Early Onset Obsessive-Compulsive Disorder With and Without Tics

Maria Alice de Mathis, MS, Juliana B. Diniz, MD, Roseli G. Shavitt, MD, PhD, Albina R. Torres, MD, PhD, Ygor A. Ferrão, MD, PhD, Victor Fossaluza, MS, Carlos Pereira, PhD, Eurípedes C. Miguel, MD, PhD, and Maria Conceição do Rosario, MD, PhD

ABSTRACT

Introduction: Research suggests that obsessive-compulsive disorder (OCD) is not a unitary entity, but rather a highly heterogeneous condition, with complex and variable clinical manifestations.

Objective: The aims of this study were to compare clinical and demographic characteristics of OCD patients with early and late age of onset of obsessive-compulsive symptoms (OCS); and to compare the same features in early onset OCD with and without tics. The independent impact of age at onset and presence of tics on comorbidity patterns was investigated.

Methods: Three hundred and thirty consecutive outpatients meeting *Diagnostic and Statistical Manual of Mental Disorders,* Fourth Edition criteria for OCD were evaluated: 160 patients belonged to the "early onset" group (EOG): before 11 years of age, 75 patients had an "intermediate onset" (IOG), and 95 patients were from the "late onset" group (LOG): after 18 years of age. From the 160 EOG, 60 had comorbidity with tic disorders. The diagnostic instruments used were: the Yale-Brown Obsessive Compulsive Scale and the Dimensional Yale-Brown Obsessive Compulsive Scale (DY-BOCS), Yale Global Tics Severity Scale; and Structured Clinical Interview for *DSM-IV* Axis I Disorders-patient edition. Statistical tests used were: Mann-Whitney, full Bayesian significance test, and logistic regression.

FOCUS POINTS

- Identify the clinical differences between obsessive-compulsive disorder (OCD) patients with early and late onset of symptoms.
- Discuss the impact of tic disorders in the expression of clinical characteristics among early onset OCD patients.
- Discuss the OCD heterogenity implications for OCD.

Miss de Mathis is fellow in Psychiatry at the University of São Paulo Medical School in Brazil. Dr. Diniz is fellow in Psychiatry at the University of São Paulo Medical School. Dr. Shavitt is post-doctoral researcher in the Department of Psychiatry at São Paulo Medical School. Dr. Torres is professor in the Department of Neurology, Psychology and Psychiatry at Botucatu Medical School in São Paulo. Dr. Ferrao is professor of the Centro Universitário Metodista at the Porto Alegre Institute. Mr. Fossaluza is fellow in Statistics at the University of Sao Paulo. Dr. Pereira is full professor of Math and Statistics at the Institute of University of São Paulo. Dr. Miguel is full professor at the Institute of Psychiatry at São Paulo Medical School. Dr. do Rosario is associate professor in the Department of Psychiatry at Federal University of São Paulo in Brazil.

Faculty Disclosures: Dr. Diniz is on the speaker's bureau of Mantecorp; and has received research/grant support from Jansen-Cliag and Novartis. Dr Ferrão is on the speaker's bureau of Eli Lilly. Dr. Miguel is on the speaker's bureau of Solvay. Dr. Rosario is on the speaker's bureau of Janssen and Novartis. Miss De Mathis, Dr. Shavitt, Dr. Torres, Mr. Fossaluza, and Dr. Pereira do not have an affiliation with or financial interest in any organization that might pose a conflict of interest.

Funding/Support: This study was supported by grants from the Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP, Foundation for the Support of Research in the State of Sao Paulo): no. 04/11462-6 awarded to Miss De Mathis; no. 2005-55628-8 awarded to Dr. Miguel, no. 06/61459-7 awarded to Dr. Shavitt and no. 06/61459-7 awarded to Dr. Diniz. Additional support was provided by the Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPQ, Brazilian Council for Scientific and Technological Development; grants: no. 521369/96-7 to Dr. Miguel). Research Funding from Porto Alegre Institute of the South Methodist University (Process number: 6600023) was awarded to Dr. Ferrão.

Submitted for publication: December 12, 2008; Accepted for publication: June 14, 2009.

