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The association of personality trait on treatment outcomes in patients with chronic prostatitis/chronic pelvic pain syndrome: An exploratory study ☆

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ABSTRACT

Objective: This study investigated the association of personality traits with the baseline clinical characteristics and treatment outcomes of patients with chronic prostatitis/chronic pelvic pain syndrome (CP/CPPS).
Methods: Subjects were evaluated at baseline and at week 12 following routine treatment for CP/CPPS using the Korean version of the National Institutes of Health Chronic Prostatitis Symptom Index (NIH-CPSI) to measure the severity of CP/CPPS; the Korean version of the Patient Health Questionnaire-9 (PHQ-9) to assess depression; the Korean version of the Patient Health Questionnaire-15 (PHQ-15) to evaluate somatization; and the Korean version of the EuroQol Questionnaire-5 Dimensions (EQ-5D), specifically the EQ-5D utility index and the EQ-5D visual analog scale (EQ-5D VAS), to assess quality of life (QoL). Personality traits including extraversion, agreeableness, conscientiousness, neuroticism, and openness were determined at baseline using the 44-item Big Five Inventory (BFI). The influence of personality traits on the clinical characteristics and treatment outcomes of patients with CP/CPPS was assessed using relevant statistical analyses.
Results: Neuroticism was associated with a significantly poorer treatment response and higher levels of depression and somatization. Extraversion, agreeableness, and conscientiousness had some influence on clinical characteristics but openness did not affect overall symptoms or the treatment response in patients with CP/CPPS.
Conclusions: We found that neuroticism may be the most important personality trait associated with treatment response and the severity of depression and somatization in patients with CP/CPPS. However, our exploratory findings should be confirmed by additional studies with adequate power and improved designs.
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Introduction

An increasing amount of evidence clearly suggests that the personality profile of an individual is involved in the development of, and the treatment response to, various neuropsychiatric disorders [1–3]. In this context, a recent study found that the psychometric profiles of patients with chronic prostatitis/chronic pelvic pain syndrome (CP/CPPS) exhibited significantly higher scores on all assessments, except type-A behavior, relative to healthy controls [4,5].

According to the first unselected population-based study to explore personality features in patients with prostatitis syndromes [6], patients with prostatitis were significantly more occupied, nervous, and meticulous than controls. Likewise, several studies, although limited and incomplete, have proposed that personality may be involved in the susceptibility of an individual to prostatitis and/or related disorders [7–12]. The trait nature of one's personality profile is supported by findings from a 2-year observation of illness behavior and personality changes in a small sample of patients with CP, which found that the subjective well-being (psychosocial and somatic aspects) of patients was impaired, but the personality of patients did not change [13].

The recent turn towards a novel understanding of CP/CPPS as a heterogenous syndrome rather than a homogeneous disease has led to the development of specific classification criteria and treatment strategies based on individual patients' clinical characteristics [14–17]. Almost half of the patients in one study were clinically heterogenous [18]. Specific personality facets have also been found to be related to

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depression and treatment outcomes, and it has been proposed that screening for certain personality traits at the start of treatment might help to identify patients at risk for an inadequate response to treatment [2].

Thus, it has been hypothesized that personality traits may affect the severity of CP/CPPS, as well as the treatment outcomes of CP/CPPS patients, following routine treatment, because a person's personality profile is a crucial factor that can influence their response to given stressors and/or diseases, and may be a strong predictor of perceived health status and use of coping strategies [19–21]. However, there is a paucity of data regarding the role of personality traits in the treatment of CP/CPPS, particularly using a validated and brief personality scale and in an Asian population.

Methods

Study design

This study was a 12-week prospective observational study with routine treatment.

Patients

Male participants were recruited at an outpatient clinic treating prostatitis in the Department of Urology at Bucheon St. Mary's Hospital in Bucheon, Kyeonggi-Do, Korea between April 2011 and March 2012. The clinical diagnosis of CP/CPPS was based on an NIH consensus regarding CP/CPPS symptoms [22].

Few exclusion criteria were applied because our study was performed during routine practice. However, patients who were suffering from pyuria and/or other genitourinary symptoms that may be associated with benign prostatic hyperplasia (BPH), neurogenic bladder, or genitourinary diseases other than CP/CPPS were excluded to maximize the diagnostic validity of CP/CPPS.

