

'It's a curse!': coprolalia in Tourette syndrome

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Background and purpose: Coprolalia is a complex socially inappropriate vocal tic most frequently reported in the context of Tourette syndrome (TS) and widely portrayed as a cardinal characteristic of this condition throughout popular culture. This study investigated which clinical factors may predispose some patients with TS to experience coprolalia and the impact of this symptom on quality of life.

Methods: Participants were 60 patients with TS (39 males, mean age 32.15, SD 14.1 years) of whom 50% reported mental coprolalia (urges) and 33% reported actual involuntary swearing as a tic. Relationships between the presence of coprolalia and a range of clinical variables including severity of tics, obsessive–compulsive symptoms, attention problems, anxiety, depression, premonitory urges for tics and quality of life were investigated.

Results: The presence of urges to utter obscene language was significantly related to non-obscene socially inappropriate symptoms and self-reported tic severity. Although experiencing socially inappropriate urges in general was correlated with the presence of mental coprolalia, only the presence of more severe tics was a good indicator of outbursts of obscene vocal tics. Having coprolalia was related to significantly poorer quality of life in TS.

Conclusions: As outbursts of coprolalia exert a specific negative impact on quality of life clinicians should consider improvement in this symptom during evaluation of treatment efficacy.

Introduction

Coprolalia describes a class of complex phonic tics involving the use of obscene language or curse words, not expressed out of anger or intent to offend. The prevalence of coprolalia in Tourette syndrome (TS) may range from 10% to 33% [1–3] depending on the study population. Despite this, swearing tics are probably the most widely portrayed symptom of TS in popular culture and consequently a more widely recognized clinical feature by members of the public than more common simple motor tics.

Although this problematic symptom receives much media attention, scientific literature on coprolalia is relatively scarce. Swearing tics can be one of the most distressing and socially impairing symptoms of TS, with a potential contribution to unemployment and social isolation [4]. However, whilst numerous studies

have shown that quality of life (QoL) is poorer in TS than in the general population, e.g. [5,6], no study has specifically assessed the specific impact of coprolalia on QoL.

A further important point to address is why some patients with TS experience coprolalia whilst others do not. In one study [3], coprophobia (both coprolalia and copropraxia: the involuntary expression of obscene gestures) were associated with sexually inappropriate behaviours, obsessive–compulsive disorder (OCD), smelling non-food objects, anger control problems and oppositional-defiant/conduct disorder in children, and attention-deficit/hyperactivity disorder (ADHD) and sleep problems in adults. This study also suggested that coprolalia may be more common in patients with additional comorbid diagnoses (e.g. OCD, ADHD) than in patients with 'uncomplicated' TS. However, it was not determined whether these clinical symptoms were actually reliable indicators of the presence of coprolalia.

In the current study relationships between the presence of coprolalia and a range of clinical variables,

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including QoL, tic severity, premonitory urges, depression, anxiety, obsessions, compulsions, attention problems, and the presence of non-obscene socially inappropriate symptoms (NOSIS) were explored. Which of these clinical variables could indicate the presence of coprolalia or the urge to utter obscene language was then investigated. Both coprolalia and mental coprolalia (urges not spoken aloud) were considered separately, as some individuals with TS may be able to suppress the urge to make obscene remarks.

Method

The study was approved by South Birmingham NHS Research Ethics Committee. Participants were 60 patients (39 males, mean age 32.15, SD 14.1 years) recruited consecutively from an outpatient specialist TS clinic. All had been diagnosed with TS by an experienced neurologist and screened using the National Hospital Interview Schedule for TS [7]. Participants gave written informed consent to participate and were tested in the outpatient clinic. Data were collected for the following eight measures.

Yale Global Tic Severity Scale (YGTSS)

This clinician-rated instrument [8] provides a measure of the overall severity of tics. There are subscales for motor and vocal tics, which are scored in terms of tic number, frequency, complexity, intensity and interference.