Please direct all correspondence to: Maria Alice de Mathis, MS, Department of Psychiatry, University of São Paulo Medical School, Rua Dr. Ovídio Pires de Campos, 785 – 05403-010, São Paulo, Brazil; Tel: 55-11-30697896, Fax: 55-11-30697895; e-mail: alicedemathis@gmail.com

Results: The EOG had a predominance of males, higher frequency of family history of OCS, higher mean scores on the "aggression/violence" and "miscellaneous" dimensions, and higher mean global DY-BOCS scores. Patients with EOG without tic disorders presented higher mean global DY-BOCS scores and higher mean scores in the "contamination/cleaning" dimension.

Conclusion: The current results disentangle some of the clinical overlap between early onset OCD with and without tics.

CNS Spectr. 2009;14(7):362-370

INTRODUCTION

Several lines of research suggest that obsessive-compulsive disorder (OCD) is not a unitary entity, but rather a highly heterogeneous condition, with complex and variable clinical manifestations.[1] This heterogeneity complicates the interpretation of research results and limits the search for etiological factors and the establishment of more effective treatment strategies.[2] Therefore, the identification of more homogeneous subgroups of patients, with meaningful clinical and etiological substrates, is highly important and needed.

Categorizing OCD patients according to the presence or absence of specific characteristics has brought important contributions to the field. Clinical features, such as age at onset of the obsessive compulsive symptoms (OCS),[3] comorbidity with tics,[4] gender,[5] type of onset,[6] and history of streptococcal infections[7] have been hypothesized as meaningful variables in the identification of more homogeneous OCD subgroups. Early onset and tic-related OCD subtypes have received the most consistent support from different areas.[2,8] For example, many studies reported that OCD patients with comorbid tics presented an early age at onset of the OCS[3,9]; higher male prevalence[10,11]; higher frequency of sensory phenomena[12-15]; higher frequency of hoarding, symmetry, and tic-like compulsions[4,16-18]; and an increased risk of family history of tic disorders and OCD.[19-23] Interestingly, an early onset of the OCS has also been associated with many of the same features described above for the tic-related subgroup, including a much higher morbidity risk for first-degree family members to develop tics and OCD.[23,24]

The similarities between the presentations of these two possible OCD subgroups have intrigued researchers for many years. The way in which the characteristics presented by these patients overlap and/or interfere with each other is not yet well understood. In fact, there have been few studies adequately designed to address this issue. Previous attempts to better identify the unique contributions of the presence of tics and age at onset of the OCS have been limited mainly by small sample sizes.

Hanna and colleagues[25] assessed 60 early onset OCD patients and reported that only cleaning and hoarding symptoms were significantly different between the OCD-only and the OCD+tics group. Scahill and colleagues[26] interviewed 80 subjects and found that OCD patients without tic disorders had more cleaning and washing symptoms when compared to OCD patients with tic disorders.

Another limitation has been the lack of consensus on how to define the best cut-off ages for determining an early or late onset. A recent study used cluster analyses and revealed that differences in comorbidity patterns started to emerge at 10 years of age and were more pronounced at 17 years of age, suggesting that, at least for this sample, these were the best cut-off points.[27] This study also analyzed the association between age at onset and comorbidity patterns in a large OCD sample. They found that age at onset of the OCS was related to other clinical features in an additive model, and the earlier the onset of the OCS, the higher the homogeneity between subjects of the same onset age stratum, including, for example, the prevalence of concomitant tic disorders.[27]

As an attempt to investigate the specific contributions of presence of tics and age at onset in early onset OCD patients, and extend and expand the above results in a large enough sample, the current study was conducted. It also aimed to better explore the clinical characteristics of early-onset OCD patients. More specifically, the main objectives of this study were: to compare the demographic and clinical characteristics of patients with early and late age of onset of the OCS; to compare the demographic and clinical characteristics of early-onset OCD patients with and without tics; to verify the independent impact of age at onset and presence of tics on comorbidity patterns taking into consideration possible confounders in the same sample.