There is no one particular treatment that shows significant clinical efficacy as a mono-therapy for the treatment of CP/CPPS and thus most guidelines recommend clinicians to use individualized treatment options based on their own clinical experience, the situation, and the patient's treatment response history [23]. Hence, the routine treatment protocol of our outpatient clinic during the course of this study combined alpha blockers, antimicrobials, and anti-inflammatory agents as the primary treatment regimen, in accordance with previous reports [23,24]. Based on the results of routine urinalysis/urine culture, microscopic analysis of expressed prostatic secretions (EPS), and PCR, when an infectious cause was suggested the primary treatment was an alpha-blocker plus an antimicrobial agent and NSAID; when no infectious cause was suggested, an alpha-blocker plus NSAID was the primary pharmacotherapy. Throughout the study period, participants remained on the same medication and the same dosage as was given at the time of enrollment, with the exception of those who required dosage adjustment for response to treatment or adverse event (AE) issues.

The present study followed the Declaration of Helsinki and ethical principles regarding human experimentation and the study protocol was approved by the Institutional Review Board of Bucheon St. Mary's Hospital in Bucheon, Kyeonggi-Do, Korea (HC11EISE0009).

Clinical outcomes

Rating scales

This study utilized the Korean version of the Chronic Prostatitis Symptom Index (CPSI) from the NIH (NIH-CPSI) to measure the severity of CP/CPPS [22,25], the Korean version of the Patient Health Questionnaire-9 (PHQ-9) to assess depression [26,27], the Korean version of the Patient Health Questionnaire-15 (PHQ-15) to evaluate somatization [28,29], the Korean version of the EuroQol Questionnaire-5 Dimensions (EQ-5D), specifically the EQ-5D utility index and the EQ-5D visual analog scale (EQ-5D VAS), to assess QoL [30,31], and the Korean version of the 44-item Big Five Inventory (BFI) to assess personality traits [32–34]. The Korean version of the BFI has been standardized and validated by two research groups [33,34].

The BFI personality traits consist of extraversion (talkative, assertive, and energetic); agreeableness (good-natured, cooperative, altruistic, and empathic); conscientiousness (orderly, responsible, and dependable); neuroticism (neurotic, easily upset, and not self-confident); and openness (open to experience, intellectual, imaginative, and independent-minded). The BFI consists of 44 items; higher scores represent higher levels of each personality trait [32].

Primary and secondary endpoints

Each personality trait domain was categorized into low and high groups according to median values, as described in a previous study [35]. The primary endpoint of this study was the change in the CPSI total score from baseline to week 12 according to the five domains of the BFI. Secondary endpoints included changes in total scores on the symptom scale (sum of pain and urinary scores) of the CPSI (CPSI-sss), the PHQ-9, the PHQ-15, the EQ-5D utility index, and the EQ-5D VAS from baseline to week 12. Additionally, responder/improver analyses according to the five domains of the BFI were evaluated: 1) responder: $\geq$4 point decrease in CPSI total score from baseline to week 12; 2) responder: $\geq$20% decrease in CPSI total score from baseline to week 12; and 3) improver: any improvement versus no change/worsening in CPSI total score at week 12. A 4-point decrease in the CPSI total score is the minimum clinically significant difference perceived by patients as beneficial, and is one of the most frequently used and validated response criteria in numerous clinical trials [36–38] and reviews [39,40]. With the cut-off point of a 4-point decrease, the sensitivity was nearly 90% and the specificity in distinguishing responders from non-responders was 60%. The area under the ROC curve was 0.83, which suggests that the CPSI total score has good discriminative ability in distinguishing responders from non-responders [40]. The 20% improvement threshold was empirically chosen based on findings from previous clinical trials (corresponding to slight improvement in global response assessment) [40]. The improver analysis was performed to demonstrate more diverse results in relation to the association of personality and CP/CPPS treatment outcome.

Statistical analyses

Demographic and clinical variables were compared according to each personality trait and other parameters using Student's t-test, a chi-square test with Yate's correction, or Fisher's test, as appropriate. To investigate the influence of personality traits on various treatment outcomes, changes in individual rating scales from baseline to week 12 were analyzed using an analysis of covariance (ANCOVA) controlling for age, duration of disease, medication, and new onset or chronicity. To analyze improver and responder rates as defined a priori, Fisher's exact tests were conducted. Odds ratios (ORs) with 95% confidence intervals (CIs) were also utilized for the responder analysis.

Statistical significance was two-tailed and set at $p < 0.05$; there was no adjustment for multiple comparisons because the sample size was relatively small. With these statistical parameters and after adjusting with covariates, the power of the sample to detect a medium-to-large effect size ($d = 0.77$) was 0.8028, which corresponded to a difference of 3.3 in the change of CPSI total scores between those with high and low neuroticism.

All statistical analyses were conducted using the NCSS 2007® Power Analysis & Sample Size software (Kaysville, Utah, USA).

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