



Sensory phenomena related to tics, obsessive-compulsive symptoms, and global functioning in Tourette syndrome

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Abstract

Objectives: Sensory phenomena, including premonitory urges, are experienced by patients with Tourette syndrome (TS) and obsessive-compulsive disorder (OCD). The goal of the present study was to investigate such phenomena related to tics, obsessive-compulsive symptoms (OCS), and global functioning in Japanese patients with TS.

Methods: Forty-one patients with TS were assessed using the University of São Paulo Sensory Phenomena Scale (USP-SPS), the Premonitory Urge for Tics Scale (PUTS), the Yale Global Tic Severity Scale (YGTSS), the Dimensional Yale-Brown Obsessive-Compulsive Scale (DY-BOCS), and the Global Assessment of Functioning (GAF) Scale.

Results: USP-SPS and PUTS total scores were significantly correlated with YGTSS total and vocal tics scores. Additionally, both sensory phenomena severity scores were significantly correlated with DY-BOCS total OCS scores. Of the six dimensional OCS scores, the USP-SPS scores were significantly correlated with measures of aggression and sexual/religious dimensions. Finally, the PUTS total scores were significantly and negatively correlated with GAF scores.

Conclusions: By assessing premonitory urges and broader sensory phenomena, and by viewing OCS from a dimensional approach, this study provides significant insight into sensory phenomena related to tics, OCS, and global functioning in patients with TS.

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1. Introduction

Tourette syndrome (TS) is a neurodevelopmental disorder characterized by multiple motor tics and one or more vocal tics that persist for at least 1 year [1]. Comorbidities of TS often include various psychiatric disorders such as obsessive-compulsive disorder (OCD) and attention-deficit/hyperactivity disorder (ADHD). The prevalence of OCD among patients

with TS is estimated to be as high as 30% and nearly 50% or more if sub-clinical cases are included [2].

Sensory phenomena precede tics in TS and compulsions in OCD; these phenomena have been described as desires to have things “just-right” [3]. Of the sensory phenomena that typically accompany TS, an urge to move (or a tic impulse) is the most commonly reported [4]. Sensory phenomena preceding tics include premonitory urges and somatic hypersensitivity; these are recognized as crucial TS symptoms [5].

Premonitory urges are associated with both motor and vocal tics in terms of their number, complexity, and interference [6]. Recently, premonitory urges have been significantly correlated with IQ and tic severity [7]. Although premonitory urge assessment can be influenced by an individual’s ability to recognize his/her own feelings, and to verbally express these feelings, a close relationship between premonitory urges and TS pathogenesis has been suggested [8].

Abbreviations: DSM-IV-TR, Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision; DY-BOCS, Dimensional Yale-Brown Obsessive-Compulsive Scale; GAF, Global Assessment of Functioning; OCD, obsessive-compulsive disorder; OCS, obsessive-compulsive symptoms; PUTS, Premonitory Urge for Tics Scale; QOL, quality of life; SD, standard deviation; TS, Tourette syndrome; USP-SPS, University of São Paulo Sensory Phenomena Scale; YGTSS, Yale Global Tic Severity Scale

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It has also been suggested that premonitory urges are correlated with obsessive-compulsive symptoms (OCS) in children and adolescents with chronic tic disorders [6] and in adults with TS [9]. For example, one study suggested that these urges were correlated with OCS severity, but not with tics, in children and adolescents with TS or chronic tic disorder [10]. Conversely, a recent study was unable to find a significant correlation between premonitory urges and comorbid OCD or ADHD severity in adolescents and adults with TS [7].

Among sensory phenomena, “just-right” feelings have been observed more frequently in patients with TS and comorbid OCD than in those without [4]. Furthermore, sensory phenomena subtypes might affect any correlation between sensory phenomena and OCS.