METHODS

Subjects

The clinical sample has been described elsewhere.[27] Between 1996 and 2006, 330 consecutive outpatients with *Diagnostic and Statistical Manual of Mental Disorders,* Fourth Edition OCD diagnoses receiving treatment at three Brazilian university hospitals (Sao Paulo=253 patients; Botucatu=27 patients; and Porto Alegre=50 patients), and two private practice clinics (n=156) were evaluated with the same research protocol. All participants gave written informed consent (parents also signed the consent when patients were ≤18 years of age) and the Medical Ethics Committee from the three university hospitals approved this study.

Clinical Assessment

The age at OCS onset was defined as the earliest age of OCS remembered by the patient. Whenever possible, a family member was also interviewed to confirm the age of OCS onset. Early onset was defined as the beginning of symptoms before 11 years of age, whereas late onset was defined as the beginning of symptoms at ≥18 years of age, as proposed in other studies.[3,27,28] Patients whose symptoms had begun between 11–17 years of age were considered as "intermediate onset" subgroup. Because of space limits, results are not presented in this paper, but are available upon request.

The instruments used to assess presence and severity of OCS were the Yale-Brown Obsessive Compulsive Scale[29] (Y-BOCS) and the Dimensional Yale-Brown Obsessive Compulsive Scale (DY-BOCS). The DY-BOCS investigates presence and severity of specific OCS dimensions and has been validated recently.[30]

Tics were evaluated with the Yale Global Tics Severity Scale.[31] The presence of other Axis I comorbid diagnoses were investigated with the Structured Clinical Interview for *DSM-IV* Axis I Disorders-patient edition.[32]

Interviewers were experienced clinical psychologists or psychiatrists with at least two years experience working with OCD. Interviewers participated in at least five training sessions with video recorded interviews and five training sessions with live interviews performed by a senior interviewer. After this initial training, five interviews were conducted with the assistance of a senior researcher before the trainee was allowed to perform the interviews without assistance. Data on family history was indirectly collected with the patient.

Data Analysis

The Statistical Package for Social Science (SPSS v. 12.0) for Windows and "R: a Language" was used to perform all the statistical analyses.

For continuous variables with non-normal distribution, the Mann-Whitney test was chosen for comparisons between different groups in the univariate analyses. For categorical variables (sex, family history) the significance tests were performed by Bayesian approach with the full Bayesian significance test, introduced by Pereira and Stern.[33] To compare these distributions we used two significant levels: the *P*-value and the evidence value (e-value), a Bayesian index. Both *P*-values and e-values are indexes to measure the evidence of the data in favor of the hypotheses.

Logistic regression analyses were used in order to verify the independent impact of age at onset and presence of tics on comorbidity patterns, adjusting for possible confounders. The dependent variable (Y) was the presence (Y=1) or absence (Y=0) of each of the studied comorbid diagnosis group. The dependent variables were: Tic Disorders, Mood Disorders, Unipolar Disorders, Anxiety Disorders, Social Phobia, Eating Disorders, and Impulse-Control Disorders. Independent variables were age at onset, presence of tics, gender, illness duration, Y-BOCS scores, and number of comorbid disorders. These variables were selected based on prior literature with respect to their relevance to the study of OCD phenotypes.[2,8]

RESULTS

One hundred and sixty patients (48.5%) had an early onset of their OCS and 95 patients (28.8%) had a late onset. Seventy-five individuals (22.7%) presented intermediate onset and were excluded from the current study. Even though the intermediate onset group was not the main focus of this study, it was not excluded from the general data analyses because this group contributed 22.7% of the sample. In most of the analyses, this group was more similar to the "late onset" group (LOG) than to the "early onset" group (EOG). Due to space limitations, results were not presented in this paper but are available upon request. Table 1 presents patients clinical characteristics. Interestingly, 60 subjects (37.5%) from the EOG had tics compared with 101 patients (30.6%) from the whole sample.

Early Onset OCD Compared with Late Onset OCD

There was a statistically significant difference between both groups regarding gender: the EOG had a predominance of males (e-value=0.013). As expected, the EOG, when compared to the LOG, also presented longer illness duration (mean=22.6; SE=0.8 years for the EOG and mean=14.3; SE=1.0 years for the LOG), and a higher frequency of family history of OCS (e-value=0.04).

