



## Short Communications

# Higher prevalence of obsessive–compulsive spectrum disorders in rheumatic fever

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**Abstract**

**Objective:** This study aims to compare the prevalence of obsessive–compulsive spectrum disorders (OCSD) in psychiatric outpatients with and without a history of rheumatic fever (RF).

**Methods:** An analytical cross-sectional study assessing a large sample of consecutive psychiatric outpatients at a Brazilian private practice was conducted during a 10-year period. Psychiatric diagnoses were made by a senior psychiatrist based on *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*. Best-estimate diagnosis procedure was also performed.

**Results:** The total sample comprised 678 subjects, 13 of whom (1.92%) presented with a previous history of RF. This group showed a higher prevalence of subclinical obsessive–compulsive disorder ( $P=.025$ ) and OCSD ( $P=.007$ ) when compared to individuals with no such history.

**Conclusions:** A previous history of RF was associated with OCSD. These results suggest that clinicians should be encouraged to actively investigate obsessive–compulsive symptoms and related disorders in patients with a positive history of RF.

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**Keywords:** Obsessive–compulsive disorder; Rheumatic fever; Streptococcal infection; Sydenham's chorea

**1. Introduction**

Genetically susceptible children who are infected by Group A  $\beta$ -hemolytic streptococci (GABHS) may develop a systemic autoimmune disorder known as rheumatic fever (RF). The classical neurological manifestation of RF is Sydenham's chorea (SC) [1]. Nevertheless, several psychiatric disorders, in particular obsessive–compulsive spectrum disorders (OCSD) [2], have been described in SC [3–5]. Recent studies report obsessive–compulsive symptoms,

obsessive–compulsive disorder (OCD), tic disorders and body dysmorphic disorder in adults with a previous history of RF independently of the presence of SC [6–8]. In the present study, we further explore the association of RF with these OCSD by assessing for the first time a large consecutive outpatient sample.

**2. Methods**

An analytical cross-sectional study with a convenience sample of 738 consecutive outpatients who were referred to a private psychiatric practice in São Paulo City, Brazil, was conducted during a 10-year period. Data were collected from the patients' records or by phone if the clinical registers were unclear.

Psychiatric diagnoses were made by an experienced psychiatrist (E.C.M.) based on *Diagnostic and Statistical*

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*Manual of Mental Disorders, Fourth Edition.* The best-estimate diagnosis procedure [9] for the diagnoses of OCD, TD, body dysmorphic disorder and trichotillomania was performed by two psychiatrists (A.G.H. and P.G.A.) who were blinded to RF status. The interrater reliability between these psychiatrists ranged from 0.90 to 0.95. Subclinical OCD was defined as the presence of an obsession and/or compulsion that is egodystonic but does not cause enough distress or interference in functioning to qualify as OCD [10,11]. Although subclinical, it has been identified as important to rate in family and genetic studies [11]. Previous history of RF, SC, valvular heart disease or prolonged treatment with penicillin had been systematically registered in the patients' records, and complementary clinical interviews were conducted by phone when records were insufficient. All RF patients were evaluated by a private cardiologist or pediatrician. No patient was suffering from cardiac insufficiency or severe organic disease at the time of the psychiatric interview.

Individuals with incomplete records that could not be assessed by phone and patients who presented with psychiatric symptoms related to neurological diseases were excluded.

SPSS software, version 11.0, was used for statistical analysis. Comparisons of categorical variables were performed using chi-square test with Yates correction, when necessary. Comparisons of continuous variables were conducted using analysis of variance or Student's *t* test for two independent groups. Values of  $P < .05$  (two-tailed) were considered significant. Ethics committee approval was obtained (University of São Paulo Medical School).

### 3. Results

The total sample comprised 738 individuals. Complementary clinical interviews were conducted by phone with 151 individuals. Excluded were another 54 individuals with incomplete data who could not be located, as well as 6 individuals with psychiatric symptoms related to neurological conditions. The remaining 678 individuals were enrolled for the analysis. The sociodemographic and psychiatric data of the participants are shown in Table 1.

Thirteen patients (1.92%) presented with a previous history of RF, and the remaining 665 patients denied having had a history of RF, SC, valvular heart disease or prolonged treatment with penicillin. The sample was divided into two groups according to the RF history status. The mean current ages of the RF and non-RF groups were 37 years [standard deviation (S.D.)=10.55] and 33.5 years (S.D.=16.32), respectively ( $P=.272$ ). There were also no significant differences between the groups in terms of gender ( $P=.928$ ) or socioeconomic status ( $P=.345$ ) (Table 1).

