

Clinical Aspects of Gilles de la Tourette Syndrome

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Introduction

In 1825, Itard described a case of a girl who, at age seven, suffered from sudden involuntary movements, utterances and coprolalia. By 1885, Gilles de la Tourette had well defined this clinical entity, henceforth known by his name. Reviews of this syndrome have been published elsewhere (Corbett et al., 1969; Abuzzahab and Anderson, 1976; Shapiro et al., 1978).

This syndrome is usually characterized by multiple abnormal movements (tics), imitative behavior (echolalia and echokinesis), and obscene verbalizations (coprolalia).

Our interest in Gilles de la Tourette's Syndrome developed as a result of examining two patients who, in addition to the classical clinical picture, manifested obsessive-compulsive symptoms (e.g., dwelling of intrusive thoughts, doubting, double checking, rituals, etc.).

For its treatment, we chose chlorimipramine (CLI), a tricyclic antidepressant, with a serotonin (5-HT) uptake blocking activity in animals, as shown by Carlsson et al. (1969). Moreover, it has been found that CLI possesses strong anti-obsessive-compulsive properties (Lopez Ibor, 1968; Capstick, 1971; Rack, 1973; Yaryura-Tobias and Neziroglu, 1975; Yaryura-Tobias et al., 1980). Encouraged by our preliminary findings (Yaryura-Tobias, 1975), we continued our investigations on a larger scale. We hypothesized that the psychomotor symptoms of de la Tourette patients consisted of two components also present in obsessive-compulsive disorders: 1) ideational, and 2) motor. Thus, "the involuntary movement" in the Gilles de la Tourette syndrome should be controlled by suppressing the obsessive-compulsive symptoms.

Clinical Aspects

Most frequently, Gilles de la Tourette Syndrome has its onset in childhood, and it is initially manifested by facial tics in the form of blinking, squinting, grimacing, and twitching. At times, the syndrome begins with obsessive-compulsive symptoms that may be mistaken for a normal amount of obsessive-

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compulsive behavior usually seen in children.

With progression of the disease, the tics follow a cephalocaudal distribution, so that movements of the neck, trunk (especially the diaphragm) and extremities eventually appear. The tics cease during sleep and sexual activity, and decrease when attention span increases. However, the frequency of the tics increases during viral or microbial infections and fever.

Our observations have shown that 60 percent of our patients manifested an urge to tic (Yaryura-Tobias and Neziroglu, 1977; Yaryura-Tobias, 1981). This urge to tic could be partly restrained by the patient's will, and it had the same characteristics of a compulsion (i.e., an urge to perform an act, that if suppressed or delayed, would cause severe anxiety and/or general malaise).

At this point, it is important to remember that a

tic is defined as an involuntary movement pertaining to a determined number of muscles, repeating itself at regular intervals, with identical characteristics. However, tics can be arrested voluntarily for a period of time, during which anxiety will occur until the tic is completed (Dassen and Fustinoni, 1953). Moreover, its repetitious nature is fundamental. All these aspects differentiate tics from choreic movements, which consist of involuntary, ample, fast and irregular movements which are not controllable.

For us, an important clinical observation made in our first two Gilles de la Tourette patients (Yaryura-Tobias, 1975) was the presence of obsessive-compulsive symptomatology. Thereafter, we found obsessive-compulsive symptoms to be present in 89 percent of our patients (see Table 1).

TABLE 1
Gilles de la Tourette Syndrome
Obsessive-Compulsive Symptoms

	N*	% ^a
OCS AND URGE TO TIC	29	53
URGE TO TIC	4	7
OCS	16	29
NONE OF THE	6	11

* Total N=55

OCS = Obsessive-Compulsive Symptoms

Aggressive behavior and self mutilation were also common findings (see Table 2).

TABLE 2
Gilles de la Tourette Syndrome
Aggressive Symptoms

	NEITHER OF THE ABOVE	
	N *	% ^a
AGGRESSIVE BEHAVIOR	34	62
SELF-MUTILATION	10	18
	11	20

* Total N=55

Epidemiology

From a sample of 55 cases, we have found three siblings having the syndrome. On the other hand, we have seen one case of fraternal twins where only one twin suffered

from the syndrome. Furthermore, many parents and relatives of patients suffered from obsessive-compulsive disorders or Gilles de la Tourette's Syndrome (see Table 3).