Regarding OCS dimensions, there were no differences in Y-BOCS severity between groups. When analyzing OCS dimensions, the EOG presented higher mean scores on the "aggression/violence" and "miscellaneous" dimensions, when compared with the LOG (*P*=.010 and *P*=.033, respectively), as well as higher mean global DY-BOCS scores (P=.012). Among the EOG, 60 subjects (37.5%) had comorbidity with tics (EOG with tics).

Early Onset OCD With or Without Tic Disorders

The analyses comparing the EOG with and without tics showed that there were no significant differences between these subgroups regarding gender or family history of OCD, OCS, or tic disorders in the first-degree relatives (Table 2). Regarding clinical symptoms, there were no significant differences between the EOG with tics and the EOG without tics subgroups regarding the mean age of OCS onset (*P*=.69) or mean Y-BOCS scores (*P*=.48). In contrast, when symptom dimensions were compared, the EOG without tics subgroup presented a higher mean global DY-BOCS score (*P*=.041) and a higher mean score in the "contamination/cleaning" dimension (*P*=.037) (Table 3).

Comorbid Disorders

Logistic regression analyses were used to verify the independent influence of age at onset of the OCS and presence of tics on Axis I comorbidity patterns, adjusting for possible confounders. Gender, illness duration, Y-BOCS score, and number of comorbid disorders were also included in the model as independent variables (Table 4).

The logistic regression indicated that the younger the age at OCS onset, the higher the probability of having tic disorders (*P*=.003)

TABLE 1.
Clinical Characteristics of the Early and Late Onset Groups

		EOG (n=160)		LOG (n=95)	
		n	***%***	***n***	***%***
Gender	Male	94	58.8	39	41.1
	Female	66	41.2	56	58.9
Marital status	Single	101	63.1	37	38.9
	Married	51	31.9	47	49.5
	Divorced	7	4.4	8	8.4
	Widowed	1	0.6	3	3.2
Tic disorders		60	37.5	15	15.8
		Mean	***(ep)***	***Mean***	***(ep)***
Years of Study		14.8	0.41	13.58	0.55
Current Age (years)		30.23	0.86	39.57	1.16
Illness Duration (years)		22.62	0.86	14.34	1.06
Number of Comorbid Diagnoses		3.5	0.18	2.54	0.21
Y-BOCS Obsession		12.12	0.35	11.61	0.45
Y-BOCS Compulsion		12.8	0.31	11.48	0.45
Y-BOCS Total (mean score)		24.87	0.58	23.02	0.8
DY-BOCS Total Score (mean score)		18.39	0.86	15.79	0.89

EOG=early onset group; LOG=late onset group; Y=BOCS=Yale-Brown Obsessive-Compulsive Scale; DY-BOCS=Dimensional Yale-Brown Obsessive-Compulsive Scale.

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and social phobia (*P*=.01). The presence of any tic disorder decreased the chance of having mood disorders (*P*<.001), unipolar depression (*P*=.011), anxiety disorders (*P*=.037), and social phobia (*P*=.048). The longer the duration of the OCS, the higher the chance of having unipolar depression (*P*=.042) and the lower the chance of having tic disorders (*P*=.001). Female gender decreased the probability of having social phobia (*P*=.004) and tic disorders (*P*=.031). On the other hand, it enhanced the chance of having eating disorders (*P*=.003) and impulse-control disorders (*P*=.031). The higher the Y-BOCS obsession scores, the higher the chance of having mood disorders (*P*<.001), and the lower the Y-BOCS compulsion scores, the higher the chance of having anxiety disorders (*P*=.001). Finally, the number of comorbid disorders was significantly associated with all disorders, suggesting that the higher the number of comorbidities, the higher the chance of having any additional diagnosis.

TABLE 2.
Gender and Family History of the 160 Early-onset OCD Patients With and Without Tics Disorders

	EOG without Tics (100)		EOG with Tics (60)		
	n	*(%)*	*n*	*(%)*	P
Male gender	58	(58.0)	36	(60.0)	0.97
Female gender	42	(42.0)	24	(40.0)	
Family History of OCS (1st degree)	55	(56.1)	27	(45.0)	0.39
Family History of OCD (1st degree)	25	(25.5)	14	(23.3)	0.95
Family History of Tics (1st degree)	15	(15.3)	16	(26.7)	0.22

OCD=obsessive-compulsive disorder; EOG=early onset group; OCS=obsessive-compulsive symptoms.

