

# Gilles de la Tourette syndrome: clinical features of 75 cases from Argentina

F. Micheli<sup>1</sup>, M. Gatto<sup>1</sup>, O. Gershanik<sup>2</sup>, A. Steinschnaider<sup>3</sup>, M. Fernandez Pardal<sup>1</sup> and M. Massaro<sup>3</sup>

<sup>1</sup>Department of Neurology, Hospital de Clinicas, University of Buenos Aires, <sup>2</sup>Department of Neurology, Hospital Frances, Buenos Aires, and <sup>3</sup>Department of Neurology, Juan P. Garrahan Pediatrics Hospital, Buenos Aires, Argentina

Correspondence to: F. Micheli, Olleros 2240 - 1426, Buenos Aires, Argentina

A series of 75 cases of Gilles de la Tourette syndrome (GTS) from Argentina, whose ages ranged from 6 to 55 with a mean of 20.02, were evaluated to compare findings with those reported for other countries. Mean age at onset was 7.44 years and mean overall duration of symptoms was 12.58 years; 6.7% of cases were mild, 49% moderate and 44.3% severe. Most frequent presenting motor tics were excessive blinking in 41 followed by head jerking in 16 and eye winking in six, while phonic tics included coprolalia in 28.0%, echolalia in 17.5% and palilalia in 10.8%. Abnormal perinatal events were reported in 40.5%, while positive family history for tics was present in 26.66%. Obsessive-compulsive behaviour was evident in 66% and attention deficit disorder in 16% of cases. Self-injurious behaviour comprised onychophagia in 28 patients, lip-biting in seven and self-slapping in eight cases. Almost half of our patients were initially interpreted as having a psychogenic disorder indicating that GTS in Argentina is most likely underdiagnosed. It may be concluded that the overall pattern of GTS is not dissimilar to that described for European, Asian and American populations, thus highlighting the previously recognized cross-cultural uniformity.

**Keywords:** Argentina – Gilles de la Tourette – Obsessive-compulsive disorder – Tic

## INTRODUCTION

Gilles de la Tourette syndrome (GTS) has long been recognized as a hereditary disorder featuring motor and phonic tics with early onset that wax and wane and change in nature over time.

Although named after Georges Gilles de la Tourette in 1885, a previous case had already been described by Itard as early as 1825 (Itard, 1825).

Considered a rare neuropsychiatric disorder for decades, it was only in the last 30 years that GTS attracted the increasing attention of research workers who laid down criteria for its diagnosis. The classic triad of multiple tics, coprolalia and echolalia lost its paramount significance as shown by currently accepted criteria, thus providing the basis for earlier diagnosis even in mild cases (DSM-III-R; American Psychiatric Association, 1987). It is now widely accepted that GTS is a neuropsychiatric condition, and it has recently been demonstrated by neurophysiological techniques that motor tics are expressed by pathways other than those subserving voluntary movements (Obeso *et al.*, 1981).

So far the occurrence of GTS in Latin America has been mostly documented as single case reports or

very limited series in regional literature from Brazil (Sougey and Vilaca, 1981; Matarazzo, 1985; Rolemberg *et al.*, 1985; Fontanari and Vaitzes, 1985, 1986; Golfeto *et al.*, 1988), Peru (Warton, 1987), Chile (Guajardo, 1986) and Puerto Rico (Joy Sobrino *et al.*, 1985). In fact, only two papers are available in the English language journals describing a few cases from Argentina (Micheli *et al.*, 1990) and a single case from Guyana (Eapen and Robertson, 1992).

Here we report the clinical features of 75 patients with GTS in Argentina evaluated over a 4 year period in the city of Buenos Aires.

## METHODS

We evaluated prospectively 75 cases, presenting with chronic tics, seen consecutively in the outpatient clinic of the departments of neurology of the Hospital de Clinicas, Juan P. Garrahan National Pediatrics Hospital and Hospital Frances of Buenos Aires, from 1988 to 1991. Most patients were referred to us from other clinical departments within our hospitals. The remainder were referrals from