When investigating sensory phenomena in relation to OCS in patients with TS, recent research indicates that a dimensional approach should be considered. More specifically, factor analytic studies using the Yale-Brown Obsessive-Compulsive Scale (Y-BOCS) have suggested that OCS in patients with OCD can be divided into 3–5 dimensions; genetic, neuroimaging, and treatment studies have supported the utility of this approach [11,12]. Additionally, comorbid tic disorders can be related to the symmetry/ordering dimension of OCS in adults with OCD [13] and the aggressive/checking dimension of OCS in children and adolescents with OCD [14]. A recent study on adults with OCD indicated that sensory phenomena were associated with higher frequency and greater severity of the symmetry/ordering/arranging and contamination/washing symptom dimensions [15]. Another study indicated that adults with OCD and TS were more likely to present with sensory phenomena and to show higher severity in aggressive, sexual/religious, and hoarding dimensions of OCS than those with OCD without TS [16].

In adults with TS, premonitory urges are significantly correlated with the quality of life (QOL) psychological domain [17]. Furthermore, a strong negative correlation has been revealed between premonitory urges and QOL in patients with TS without comorbid conditions. Conversely, in patients with TS and comorbid conditions, a weaker relationship between premonitory urges and QOL has been described; however, stronger or more frequent premonitory urges were reported [9]. These studies suggest that premonitory urges affect the everyday lives of patients with TS and that global functioning may be influenced by premonitory urges as well as QOL.

The current study investigated sensory phenomena in relation to tics, OCS, and global functioning in Japanese patients with TS. We applied the aforementioned dimensional approach taken with OCS. We expected to find a correlation between premonitory urges and tics in terms of their number, complexity, and interference in patients with TS. Moreover, we hypothesized that sensory phenomena, including premonitory urges, would be associated with symmetry and aggression OCS dimensions. Finally, we expected to observe that global functioning would be correlated with sensory phenomena, along with tics and OCS.

2. Methods

2.1. Participants

Participants were recruited from a specialty clinic that treats patients with TS and related disorders at the Department of Child Psychiatry, the University of Tokyo Hospital from October 2009 to October 2011. Participants were included in this study if they had a Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR) diagnosis of Tourette’s disorder [18]. Participants were excluded if they had an intellectual disability, autistic disorder, or any neurological disorder that could interfere with interview quality. Expert child psychiatrists made diagnoses according to DSM-IV-TR criteria, with a high diagnostic concordance rate.

Of the 54 patients invited to participate, 47 agreed and were enrolled. Forty-one patients with TS (31 men and 10 women; age range, 12–50 years; mean = 23.1; standard deviation (SD) = 10.6) were included, as they were completely assessed by the instruments and were aged 11 years or older.

The Institutional Ethical Committee of the University of Tokyo Hospital approved this study. All participants signed informed consent forms after the study was explained in detail, and they were assured that the decision to participate in the study would not affect their treatment in any way. If participants were 19-years-old or younger, written informed consent was obtained from their parents.

Psychologists were trained to ensure conformity of assessment, and all interviews were conducted by psychologists who had in-depth knowledge of the instruments used in the current study, clinical experience with TS, and no involvement with the patients’ treatment.

2.2. Instruments

2.2.1. Assessment of sensory phenomena

2.2.1.1. University of São Paulo Sensory Phenomena Scale (USP-SPS). The USP-SPS is a semi-structured scale designed to investigate the presence and severity of different types of sensory phenomena occurring before or during repetitive behaviors such as tics and compulsions [19,20]. The USP-SPS is divided into two parts: a checklist and a severity scale. The USP-SPS checklist is composed of items that assess the occurrence of different types of sensory phenomena both in the past and in the present. Subtypes of sensory phenomena consist of physical sensations (tactile and muscle-joint), “just right” perceptions (visual, auditory, and tactile), feelings of incompleteness, energy that builds up and needs to be released, and just an urge to do repetitive behaviors. The USP-SPS measures the severity of sensory phenomena on three ordinal scales, with six anchor points, that focus on the frequency of symptoms (0–5), the amount of distress they cause (0–5), and the degree to which they interfere with patient functioning (0–5). A total score (0–15) is obtained by combining these scores. The Japanese version

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