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TABLE 3.
Age of Onset and Severity of OCS in the 160 EOG With and Without Tics

	EOG Without Tics (100)		EOG with Tics (60)		
	Mean	*SE*	*Mean*	*SE*	P
Age at onset of OCS	7.56	0.19	7.68	0.24	0.69
Y-BOCS Obsession Score	12.11	0.44	12.13	0.56	0.98
Y-BOCS Compulsion Score	12.63	0.39	13.08	0.51	0.31
Y-BOCS Total Score	24.66	0.71	25.22	1.00	0.48
OCS Dimensions (DY-BOCS)					
"Aggressive/Violence"	7.68	0.66	8.00	1.30	0.72
"Sexual/Religious"	6.19	0.73	5.82	1.33	0.63
"Symmetry/Ordering"	7.84	0.58	6.38	1.06	0.24
"Cleaning/Contamination"	8.55	0.65	5.50	1.11	0.04
"Hoarding"	4.89	0.71	3.90	0.88	0.72
"Miscellaneous"	8.46	0.57	7.53	1.00	0.40
Global Score	19.65	0.85	14.41	2.23	0.04

OCS=obsessive-compulsive symptoms; EOG=early onset group; Y-BOCS=Yale-Brown Obsessive Compulsive Scale; DY-BOCS=Dimensional Yale-Brown Obsessive Compulsive Scale.

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DISCUSSION

The current study compared the demographic and clinical characteristics of patients with early and late onset of OCS. Additionally, it investigated the specific contributions of age of onset and presence of tics in the clinical presentation of these patients in an attempt to disentangle the overlap in demographic and clinical characteristics between early onset OCD with and without tics in a large enough sample. All subjects were interviewed using structured interviews, administered by experienced and carefully trained clinicians. In addition, a detailed assessment of presence and severity of the OCS dimensions was performed using a new scale developed to generate specific scores for each symptom dimension, the DY-BOCS.

Early Versus Late Onset OCD Subgroups

The first goal of this study was to compare the clinical features between individuals with early and late onset of OCS. In this sample, we replicated most of the results found in previous studies. For example, male gender was more frequent in the EOG[18,29,34-38] and the EOG presented a higher frequency of family history of OCS among their relatives.[39,40]

Symptoms of the "violence/aggression" dimension were more prevalent in the EOG, which also presented higher mean global DY-BOCS scores. Aggressive obsessions have been associated with depressive symptoms although the direction of this association is not clear. In this regard, Besiroglu and colleagues[41] found that patients with OCD and major depressive disorder had higher prevalence of aggressive OCS when compared to

TABLE 4.
Investigation of Comorbid Disorders in the Whole Sample According to Clinical Features