TABLE I. Motor tics in 75 patients with GTS

Simple	Complex
Increased blinking rate	Nose touching
Nose wrinkling	Shirt adjusting
Eye winking	Hands and arms sniffing
Teeth sucking	Object throwing
Eyebrow raising	Face and thigh self-slapping
Gaze raising	Hair preening
Tongue protrusion	Leg crossing
Lip biting	Hopping
Lateral head jerking	Trouser adjusting
Shoulder shrugging	Strap lifting
Violent nodding	Nose blowing
Random head jerking	
Arm indrawing	
Hand wringing	
Finger drumming	
Belly, pelvic and trunkal jerking	
Buttock jerking while seated	
Thoracic jerking	
Kicking	
Foot flexing	
Eye twitching	
Forward head jerking	
Oromandibular twitching	
Other facial twitching	
Pouting	
Tongue twitching	
Limb jerking	
Finger crossing	
Teeth grinding	
Sideway gazing	
Arm raising	
Mouth angle deviation	
Nose twitching	
Hand waving	
Facial grimacing	

other hospitals both in Buenos Aires and elsewhere in Argentina.

A comprehensive clinical history was recorded, including age at onset of motor and phonic tics as well as their distribution, clinical phenomenology and progression. Simple motor tics were taken as fast, darting, meaningless jerks; dystonic motor tics comprised abnormal involuntary sustained movements or postures (Jankovic and Stone, 1991); while complex motor tics included more elaborated but purposeless movements. Simple phonic tics were defined as meaningless sounds and noises while complex phonic tics referred to linguistically meaningful words and phrases out of social context. Sensory tics were recorded as such when patients reported a peculiar sensory feeling prior to the appearance of the movement disorder or when a movement could be interpreted as cathartic voluntary action intended to

relieve the subjective feeling, though on occasion the motor correlate was lacking. Since tics are often inhibited at examination and even during video recording, not only the examiners' description but also the patients' and their parents' reports were taken into account to determine the tic pattern.

Data were requested on initial diagnosis as well as family history for tics, coprolalia, palilalia (involuntary repetition of the last sound, word, phrase or sentence uttered by the patient), echolalia (as above but regarding the interlocutor's speech), and somniloquias (words or sentences uttered by the patient while asleep). GTS, obsessive-compulsive disorder (OCD) and attention deficit disorder (ADD) were diagnosed according to DSM-III-R (American Psychiatric Association, 1987), while self-injurious behaviour, schooling performance, ethnic origin and perinatal background were also recorded.

## RESULTS

Sixty patients were males, with ages ranging from 6 to 53 years (mean 19.7 years), and 15 were females, with ages ranging from 12 to 55 (mean 22.13 years); overall mean age was 20.02 years.

Mean age at onset of GTS was 7.51 years for males and 8.20 for females, with a mean of 12.58 years of tic duration. While phonic tics were the presenting symptom in 2.7%, the remainder exhibited motor tics. Degree of severity was mild in 6.7%, moderate in 49% and severe in 44.3%.

According to body segment, 237 motor tics were discerned; 135 involved the face and neck, 55 the upper limbs, 25 the lower limbs and 22 the trunk. Table I lists simple and complex motor tics which were presented in 74% and 26% of cases respectively. Presenting motor tics, globally listed in Table II, were overwhelmingly simple in nature (95%). Dystonic tics were present in 29 patients and involved the cervical area in 18, orbicular oculi in three, hands in five and masticatory muscles in three, while sensory tics were reported in nine cases.

Phonic tics were detected in all patients, and included mouth rinsing with a swishing noise, hiccoughs, tongue clicking, yelling, screaming, sniffing, ughing, shhing, mumbling, popping, snorting, throat clearing, whistling, clucking, coughing, stuttering, guttural sounds, non-specific utterances, sobbing, isolated words out of context, grunting, teeth chattering, clicking, sighing, giggling, vowel utterances, buzzing, cooing and meaningless cliches.

Out of the 75 GTS cases, 28% developed coprolalia, 10.7% copropraxia, 17.5% echolalia, 4% echo-praxia, 10.8% palilalia and 12% somniloquia.

TABLE II. Presenting motor tic

Excessive blinking	41
Lateral head jerking	10
Forward head jerking	6
Eye winking	6
Oromandibular twitching	5
Shoulder shrugging	3
Arm raising	3
Facial grimacing	3
Tongue twitching	2
Lip biting	1
Limb jerking	1
Teeth grinding	1
Strap lifting	1
Thoracic jerking	1
Finger crossing	1
Trouser adjusting	1
Gaze raising	1
Sideway gazing	1
Mouth angle deviation	1
Arm lifting	1
Nose twitching	1
Nose blowing	1
Hand waving	1
Multifocal jerks	1

Tics were often precipitated by anxiety in 50.6% of the cases and by watching TV in 6.6%, while in one there was a clear-cut positive correlation between tic severity and hyperthermia. Tic inhibition was reported to occur during sexual intercourse and while playing games in two each. On occasion, phonic tic suppression was marked enough to exhibit a dramatic rebound phenomenon, as illustrated by a patient who was able to work for hours as a professional fashion model without involuntary utterances.