Premonitory Urge for Tics Scale (PUTS)

This scale [9] includes nine items designed to measure sensory and mental phenomena associated with the premonitory urges linked to tics. Higher scores reflect greater frequency and/or intensity of premonitory urges.

Obsessive–Compulsive Inventory Revised (OCI-R)

This self-report scale [10] can be used to assess OCD symptoms. It contains 18 questions responded to using a five-point Likert scale with higher scores indicating more severe OCD.

Adult ADHD self-report scale (ASRS)

The original scale contains 18 questions used to assess ADHD symptoms in adults. The subset of six questions used in this study has been shown to outperform the full scale in diagnosing ADHD [11].

Hospital Anxiety and Depression Scale (HADS)

The HADS [12] contains 14 items, half of which relate to depression and half of which measure anxiety. Totals were used for each subscale.

The Motor Tic, Obsessions and Compulsions, Vocal Tic Evaluation Survey (MOVES)

This 20-item self-report instrument [13] assesses five domains specific to TS (motor tics, vocal tics, obsessions, compulsions, and tic-related symptoms such as coprophenomena, paliphenomena and echophenomena).

Gilles de la Tourette Syndrome Quality of Life scale (GTS-QoL)

This self-report, disease-specific instrument was developed to measure health-related QoL in patients with TS [14]. It contains 27 items, and lower scores indicate better QoL.

NOSIS questionnaire

This questionnaire [15] records the presence of coprolalia, mental coprolalia, symptoms of other conditions commonly comorbid with TS (e.g. OCD, ADHD) and the presence and nature of NOSIS. All participants were given the option of answering questions in private. The difference between coprolalia (swearing tics) and NOSIS (socially inappropriate behaviours not including obscene features) was clearly explained. Furthermore, the NOSIS questionnaire offers examples of these different types of socially inappropriate urges. For the current study, data included patients' responses to questions about the presence of NOSIS, coprolalia and mental coprolalia.

Results

When directly questioned, 50% of patients reported the urge to swear as a tic (mental coprolalia). Fewer, 33% of the entire patient sample (but two-thirds of those with urges), reported making obscene remarks. Ten patients were always able to suppress these urges and never speak the words aloud. All patients who had coprolalia also experienced mental coprolalia.

Correlations were conducted separately for coprolalia/mental coprolalia and 10 variables: GTS-QoL total score; OCI-R score; ADHD scale score; YGTSS motor and vocal tic scores; MOVES score; HADS subscale scores; PUTS score; and presence/absence of NOSIS. Coprolalia was related to the presence of

Table 1 Clinical correlates of coprolalia in Tourette syndrome

Clinical variable	Coprolalia: utterances (<i>n</i> = 20/60)	Coprolalia: mental urges (<i>n</i> = 30/60)
	Pr, <i>P</i> -value	Pr, <i>P</i> -value
NOSIS	0.275, 0.033*	0.283, 0.029*†
Quality of life	0.296, 0.027*	0.189, 0.163
ASRS score	0.241, 0.076	0.193, 0.158
OCI-R score	0.173, 0.207	0.233, 0.087
HADS anxiety score	0.248, 0.071	0.058, 0.675
HADS depression score	0.146, 0.293	−0.027, 0.845
PUTS	0.063, 0.636	109, 0.412
MOVES	0.450, < 0.001**†	0.301, 0.024*
YGTSS motor	0.147, 0.299	0.246, 0.079
YGTSS vocal	0.245, 0.080	0.245, 0.080

NOSIS, non-obscene socially inappropriate symptoms; ASRS, Adult ADHD Self Report Scale; OCI-R, Obsessive–Compulsive Inventory Revised; HADS, Hospital Anxiety and Depression Scale; GTS-QoL, Gilles de la Tourette Quality of Life Scale; PUTS, Premonitory Urge for Tics Scale; MOVES, Motor Tic, Obsessions and Compulsions, Vocal Tic Evaluation Survey; YGTSS, Yale Global Tic Severity Score; Pr, Pearson's correlation coefficient. *Significant at the 0.05 level; **Significant at the 0.001 level; †Significant predictor variable of coprolalia in stepwise logistic regression.