				Confidence Interval		
	Coefficient	*Standard Error*	*Exponential (Coefficent)*	*Inferior*	*Superior*	*P-value*
Mood Disorders						
Intercept	-2.17	0.52	0.11	0.04	0.32	<.001
Early age at OCD onset (<11 years)	-0.49	0.37	0.61	0.30	1.27	.19
Late age at OCD onset (≥18 years)	-0.32	0.36	0.73	0.36	1.46	.37
Tic disorders	-1.66	0.39	0.19	0.09	0.41	<.001
Number of comorbid disorders	0.98	0.13	2.65	2.05	3.44	<.001
Y-BOCS Obsession Score	0.12	0.03	1.13	1.06	1.21	<.001
Unipolar Depression						
Intercept	-0.90	0.42	0.41	0.18	0.92	.03
Early age at OCD onset (<11 years)	-0.39	0.30	0.67	0.37	1.22	.19
Late age at OCD onset (≥18 years)	-0.20	0.29	0.82	0.46	1.44	.48
Tic disorders	-0.73	0.29	0.48	0.28	0.85	.01
Number of Comorbid disorders	0.37	0.07	1.44	1.25	1.66	<.001
Illness Duration	0.06	0.03	1.06	1.00	1.12	.04
Anxiety Disorders						
Intercept	-0.79	0.64	0.45	0.13	1.59	.22
Early age at OCD onset (<11 years)	-0.22	0.39	0.80	0.37	1.72	.57
Late age at OCD onset (≥18 years)	-0.35	0.38	0.70	0.33	1.49	.35
Tic disorders	-0.81	0.39	0.44	0.21	0.95	.04
Number of comorbid disorders	1.29	0.16	3.62	2.65	4.95	<.001
Illness duration	0.03	0.01	1.03	1.00	1.05	.07
Y-BOCS Compulsion	-0.13	0.04	0.88	0.82	0.95	.001
Social Phobia						
Intercept	-1.77	0.33	0.17	0.09	0.32	<.001
Early age at OCD onset (<11 years)	-0.38	0.33	0.69	0.36	1.32	.26
Late age at OCD onset (≥18 years)	-0.89	0.35	0.41	0.21	0.81	.01
Tic disorders	-0.61	0.31	0.54	0.30	0.99	.048
Female gender	-0.84	0.29	0.43	0.24	0.76	.004
Number of comorbidity	0.68	0.09	1.97	1.65	2.35	<.001

Continued on next page

OCD patients without depression. Hasler and colleagues[42] have also reported this association.

As consistently reported in earlier studies, the lower the age at onset the higher the probability of having tic disorders.[3,10,11,14] Interestingly, this was also true for social phobia in the current sample.

Early Onset OCD With and Without Tics

Patients with early onset OCD without tics presented significantly higher mean DY-BOCS global scores when compared with EOG patients with tics. Interestingly, the EOG without tic subgroup also scored significantly higher in the "contamination/cleaning" dimension, in accordance with previous studies. It is important to note, however, that this result was also found in the whole sample and corroborates with previous studies which have reported more symptoms of cleaning/contamination in patients without tic disorders.[10,17,26,27,43-45]

The presence of tics was independently associated with male gender, shorter illness duration, and lower frequencies of comorbid unipolar depression, mood disorders, anxiety disorders, and social phobia. Mood disorders were associated with longer illness duration whereas tic disorders were associated with male gender and shorter illness duration. Although the cross-sectional study design did not allow inferences on what disorder came first, it is plausible to hypothesize that the longer the period the individual suffers from OCD, the more likely he/she is to have an additional affective disorder, particularly depression. Women were more likely than men to present eating and impulse control disorders, and less likely to present comorbid social phobia and tic disorders, replicating several other studies.[3,10,11,14,46,47]

It is also noticeable that higher mean Y-BOCS Obsession scores were positively and independently associated with the presence of mood disorders, while higher mean Y-BOCS Compulsion

TABLE 4. (Cont.)
Investigation of Comorbid Disorders in the Whole Sample According to Clinical Features

				Confidence Interval		
	Coefficient	*Standard Error*	*Exponecial (Coefficent)*	*Inferior*	*Superior*	P-*value*
Eating Disorders						
Intercept	-6.18	1.08	0.00	0.00	0.02	<.001
Early age at OCD onset (<11 years)	0.23	0.55	1.26	0.42	3.73	.68
Late age at OCD onset (≥18 years)	-0.18	0.51	0.84	0.31	2.26	.73
Tic disorders	-0.83	0.49	0.44	0.17	1.15	.09
Female gender	1.39	0.46	4.02	1.62	10.00	.003
Number of comorbid disorders	0.50	0.10	1.65	1.36	2.00	<.001
Y-BOCS Obsession Score	0.11	0.06	1.12	0.99	1.26	.06
Impulse Control Disorders						
Intercept	-3.55	0.44	0.03	0.01	0.07	<.001
Early age at OCD onset (<11 years)	0.04	0.39	1.04	0.49	2.24	.92
Late age at OCD onset (≥18 years)	-0.05	0.37	0.95	0.47	1.95	.90
Female gender	0.66	0.31	1.94	1.06	3.54	.03
Number of comorbid disorders	0.57	0.08	1.77	1.51	2.08	<.001
Tic Disorders						
Intercept	-1.19	0.48	0.31	0.12	0.79	.01
Early age at OCD onset (< 11 years)	-0.16	0.34	0.85	0.44	1.65	.63
Late age at OCD onset (≥ 18 years)	-1.12	0.38	0.33	0.16	0.68	.003
Female gender	-0.61	0.28	0.55	0.31	0.95	.03
Number of comorbid disorders	0.32	0.07	1.37	1.20	1.56	<.001
Illness duration	-0.04	0.01	0.96	0.93	0.98	.001