Despite the handicap caused by tics, schooling was rated as good in 46.7% of the cases, fair in 4%, bad in 16% and non-existent in 33.3%.

Positive family history for tics was recorded in 26.6% of the patients with more than one relative affected in a few cases, while abnormal perinatal events were reported in 32%, including hypoxia in seven, preterm birth in five, umbilical cord round the neck in three, fetal distress in three, forceps delivery in three, and other dystocic deliveries in three each.

OCD was evident in 66% of cases, ADD in 16%, migraine in 8%, enuresis in 8%, psychiatric illness in 4% and substance abuse in 8%. OCD included taking objects to pieces in three, and other OCD in eight, including arithmomania, scratching, tidying folders, excessive personal hygiene, switching lights on and off, opening and closing doors and dancing steps in one each.

Twenty-three cases (30.6%) experienced social embarrassment inducing self-isolation, while in others

tics led to job difficulties, divorce, increasing shyness and/or anxiety and even forcible rejection by peers.

Almost half of the cases (48%) were initially diagnosed as psychogenic. GTS or tics was the initial diagnosis in only 25.4%, epilepsy in three, hyperkinesia in one, behavioural disorders in two and sleep disturbances in one, while it was not available in 13.

Self-injurious behaviour included onychophagia in 62% of patients, one of whom developed nail removal, lip biting in 9.3%, self-slapping in 10%, one of whom inflicted severe bruises, and hair pulling in one.

Ethnic background comprised 34.6% Latins, 4%, Jews, 1.3% Germans and 1.3% Arabs, and was mixed or could not be determined in the remainder.

Thirty-four patients were treated with flunarizine 10 mg/day for 3 months and evaluated fortnightly by means of the Goetz rating scale (Goetz *et al.*, 1987b) as part of a separate protocol, while haloperidol was given to 29, clonazepam to four, tiapride to nine, clonidine to five, pimozide to seven, and tetrabenazine to one. Table III summarizes drugs administered and results achieved.

## DISCUSSION

Although diverse series of GTS patients have been reported from different countries world-wide, very few publications from Latin America are available, probably due to the fact that many if not most of such cases are misdiagnosed and hence improperly treated.

Our series from Argentina demonstrated that GTS in Latin America shares striking similarities with cases reported elsewhere, thus confirming the universal cross-cultural uniformity previously described (Shapiro *et al.*, 1978; Nomura and Segawa, 1982; Asam, 1982; Lieh Mak *et al.*, 1982; Lees *et al.*, 1984; Min and Lee, 1986; Robertson and Trimble, 1991). Inhabitants of Argentina and particularly its capital city Buenos Aires are mostly of European descent, as shown by the ethnic background of our patients who included 34.6% Latins, 4% Jews, 1.3% Germans and 1.3% Arabs, while for the remainder no single ethnos could be pinpointed. This pattern roughly parallels the prevailing general population profile in Buenos Aires with no ethnic group being over-represented.

Age at onset, tic features, male predominance and cephalocaudal progression disclosed no differences with previous studies on European, American and Asian patients (Lieh Mak *et al.*, 1982; Shapiro and Shapiro, 1982; Shapiro *et al.*, 1983; Lees *et al.*, 1984; Min and Lee, 1986; Robertson and Trimble, 1991).

TABLE III. Drugs used and benefit achieved in 75 cases of GTS

Drug	Evident benefit	Slight benefit	No benefit	Undetermined
Flunarizine	18	5	8	3
Biperiden				2
Diazepam		3		
Haloperidol	10	3	14	
Tiapride	3		5	1
Tetrabenazine		1		
Pimozide	5	2		
Clonazepam	1	1	2	

Incidence of familial cases in our population was low (26.6%) compared to other series in the literature. However our study was not designed to explore the familial nature of this disorder and the incidence of a positive family history was only obtained through questioning of the patient and parents. We are fully aware of the shortcomings of the family history method of ascertainment (Pauls *et al.*, 1984) as compared with direct interview methods used in genetic studies (Eapen *et al.*, 1993).

