Lower urinary tract symptoms in women with benign joint hypermobility syndrome: a case-controlled study

Laura Scheufele PT, DPT, WCS
December 5, 2018

Introduction: Urinary incontinence is multifactorial, with age related urogenital atrophy assumed to be a causative factor. One potential contributing factor for the atrophy is an associated reduction in skin collagen content genetic abnormalities of collagen synthesis also considered as possible contribution to development of UI. These genetic connective tissue disorders can include Marfan’s syndrome and type IV Ehlers Danlos syndrome, to less severe conditions such as benign joint hypermobility syndrome (BJHS). With joint hypermobility there is an abnormally higher ratio of type III collagen

Aim of Study: “Identify whether prevalence of lower urinary tract symptoms (LUTS), including UI, in the BJHS population is greater than in normal women.”

Study Design: Case controlled study

Methods:
Participants: Subjects were recruited at University College Hospital from October 2010 and August 2011 after being referred to hypermobility clinic via leaflet when mailed their appointment letters. Inclusion criteria included age between 18 and 60 years and an understanding of English language. Women with previous pelvic surgery were excluded. Controls recruited from King’s College Hospital. Subjects diagnosed with BJHS (using Brighton criteria—see Appendix 1.
All controls screened for BJHS using the same methods and excluded if they met the criteria. Ethical approval obtained by local ethics committee and all women gave informed consent.
Subjects matched according to age +/- 2 years, exact parity and ethnicity.
Questionnaires & Measurements: All participants completed:
1) King’s Health Questionnaire (KHQ). Prolapse Quality of Life Questionnaire (P-QOL). Prolapse objectively measured using POP-Q (Pelvic Organ Prolapse Quantification).
2) KHQ, voiding dysfunction symptoms from P-QOL, and the 9 points of the POP-Q compared between study patients and controls.

Statistical Power and Analysis: Power calculation based on study by Jha et al (10) that reported a 60% prevalence of UI in the BJHS group. Calculated that 60 participants in each group would yield a power of 80% to detect a 30% difference at a 5% significance. Analyses performed using SPSS version 17.0. Statistical difference for categorical variables in case of 2X2 tables analyzed using McNemar’s test. Comparison of QoL scores performed using Wilcoxon signed-rank test. Paired t test used to compare POP-Q measurements. The Kendall-Tau b test used to measure association between two measured quantities. Statistically significant difference was p<0.05.
**Results:** 60 study and 60 controls recruited, mean age 39.4 years, median parity 1 (range 0-3).

1) **UI symptoms:** See Fig 1. Prevalence of overall UI significantly higher in BJHS: 73.3% vs Controls: 48.3%. Subgroup of UUI also significantly greater: 62% vs 38.3%, but SUI prevalence not significantly higher: 63.3 (38/60) vs 36.7% (22/60): p=0.141. Prevalence of all other urine-specific questions on KHQ significantly higher in hypermobile group.

2) **Voiding dysfunction symptoms.** See Table 1. Three of four categories of voiding dysfunction found significantly higher prevalence in hypermobile group. Most common complaint with subjects was incomplete emptying with 63.3% vs 23.3%.

3) **Impact of UI on Quality of Life:** See Figure 2: All 9 domains statistically different between groups.

4) **Prolapse measurements:** See Table 2. Objective measurements from POP-Q system measurements.

The POP-Q points that were significantly different in the hypermobile group included Aa and Ba associated with anterior wall support; Ap and Bp associated with posterior wall support, and perineal body. Also noted was a significant correlation between prolapse in the anterior compartment and incomplete emptying (p=0.037).

**Discussion:** With the largest case-controlled study comparing prevalence of UI in women with BJHS and controls, as expected by the researchers the prevalence of UI was significantly greater in the hypermobile group. Although similar incidence of SUI and UUI reported, only the UUI was significantly different than control group. In addition significantly greater prevalence of voiding dysfunction symptoms and anatomical differences to both anterior and posterior vaginal walls identified. The UI, although most often rated at mild, had significant impact on all 9 areas of quality of life. With inquiry from medical professionals about the UI symptoms, treatment can be coordinated, and potential for improvement in QOL will be achieved.

The authors postulated that women with BJHS may have voiding dysfunction symptoms related to pelvic floor muscle weakness, connective tissue defect in the PF that contributes to anatomical change/cystocele, or a defect in connective tissue in bladder wall affecting contractility.

***The BJHS women may not perceive the hypermobile symptoms as significant or variant of normal, therefore the LUTS may be their presenting complaint. Weakness: UI subjectively reported and not confirmed with urodynamics. No objective assessment of pelvic muscle function.

**Summary:** Women with BJHS have potentially multiple medical issues that demand their attention involving specialists other than gynecology/urology. These other specialists may not be screening for LUTS and/or the women may be underreporting their symptoms. With such a high prevalence of UI, a continence pathway for hypermobility specialists may be warranted. BUT, also medical professionals who treat UI may be able to identify the hypermobility pathology in unsuspected women. With all areas of quality of life impacted by the LUTS symptoms, by treating their symptoms, there is the potential for significantly improving their quality of life.
Discussion Questions:
1. Are you using the Beighton scale or Brighton criteria as part of your clinical screening process?
2. How often do you identify hypermobility in a patient who has not been diagnosed formally by their physician?
3. When you have identified hypermobility in your patients:
   a. What are your typical pelvic floor findings? Strength, weakness, coordination?
4. Have you identified unique challenges when working with the hypermobile pelvic floor dysfunction patients?
5. Why do you think there was a significant difference in UUI but not SUI when compared to controls?

Resources:
King’s Health Questionnaire: https://www.nice.org.uk/guidance/cg171/resources/the-kings-health-questionnaire-pdf-19157468


Additional references if interested:
- Rombaut L, Malfait F, De Wandele I, et al. : Balance, gait, falls, and fear of falling in women with the hypermobility type of Ehlers-Danlos syndrome. Arthritis Care Res