2nd phase. Inclusion criteria for SUI patients were ≥ 1 SUI episodes on a 3-day voiding diary and none-minimal UUI symptoms on the validated Questionnaire for Female Urinary Incontinence Diagnosis (QUID). Patients were excluded if they had a neurologic condition, prolapse beyond the hymen, or current UUI treatment with Botulinum toxin or sacral neuromodulation. We collected data on sociodemographics, the Functional Comorbidity Index (FCI), and physical exam. Urodynamic studies (UDS) were performed with room temperature normal saline. During UDS, pain was assessed with the Visual Analog Scale (VAS) at 4 time points: baseline, after catheter placement, at 100cc, and at bladder capacity. VAS scores ranged from 0 - 100 with 100 indicating maximal pain. After the bladder was emptied, the IWT was performed utilizing 100cc of normal saline at 0-4ºC. The VAS and cold perception scale (CPS) were administered after infusion of cold saline. A positive result for the IWT was any change in detrusor pressure during the subsequent 60 seconds.

RESULTS: For our preliminary results of the 1st phase, 13 SUI women have been recruited, among which 10 subjects have completed their UDS/IWT. Patients had a median age of 43 years (interquartile range (IQR) 41, 64). A majority of patients (92.3%) were white and relatively healthy with a median FCI of 2 (IQR 1, 4). These SUI patients had an average of 7 total SUI episodes on their diary. Of the 10
completed studies, all patients completed the IWT without complications. Although there was a significant difference in VAS pain scores (p=0.03) between UDS and the IWT, the absolute scores were relatively low. The CPS scores were also different (p=0.007). For all control SUI subjects, there were no changes in detrusor pressure, indicating a negative result of the IWT, as expected. CONCLUSIONS: The IWT was well-tolerated by patients despite being associated with slightly more discomfort. Patients perceived the normal saline (NS) as colder during the IWT and commented that this was the main “discomfort.” All SUI patients had negative IWT results and we anticipate that a subset of UUI patients will have a positive test, corresponding to those with C-fiber sensitivity who will likely respond to anticholinergic medications.