NOSIS and higher tic severity according to patient self-ratings on the MOVES (Table 1). The presence of urges to use obscene language was also related to both of these factors. Coprolalia was also related to QoL scores, such that QoL was poorer for patients reporting the presence of coprolalia.

Logistic regression analysis was then performed in order to determine whether any of the clinical variables found to be correlated with coprolalia or mental coprolalia could indicate the presence or absence of these symptoms. The best model using a stepwise method ($F(1, 44) = 16.549$, $P = 0.011$, with $R^2 = 0.273$) indicated that severity of TS according to MOVES ratings could account for 27% of the variance in the presence of coprolalia. When mental coprolalia was the dependent variable, the best model ($F(1, 44) = 7.085$, $P < 0.001$, with $R^2 = 0.139$) indicated that variance in the presence of NOSIS could account for 14% of the variance in the presence of mental coprolalia.

Discussion

The prevalence of coprolalia in our sample was in line with previous estimates for clinical samples [2]. Most patients who experienced urges to utter obscene language spoke these remarks aloud. However, mental coprolalia did not always lead to coprolalia, and it is likely that many patients attempt to suppress these urges or cover them up by making a camouflaging noise.

The presence of coprolalia and related mental urges were positively related to the presence of NOSIS. Both of these types of complex symptoms clearly fall under the category of socially inappropriate behaviours. The difference between them seems to be that NOSIS are more diverse and contain contextually relevant information, whereas the content of swearing tics is more restricted. Coprolalia and mental coprolalia were also more likely to be present in patients with TS who reported higher TS severity. This finding is in line with the observation reported by Freeman *et al.* [3] that significantly more patients with severe tics versus mild tics reported coprolalia. However, although coprolalia was related to tic severity based on MOVES ratings, the same relationship only approached significance for motor and vocal tic ratings on the YGTSS. This may be because of differences in sensitivity between self-report and clinician ratings or because the construct of the MOVES encompasses obsessions and compulsions in addition to simple and complex tics.

Only the presence of NOSIS was indicative of urges to swear, whereas only tic severity (on the MOVES) could indicate outbursts of coprolalia. The relationship between these factors therefore seems to be that mental coprolalia is likely to be present in individuals with NOSIS, but the likelihood of mental coprolalia leading to an outburst may be more closely related to general tic severity. That is, if tic severity is generally higher, patients with mental coprolalia are more likely to vocalize swearing tics. Future research could also consider relationships between the presence of coprolalia and other complex motor or vocal tics.

This is the first study to demonstrate that coprolalia may make an independent contribution to QoL in TS, although the presence of mental coprolalia alone does not appear to have the same effect. Our findings also imply that anxiety and depression are unlikely to be significant mediators of this relationship, as the presence of coprolalia or urges to swear as a tic was not related to perceived anxiety or depression.

Severity of OCD or ADHD symptoms was not found to be indicative of coprolalia or mental coprolalia according to OCI-R and ASRS scores. However, trends for coprolalia (utterances) to be related to both HADS anxiety scores and ADHD scores were identified. Whilst it is possible that patients with uncomplicated TS may be as likely to present with coprolalia as those with TS-plus, one should be cautious in reaching such a conclusion given the limited number of patients with different comorbidities who were included in the study. In addition, it is possible that some of the scales used were not sensitive enough to identify such relationships.

In conclusion, the presence of socially inappropriate symptoms in general is a good indicator of mental coprolalia, but verbal expression is most likely in patients with more severe tics. When present, coprolalia can respond to antidopaminergic medications used to treat other tics [4]. Importantly, coprolalia has a further detrimental impact on QoL in addition to tics without socially inappropriate content. Future investigations should specifically consider improvements in this symptom during evaluation of treatment efficacy.

Disclosure of conflicts of interest

The authors declare no financial or other conflicts of interest.

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