TABLE 3

Gilles de la Tourette Syndrome Epidemiological Data *

AGE AT CONSULTATION	28%
AGE AT FIRST CONSULTATION	(N=43) 78%
AGE OF ONSET	♂ (N=12) 22%
FAMILY INCIDENCE	♀ (N=19) 46%
OF OCD	Ratio = 4:1
SEX DISTRIBUTION	(N=19) 46%
	(N=22) 54%
JEWISH	
NON-JEWISH	
X=23 (6-62)	
X=11	
X=8(2-18)	

* Based on N=55

Laboratory Data

Patients underwent routine urinalysis and blood examinations, including complete blood count, electrolytes, and liver and thyroid profile. In addition, a five-hour oral glucose tolerance test (SHOGTT) and a hair analysis for trace minerals and toxic metals were performed. Special chemistries included plasma total and free tryptophan, whole blood serotonin, 24-hour urinary 5-hydroxyindolacetic acid, plasma manganese, and 24-hour urinary manganese. Electroencephalograms and cerebral computerized axial tomography were also requested.

Laboratory Results

Routine blood and urine chemistries, which included liver and thyroid profiles, were normal.

Abnormal five-hour glucose tolerance tests were found in 50 percent of the patients.

Hair analysis showed a suspicious incidence of low manganese levels, but plasma and 24-hour urine manganese levels, when compared to control samples, were negative.

A trend towards low whole blood serotonin levels (p<.10) was found in patients as compared to normals.

Out of 46,12 (26 percent) electroencephalograms showed non-specific abnormal tracings. Cerebral computerized axial tomography in 11 patients revealed abnormal findings in two cases; one patient presented an enlarged left ventricle, and the other one, cortical atrophy.

Treatment

Our treatment approach to Gilles de la Tourette's Syndrome has basically consisted of the administration of chlorimipramine, in doses ranging from 75 mg to 300 mg per day, with a therapeutic mean of 200 mg and a maintenance dose of 50 mg to 75 mg per day. Any therapeutic response should not be expected before three weeks from onset of treatment (Yaryura-Tobias and Neziroglu, 1977). The addition or substitution of chlorimipramine by a combination of L-trypto-phan (1g t.i.d.), niacinamide (500 mg b.i.d.), and pyridoxine (100 mg o.d.) seems to be effective by permitting a reduction in the chlorimipramine dosage. Some patients have improved with the administration of L-tryptophan, niacinamide, and pyridoxine alone. In two refractory cases, a combination of chlorimipramine (50 mg t.i.d.) and pimozide (1 mg t.i.d.) resulted in a dramatic reversal of symptoms, where all other

pharmacological agents had failed. Our experience with haloperidol has been limited, since most patients came for consultation, complaining of extrapyramidal side effects or tardive dyskinesia as a consequence of haloperidol therapy.

Additional therapeutic measures have included corrective dietary regimens, exclusion of allergens, and family participation in the overall program.

Discussion

Obsessive-compulsive symptoms and the urge to tic seem to place de la Tourette's Syndrome within the group of obsessive-compulsive disorders. Furthermore, the presence of obsessive-compulsive symptoms has been reported by other researchers as a secondary symptom (Gilles de la Tourette, 1899; Charcot, 1889; Ascher, 1948; Bockner, 1959; Walsh, 1962; Abuzza-hab and Anderson, 1976; Golden, 1977; Eld-ridge et al., 1977; Ciprian, 1980). We believe that obsessive-compulsive symptoms will be elicited if a psychiatric examination is given to the patient.

Our findings on the presence of aggressive behavior corroborate previous findings reported in individual cases (Gilles de la Tourette, 1885; Ascher, 1948; Seignot, 1961; Shapiro et al., 1974; Borak and Osetowska, 1976; Gonce and Barbeau, 1977). Of 114 patients reviewed by Van Woert et al. (1976), 40 percent to 50 percent were found to indulge in self-destructive behavior.