For categorical independent variables (ie, female gender and tic disorders), when the coefficient is positive, this represents an increase in the chance of having that specific disorder. With continuous independent variables (ie, age at onset, illness duration, illness duration, symptom severity), a negative coefficient indicates opposite direction. For example, a younger age of onset or a shorter illness duration indicates a higher probability of having the specific outcome.

OCD=obsessive-compulsive disorder; Y-BOCS=Yale-Brown Obsessive Compulsive Scale.

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scores were associated with anxiety disorders. Besiroglu and colleagues[41] found that OCD+mood disorders had higher obsession scores, but not compulsion scores, when compared to non-depressed OCD patients. It is worthwhile to note that the instrument used to assess depression was the Beck Depression Inventory, whose construct is based on cognitive phenomena. The association of compulsions with anxiety disorders may be due to the fact that compulsions are frequently triggered by feelings of anxiety.

It is important to emphasize the high frequency of comorbid diagnoses in the whole sample, as reported in previous studies,[3,4] and that having one additional comorbidity enhanced the chance of having another diagnosis. Some studies have suggested that ≥2 diagnoses in the same individual significantly enhance the severity and course of OCD, probably worsening the prognosis.[48] Ferrao and colleagues[49] have not found differences in the mean number of psychiatric diagnoses between a group of treatment refractory OCD patients when compared with "responders".

These results may reconcile previous findings in OCD treatment studies. For example, early onset OCD has been associated to worse treatment response in some studies,[3,37,50-52] but not in others.[49,53] It may be that this worse response is a feature of the EOG cases without tics, since in this study the EOG with tics had lower global DY-BOCS scores and the presence of any tic disorder decreased the chance of having several additional comorbidities (ie, mood disorders, unipolar disorders, anxiety disorders, and social phobia) in the logistic regression models. It was not possible to investigate this hypothesis in the whole sample but only in 79 patients, in whom treatment information could be assessed. Of interest in this subgroup, a logistic regression, using decrements of >35% in the Y-BOCS as the dependent variable and all the independent variables reported above, only the presence of tic disorders (P=.02) and female gender (P=.008) were associated with significant reductions on the Y-BOCS.

In the most recent study investigating the differences in OCD with and without tics, Jasoorya and colleagues[54] replicated many results from previous studies, indicating the universality of differences in tic related and not tic related OCD.

Limitations

Several limitations should be taken into account. First, since age at onset was assessed retrospectively, there is the possibility of recall bias. In order to increase the reliability on this variable, a family member was also consulted about the age of OCS onset. However, as OCD symptoms are frequently secretive, the patient is probably the best informant about their symptoms and it would be ideal to evaluate the age at OCS onset with longitudinal prospective studies. Furthermore, the age at onset of OCS established in this study was defined as when the patient first noticed any OCS. It is possible to speculate that different results could be found if age at OCS onset was defined as the age when OCS began to interfere with the person's life. Another limitation is related to the external validity of our findings, since all patients were recruited at specialized OCD clinics, and therefore the results can not be generalized to community samples. Finally, multiple comparisons were conducted, which might have increased the possibility of type I error.

CONCLUSION

The current results emphasize important clinical differences between OCD patients with early and late onset of symptoms, as well as the independent impact of tic disorders in the expression of clinical characteristics among early onset OCD patients, such as a higher score in the "contamination/cleaning" dimension and a lower frequency of comorbid unipolar depression, mood disorders, anxiety disorders, and social phobia. These results are helpful for a better understanding of the overlap between tic related and early onset OCD subgroups, and are valuable in the search for more homogeneous OCD phenotypes, which might represent relevant etiological, therapeutic, and prognostic implications.

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