

Clinical and Psychological Parameters Associated with Pain Pattern Phenotypes in Women with Interstitial Cystitis/Bladder Pain Syndrome

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Abbreviations and Acronyms

CES-D = Center for Epidemiological Studies Depression Scale
CFS = chronic fatigue syndrome
FM = fibromyalgia
FSFI = Female Sexual Functioning Inventory
IBS = irritable bowel syndrome
IC/BPS = interstitial cystitis/bladder pain syndrome
MAPP = Multidisciplinary Approach to PP
MPQ-SF = McGill Pain Questionnaire-Short Form
PP = pelvic pain
QOL = quality of life
UCPPS = urological chronic PP syndrome
UPOINT = urinary, psychosocial, organ specific, infection, neurological/systemic, tenderness

Purpose: It was recently suggested that 2 distinct clinical phenotypes can be described in patients with urological chronic pelvic pain syndrome, including pelvic pain only and pelvic pain beyond. We examined data on patients with interstitial cystitis/bladder pain syndrome, including body pain location mapping, and associated medical and psychosocial phenotyping to validate these body pain maps in a cohort of female patients with interstitial cystitis/bladder pain syndrome undergoing tertiary care.

Materials and Methods: Validated questionnaires from 173 diagnosed outpatient female patients with interstitial cystitis/bladder pain syndrome included a body pain area diagram, demographics/history, pain assessment, interstitial cystitis/bladder pain syndrome symptoms, depression, anxiety, stress, fatigue, sexual functioning, catastrophizing, quality of life and data on other chronic pain conditions. Two pain phenotypes based on counts of body locations, pelvic pain only and pelvic pain beyond, were comprehensively examined.

Results: The 157 patients (81%) identified with pelvic pain beyond reported more sensory type pain, poorer physical quality of life, and greater somatic depression and sleep disturbance than the 36 (19%) categorized with pelvic pain only. The sexual pain score was higher in the pelvic pain only group. Furthermore, patients with the pelvic pain beyond phenotype reported a higher prevalence of irritable bowel syndrome and fibromyalgia as well as more general fatigue symptoms and psychiatric conditions.

Conclusions: Two distinct pain location phenotypes, including pelvic pain only and pelvic pain beyond, were identified by our independent analysis of patients with interstitial cystitis/bladder pain syndrome. Assessing clinical phenotypes based on pain patterns has significant ramifications in our improved understanding of the etiology and treatment of female patients diagnosed with interstitial cystitis/bladder pain syndrome.

Key Words: urinary bladder; cystitis, interstitial; chronic pain; phenotype; questionnaires

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PATIENTS diagnosed with IC/BPS complain of pain perceived to be of bladder origin as well as associated storage urinary symptoms.¹ However, they also report pain outside the area of the bladder or pelvis.^{2,3} We previously reported that the number of pain sites reported by patients on body pain mapping impacted the medical and psychosocial phenotypes of those with IC/BPS.⁴ In a plenary address at the annual meeting of the AUA (American Urological Association) on behalf of the investigators of the MAPP Research Network (<http://www.mappnetwork.org/>) Clemens described a pain mapping strategy⁵ similar that of our original study.⁴ However, he suggested 2 distinct UCPPS pain location phenotypes based on pain location, including PP only and PP beyond.⁵ Those investigators hypothesized that PP only may be more bladder centric while PP beyond may represent a more centralized group or systemic pain syndrome. The comprehensive data analysis required to substantiate this finding was not presented during the presentation but we would expect it to be published in the future. If true, this observation would be important for our understanding of this enigmatic pain condition and may help direct more rational management.

This led us to reexamine our patient body pain maps along with medical and psychosocial variables in a cohort of female patients with IC/BPS from a total of 9 international IC/BPS clinics. We tested the MAPP Research Network observations that 2 novel phenotypes based on pain location exist as well as the hypothesis that they would have distinct clinical and psychological presentations.

MATERIALS AND METHODS

Participants and Study Design

A case-control study describing recruitment and our patient sample was previously published.^{4,6} Patients met the diagnostic criteria described in the Interstitial Cystitis Data Base Study⁷ and mostly fulfilled the recent IC/BPS definition in AUA,¹ EAU (European Association of Urology)⁸ and ESSIC (International Society for the Study of BPS)⁹ guidelines. Patients with IC/BPS were identified by an individual investigator and notified by telephone, personal contact or letter to determine interest in this study. After the initial contact a package containing 2 copies of the site specific, institutional review board approved informed consent form and the package of questionnaires were mailed to participants. Patients were asked to return a signed copy of the informed consent form and a completed set of questionnaires.

Measures

Demographics and self-reported history. Patients completed a demographic and history questionnaire. They were specifically asked questions on a diagnosis of IBS,

FM, CFS, vulvodynia, headache (tension or migraine), temporomandibular joint disorder and low back pain as well as a history of a psychiatric condition.

Pain and QOL. Pain was assessed by the MPQ-SF.¹⁰ Pain descriptor scores of the MPQ-SF are reported on subscales of pain that is sensory (throbbing, shooting, sharp, hot-burning, cramping, gnawing, aching, tender, heavy or splitting) and affective (tiring-exhausting or fearful). The MPQ-SF also includes a standard pain intensity visual analog scale of 0 to 10 and a whole body diagram (body map). Participants placed a mark on each site where they had experienced pain in the last 3 months. Pain locations were quantified by a body grid system and a scoring transparency to identify 45 distinct areas on the body diagram.¹¹ Functional health status was assessed by the MOS SF-12® QOL questionnaire,¹² which measures functional physical component status and mental component status.

Psychosocial parameters. We assessed depressive symptoms using the CES-D,¹³ anxiety using the trait anxiety scale of the STAI (State-Trait Anxiety Inventory),¹⁴ stress using the PSS (Perceived Stress Scale)¹⁵ and sexual functioning using the FSFI,¹⁶ which provides an overall metric and specific subscales of sexual functioning, including sexual pain. The Pain Catastrophizing Scale was used to measure catastrophizing cognitions concerning pain.¹⁷

Condition specific symptom questionnaires. IC/BPS specific symptoms were evaluated by the validated ICSI (Interstitial Cystitis Symptom Index) and ICPI (Interstitial Cystitis Problem Index).¹⁸ IBS symptoms were assessed by Rome III criteria,¹⁹ FM-like symptoms were assessed by the FIQ (FM Impact Questionnaire)²⁰ and CFS-like clinical fatigue were assessed by the MFI (Multidimensional Fatigue Inventory).²¹

Analysis

This was an exploratory analysis of our existing database to attempt to confirm the reported initial findings from the MAPP Research Network study.⁵ Pain location frequencies were dichotomized into present or absent as endorsed on the body diagram. Patients were phenotyped based on reported pain locations, including 1) PP only, including any or all of the 3 sites representing the bladder area, and the right and left lower abdominal areas (body areas 14 to 16 are considered the PP only phenotype) and 2) PP beyond, including all other patients with a least 1 pelvic site and at least 1 site outside the pelvic area. Missing data were random. We replaced missing data, which occurred with a frequency of less than 20% for any scale item across all measures, using a standardized intraparticipant mean imputation procedure²² in less than 7% of the final sample. After the item based replacement procedure less than 0.01% to 10% of measures were identified as missing. The single exception was the FSFI with 35% of the participants not completing the measure as described. Cross tabulation and chi-square analysis were used for categorical comparisons across the PP only and PP beyond groups. The independent t-test was used to contrast pairs of continuous variables.

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