

## Neurological examination in obsessive-compulsive disorder

*Departments of Neurology and Psychiatry, University of São Paulo School of Medicine, São Paulo, Brazil  
Department of Psychiatry, University of Montréal - Montréal (PQ), Canada*

Recent studies suggest the occurrence of a neurological dysfunction in Obsessive-Compulsive Disorder (OCD). The purpose of the present study was to verify the clinical value of a neurological evaluation in patients with the disease. We submitted 15 patients with OCD (five of whom were under clomipramine) and 15 controls in a detailed neurological examination, including assessment of the neurological soft-signs. Eleven patients (73.3 percent) and four controls (26.7 percent) presented abnormalities on examination. The main findings among the patients were: palmomental reflex (six cases); mirror movements (five cases); agraphesthesia and dysdiadochokinesia (three cases). Three out of the four patients who had a normal examination were on clomipramine. Palmomental reflex was the main finding among the controls. These results, although preliminary, stress the interest and usefulness of performing a detailed neurological examination in OCD.

**UNITERMS:** Obsessive-Compulsive Disorder. Neurological examination. Clomipramine.

### INTRODUCTION

Evidence of a neurological dysfunction in Obsessive-Compulsive Disorder (OCD) has surfaced over the last ten years. OCD has been reported to occur after encephalitis, head trauma, CNS tumors and infarcts, epilepsy, and in association with Gilles de la Tourette's syndrome.<sup>1,2</sup> Furthermore, recent neuroimaging and neurophysiological studies have shown some abnormalities in OCD patients, suggesting a possible participation of the caudate nucleus, cingulate cortex, and the orbitofrontal regions in its physiopathology.<sup>3-5</sup>

Previous studies have established a correlation between the presence of so-called neurological soft-signs (NSS) and certain psychiatric diseases, including OCD.<sup>6</sup> NSS are non-localizing signs of altered performance on motor or sensory tasks in the absence of a focal neurological disturbance. The investigation of these signs represents a broadening of the neurological examination, currently performed by clinicians. Furthermore, even if they are non-localizing, some NSS can suggest dysfunction in particular neural networks, and thus can give additional information concerning abnormalities in the functional organization that characterize some psychiatric diseases.

Increasing efforts have been made in psychiatry in order to clarify the physiopathology of several diseases. Modern neuroimaging methods are of special value and most of the advances in the field are due to an improvement in these techniques. However, single-photon emission computed tomography (SPECT) and positron emission tomography (PET), unfortunately, are still not available worldwide. Therefore, if simple and accessible assessments

#### Adress for correspondence:

Paulo Caramelli  
Rua Itapeva, 518, conj. 601/602  
São Paulo/SP - Brasil - CEP 01332-000

(such as a detailed neurological examination) can reveal abnormalities, they should be currently considered in the investigation of psychiatric patients. Moreover, the possibility of establishing correlations between clinical assessment and neuroimaging has expanded, with the more precise anatomic-functional data available today.

We have evaluated a group of OCD patients and age-matched controls by means of a detailed neurological examination, including a NSS battery. The purpose of this study was to verify the clinical value of a neurological examination in OCD.

## SUBJECTS AND METHODS

The OCD group included 15 patients (nine female and six male), aged between 17 and 66 years (mean=38.2, SD=15.0), following DSM-III-R diagnostic criteria for OCD, with no evidence of focal neurologic disorder. Mean duration of illness was 14.9 years, SD=10.2 years (ranging from 4 to 40 years). Ten patients were medication-free and the remaining five were receiving clomipramine (25 to 350 mg/day). Severity of symptoms was assessed by the Yale-Brown Obsessive-Compulsive Scale (YBOCS). The control group consisted of 15 subjects (nine female and six male), with mean age of 38.1 years, SD=14.6 (ranging from 18 to 68 years), with no evidence of OCD symptoms, no history of neurological or psychiatric diseases, and no use of any medication affecting the central nervous system. All patients and controls agreed to participate in the study.

Neurological assessment included evaluation of the following aspects:

1. Coordination: finger-to-nose, heel-to-knee-to-toe, diadochokinesia, mirror movements, tandem walking.
2. Primitive reflexes: snort, grasp, sucking and palmomental reflexes.
3. Abnormal movements: assessment of tremor, chorea, athetosis, dystonia and of posture abnormalities.
4. Sensory functions: arthresthesia, graphesthesia.
5. Visuospatial abilities: right-left orientation on self and examiner.

## RESULTS

Eleven patients (73.3 percent) from the OCD group and four controls (26.7 percent) presented abnormalities

upon neurological examination. In the OCD group, abnormalities included palmomental reflex (n=6), mirror movements (n=5), agraphesthesia (n=3), and dysdiadochokinesia (n=3). Table 1 presents the overall data of the OCD group. Among the four control subjects who presented abnormalities, palmomental reflex was observed in three (aged 24, 26 and 39), and in the fourth (aged 68), the palmomental reflex occurred in association with mild mirror movements.

There was no correlation between severity of OCD symptoms, as indicated by the YBOCS score, and the number of neurological signs. This was the case even if the severity of the obsessions and the compulsions were considered separately (data not shown).

Three out of four patients who presented no abnormalities on examination were on medication (clomipramine). The remaining two patients on medication presented bilateral palmomental reflexes (Case 1) and bilateral palmomental reflexes, agraphesthesia and mirror movements (Case 6).