The prevalence of subclinical OCD was significantly higher in the RF group than in the non-RF group ( $P=.025$ ). There were no significant differences between the study

Table 1 Sociodemographic and clinical characteristics of the sample (N=678)		
<i>Sociodemographic characteristics</i>		
Age in years [mean (S.D.)]	33.63 (–16.23)	t1.4
Gender [n (%)]		t1.5
Male	375 (55.3)	t1.6
Female	303 (44.7)	t1.7
Socioeconomic status [n (%)] (N=116 <sup>a</sup> )		t1.8
Class A (higher)	68 (58.6)	t1.9
Class B (high–middle)	39 (33.6)	t1.10
Class C (low–middle)	9 (7.8)	t1.11
		t1.12
<i>Psychiatric diagnoses [n (%)]</i>		
OCS <sup>b</sup>	406 (59.9)	t1.14
Subclinical and OCD	364 (53.7)	t1.15
OCD	241 (35.5)	t1.16
Body dysmorphic disorder	85 (12.5)	t1.17
Trichotillomania	34 (5.0)	t1.18
Tic disorders (including Tourette syndrome)	164 (24.2)	t1.19
Non-obsessive–compulsive spectrum	272 (39.1)	t1.20
		t1.21
<i>RF [n (%)]</i>		
History of RF	13 (1.92)	t1.23
		t1.24
		t1.25

<sup>a</sup> Socioeconomic status was obtained from only 116 patients.

<sup>b</sup> Including OCD, subclinical OCD, tic disorders, trichotillomania and body dysmorphic disorder.

groups in terms of the prevalence of OCD, TD, body dysmorphic disorder or trichotillomania. However, a significant association with RF was found ( $P=.007$ ) when all these disorders were considered together under the label of OCS [2] (Table 2).

### 4. Discussion

This is the first study to analyze a large clinical sample of psychiatric outpatients from private practice, investigating the association between RF and OCS. Consistent with earlier reports [3–6], this study found that OCS were more frequent in patients with a previous history of RF.

The finding of OCS in nonactive RF patients may suggest that immunologic activity is not necessary for the expression of neuropsychiatric symptoms. Thus, it is possible that GABHS infections and/or RF may trigger OCS, which may persist throughout adulthood regardless of new RF acute episodes [6,12,13]. Two recent family studies have reported that OCS aggregate in first-degree relatives of RF probands [14,15]. Moreover, tumor necrosis factor  $\alpha$  (TNF- $\alpha$ ) is a proinflammatory cytokine that is involved in RF and several other autoimmune diseases. Polymorphisms of the promoter region of the TNF- $\alpha$  gene have been associated with RF and OCD [16], reinforcing the hypothesis that OCS and RF may share a common genetic susceptibility.

Several limitations should be considered. Our study involves predominantly obsessive–compulsive referred patients rather than an epidemiological sample. This is very well reflected in the fact that 59.1% of the sample

t2.1 Table 2  
t2.2 Prevalence of obsessive–compulsive-related disorders in individuals with and without a history of RF

t2.3	Psychiatric disorders	RF [n (%)]	Non-RF [n (%)]	P
t2.4	OCD	8 (61.5)	233 (35.0)	.302
t2.5	Subclinical and OCD	12 (92.3)	352 (52.9)	.025
t2.6	Body dysmorphic disorder	4 (30.8)	81 (12.2)	.390
t2.7	Trichotillomania	1 (7.7)	33 (5.0)	.983
t2.8	Tic disorders (including Tourette syndrome)	4 (30.8)	160 (24.1)	.961
t2.9	OCSD <sup>a</sup>	13 (100.0)	393 (59.1)	.007
t2.10	Total	13 (100.0)	665 (100)	–

t2.11 RF: positive history of RF; non-RF: negative history of RF.  
t2.12 <sup>a</sup> Including OCD, subclinical OCD, tic disorders, trichotillomania and body dysmorphic disorder.

131 received OCSD diagnoses. Reliable information regarding  
132 the onset of OCSD and its relation with the first episode of  
133 RF was difficult to collect due to the cross-sectional design.  
134 The small number of RF subjects limits study power. Also, a  
135 selection bias may have occurred in case RF-linked OCD is  
136 more severe, leading to help seeking at a private office  
137 specialized in OCSD.

138 In conclusion, in this clinical sample, RF was signifi-  
139 cantly associated with OCSD. These results may have  
140 important clinical implications, suggesting that clinicians  
141 should be encouraged to actively investigate neuropsychia-  
142 tric disorders in patients with a positive history of RF, thus  
143 allowing early diagnosis and treatment. Studies comparing  
144 the prevalence of OCD-related conditions in patients with  
145 RF and other cardiac (and noncardiac) chronic diseases are  
146 also warranted.

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