The sexual distribution of our population, a male-female ratio of 4:1, corroborated previous findings (Kelman, 1965; Fernando, 1967; Challas, 1967; Mophew and Sim, 1969; Shapiro et al., 1978). These findings are consistent with the normal sex-distribution of childhood tics (Ford and Beyer, 1974).

The presence of tics amongst family members of Tourette patients are infrequent; nevertheless, some have been reported in the literature (Fernando, 1967). Moreover, Moldofsky et al. (1974) reported that 67 percent of 15 Tourette patients had family members with tics. Further, we have reported the presence of obsessive-compulsive disorders in Gilles de la Tourette family members.

Although this syndrome has been considered a predominantly Jewish disorder (Shapiro et al., 1978), it has been found in other ethnic groups (Perera, 1975; Nomura and Segawa, 1977). Our study in ethnic background yielded that 46 percent of our patients were of Jewish origin or religion. At first glance, this high percentage may lend further support to the racial prediction theory; however, our population was drawn primarily from New York City and its environs, an area with a known dense population of East European Jews. Nevertheless, another study performed in a midwestern city also revealed a high percentage of East European Jews (23 percent) suffering from Gilles de la Tourette's Syndrome, while the city's population is only two percent Jewish (Wassman et al., 1977).

When compared to control samples, which reveal that five percent to 15 percent of the population have abnormal EEG's (Kil-oh et al., 1972), our population showed twice as many EEG abnormalities. Of 127 EEG's of Tourette's patients reported in the literature and recorded by Shapiro et al. (1978), 66.1 percent (82) were found to be abnormal. Though this reveals a much higher percentage of abnormal EEG's as compared to our study, the range of abnormal EEG's reported in different samples varies between 25 percent and 100 percent.

Due to its protean characteristics, this disorder has intermittently belonged to the realms of both psychology and medicine; therefore, the therapeutic approach has been oriented towards the theoretical or empirical preference of the therapist. The precipitating factors may be psychological, physical, or both.

As the failure of the various psychotherapeutic techniques for controlling Tourette's Syndrome became apparent, other forms of treatment more closely related to a medical model were applied.

With the advent of modern psychopharmacology, new and controlled modes of treatment have come into being, among these, the use of the various phenothiazines (Mes-nikoff, 1959; Eisenberg et al., 1959; Lucas, 1964; Polites et al., 1965).

Haloperidol, used for the first time by Seig-not (1961), has been considered the treatment of choice, with an improvement of 77.8 percent, as reported from a total of 137 patients (Shapiro et al., 1978). The use of other neuroleptics for the treatment of Gilles de la Tourette's Syndrome yielded an improvement of 48.1 percent out of 39 patients (Abuzzahab and Anderson, 1976).

We suggest that the efficacy of neuroleptics on Gilles de la Tourette's Syndrome may partly arise from the neuromuscular side effects manifested during treatment. For instance, the rigidity developed in the musculature may physically prevent the patient from performing body tics. This supposition finds further support in the lack of efficacy of haloperidol on coprolalia, obsessions, and compulsions. Furthermore, one major limitation to the use of haloperidol and phenothiazines is the presence of extrapyramidal side effects and tardive dyskinesia. These neurological side effects may include other forms of involuntary movements, at times difficult to treat.

Psychological side effects can be also caused by haloperidol therapy (i.e., cognitive impairment). These symptoms are most noticeable in younger children or students whose academic levels are drastically affected during the course of treatment. Such symptomatology as decreased motivation, concentration, memory and attention, are not uncommon (Shapiro et al., 1978). It should be noted that complete reversibility of such cognitive side effects occurs with decreased dosage or discontinued use of medication.

Last but not least, one has to take into consideration the impact that this disorder has on the life of the patient; for instance, poor school performance, social disability, and family disturbance. Family dynamics have frequently been found to be disturbed, such as severe rigidity of one or both parents, patients being unwanted, and frequent quarreling among family members. In addition, it is not unusual to diagnose mental illness in family members of Gilles de la Tourette patients; therefore, the treatment of the family becomes imperative.

Otherwise it seems improbable that chemotherapy will be effective without an integral approach.

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