## DISCUSSION

The presence of neurological dysfunction in OCD has been suggested in recent years by different investigators. Neuroimaging studies using PET and SPECT have shown abnormalities in orbitofrontal region, cingulate gyrus, and in the caudate nucleus of OCD patients.<sup>3-5</sup> Moreover, the metabolic hyperactivity observed in PET scans tends to decrease after pharmacological treatment, providing additional support to a brain dysfunction in OCD.<sup>7,8</sup>

There have been reports describing neuropsychological changes in OCD. Specifically, recent nonverbal memory deficits,<sup>9</sup> visuospatial abnormalities,<sup>6</sup> and features of a frontal lobe-like syndrome<sup>10</sup> have been observed in some patients. Some of these findings suggest a right hemispheric dysfunction in at least a subset of cases of OCD.<sup>6,9</sup>

Recently, Hollander et al.<sup>6</sup> have used a NSS battery to evaluate a group of OCD patients and controls. The authors found significantly more NSS in the OCD group, including abnormalities in fine motor coordination, involuntary movements and visuospatial functions. Moreover, 39 out of the 41 patients examined presented at least one NSS, and the NSS correlated with the severity of obsessions.

In the present study, a group of OCD patients were submitted to a detailed neurological examination, including

Table 1  
Main data of the OCD group

Case	Age	Sex	Duration of illness (years)	YBOCS* (max=40)	Neurological Evaluation	Medication (clomipramine)
1	17	M	4	29	palmomentary reflex (bilat.)	Yes (150 mg)
2	22	M	10	35	mirror movements (bilat.)	No
3	63	F	20	29	mirror movements (left) palmomentary reflex (bilat.) agraphesthesia (bilat.)	No
4	41	M	4	4	mirror movements (right) palmomentary reflex (bilat.)	No
5	26	M	11	35	normal	Yes (350 mg)
6	47	F	5	26	mirror movements (left) palmomentary reflex (bilat.) agraphesthesia (bilat.)	Yes (25 mg)
7	23	F	16	32	normal	Yes (50 mg)
8	31	M	7	6	normal	Yes (150 mg)
9	51	F	26	37	mirror movements (left)	No
10	25	F	9	25	palmomentary reflex (bilat.) dysdiadochokinesia (left)	No
11	52	F	20	37	agraphesthesia (bilat.)	No
12	36	F	6	30	dysdiadochokinesia (bilat.)	No
13	66	F	40	38	dysdiadochokinesia (bilat.)	No
14	7	F	23	35	palmomentary reflex (right)	No
15	36	M	22	27	normal	No

\*YBOCS: Yale-Brown Obsessive Compulsive Scale

assessment of the so-called NSS and certain primitive reflexes. Although some of these reflexes can be observed in normal subjects, their frequency is increased in several neurological diseases. Thus, pyramidal and extrapyramidal damage as well as diffuse cerebral involvement can lead to the emergence of primitive reflexes, such as snout, grasp, sucking, and palmomentary reflexes. However, the latter can be elicited in a considerable number of normal subjects and its frequency seems to increase with age.<sup>11</sup>

A common finding in the OCD group was the occurrence of mirror movements. This feature can suggest basal ganglia dysfunction, and was observed in six patients and in only one control. As mentioned previously, PET studies report metabolic abnormalities in the caudate nucleus of OCD patients.<sup>3-5</sup> Hence, mirror movements may actually be a clinical indicator of some kind of dysfunction in the basal ganglia circuit.

Agraphesthesia in the absence of other sensory disturbance is consistent with parietal lobe involvement, and was found in 3 patients. Dysdiadochokinesia is a disturbance that usually indicates a cerebellar disorder, but is also associated with lesions of the cerebellar and vestibular connections. Three patients presented dysdiadochokinesia on examination. However, further research is needed to investigate the relationships between these two signs and OCD.

Recent PET studies show that the metabolic rates observed in OCD patients before treatment, particularly in the caudate nucleus and in orbitofrontal regions, change significantly after pharmacological treatment.<sup>7,8</sup> In the present study, three out of four patients who presented no abnormalities on examination were under medication. Of the remaining two patients who were receiving clomipramine, one (Case 6) had just started treatment at the time of examination and was receiving a very low dose

(25 mg); the other patient (case 1) presented only palmomental reflex. Thus, it is possible to conceive that clomipramine treatment may eliminate the neurological findings in OCD.

These overall results, even if observed in a small group of patients, stress the interest and usefulness of performing a careful neurological examination on subjects with OCD. Further longitudinal studies are needed in order to clarify the significance of these neurological signs in OCD, and also to monitor possible effects of medication on them.

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## RESUMO

Estudos recentes têm sugerido a existência de disfunção neurológica no Distúrbio Obsessivo-Compulsivo (DOC). O objetivo do presente estudo foi verificar o valor clínico do exame neurológico em pacientes com esta patologia. Quinze pacientes com diagnóstico de DOC (cinco dos quais em uso de clomipramina) e 15 controles foram submetidos a exame neurológico detalhado, incluindo avaliação de sinais neurológicos leves. Onze pacientes (73.3%) e quatro controles (26.7%) apresentaram anormalidades ao exame. No grupo de pacientes, as alterações principais foram reflexo palmomentoniano (seis casos), movimentos em espelho (cinco casos), agrafestesia e disdiadococinesia (três casos). Dos quatro pacientes com exame neurológico normal, três estavam em uso de clomipramina. Entre os controles, o achado principal foi o reflexo palmomentoniano. Estes resultados, mesmo que preliminares, reforçam o interesse e a utilidade de se realizar exame neurológico detalhado no DOC.

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