Argentine cases are frequently misdiagnosed even by a specialist, for whom a correct diagnosis seems to be a major accomplishment. Admittedly, referral bias may well be present in our series, though its influence should not be exaggerated as degree of severity was not an issue but rather initial misdiagnosis followed by improper treatment. A total of 48% of our cases were interpreted as purely psychogenic and treated as such, while epilepsy was incorrectly diagnosed in three. Interestingly, even after a firm diagnosis of GTS was reached, psychiatrists and/or psychologists previously treating such cases were reluctant to disregard the putative psychogenic nature of the disorder. In all likelihood this was due on one hand to the fact that anxiety often affected tic severity either for better or worse and, on the other hand, to the strong psychoanalytic background of local psychiatrists. In support of this contention, on reviewing most Latin American papers published in regional journals, a psychological interpretation of several aspects of the disease is commonly advanced.

Nearly 62% of our patients had varying degrees of onychophagia, so severe in one as to remove nails forcibly, and a further one had trichotillomania. Both onychophagia and trichotillomania are interpreted as a self-injurious behaviour indicative of OCD, which is frequently associated with GTS (Robertson *et al.*, 1988; George, 1991). Onychophagia is responsive to clomipramine, a drug reported to be effective for OCD and trichotillomania (Leonard *et al.*, 1991). Recent studies suggest that GTS and OCD may be

aetiologically and even genetically related. It has been proposed that OCD could be a behavioural phenotype of the putative GTS gene(s) (Pauls *et al.*, 1986a,b; Eapen *et al.*, 1993).

Although self-injurious behaviour in GTS has been reported in the literature (Robertson *et al.*, 1989) the occurrence of onychophagia has hardly ever been described, despite being a common association in our patients, perhaps due to its 50% plus prevalence in normal adolescents, which drops to 23% in later life (Leonard *et al.*, 1991). Lip biting and self-slapping were also frequent in our series. In spite of being poorly detected, self-injurious behaviour is probably common in even mild GTS cases.

Another remarkable finding in our patients was the high incidence of birth trauma and other pathologic perinatal events, which were present in 26.6% of cases. Similar findings have been reported by Lees *et al.* (1984) in 25% and Lucas *et al.* (1982) in 40% of their series.

Coprolalia was observed in 21 patients, four of whom had only mental coprolalia. The prevalence in our series (28%) is almost identical to the figure reported from Denmark (Regeur *et al.*, 1986). The prevalence of this disorder in GTS patients worldwide is outlined in Table IV.

The most common foul words were "dick" and "cunt" which were sometimes expressed only partially. However, the River Plate Spanish "puta", "pija" and "concha" have two syllables and finish in a vowel, thus sounding more pungent than their English equivalents. Conversely, the most frequently pronounced foul words in English are "fuck" and "shit", perhaps not because of their connotations but rather because they are composed of high-probability sequences of letters or phonemes as proposed by Nuwer (1982). Curiously enough, the local term for "fuck", "coger" is seldom used perhaps because it ends in a consonant and therefore sounds weak.

So far it cannot be ascertained whether the unexpected occurrence of offensive language attributed by

TABLE IV. Coprolalia: comparison between different GTS populations

Country	Coprolalia prevalence	Reference
USA	22–32%	Shapiro <i>et al.</i> (1978) Goetz <i>et al.</i> (1992)
UK	37%	Lees <i>et al.</i> (1984)
The Netherlands	36%	Van de Wetering <i>et al.</i> (1988)
Korea	33%	Min and Lee (1986)
Argentina	28%	Present series
Denmark	26%	Regeur <i>et al.</i> (1986)
Japan	4%	Nomura and Segawa (1982)
Brazil	0%	Fontanari and Vaites (1985)

Bennet (1976, 1977) and Nuwer (1982) to random generation of high-probability phonemes may be extrapolated to our Spanish-speaking population. Here such a contention should be weighed against the finding by Lang *et al.* (1993) of a patient who developed coprolalioprapaxia at times without concurrent vocalizations or the associated word coming to mind, while training in sign language as part of a rehabilitation worker programme.

Neuroleptics including haloperidol have provided clear-cut benefits for tic control. However, due to their side effects only one-third of patients improving on treatment choose to continue therapy on a long-term basis (Shapiro *et al.*, 1983). Curiously enough only half of our patients receiving haloperidol showed any improvement, in disagreement with most reports (Shapiro *et al.*, 1989). The usefulness of clonidine, a drug widely employed in GTS, is also a matter of controversy (Goetz *et al.*, 1987a). Given the initial good results achieved in GTS with flunarizine (Micheli *et al.*, 1990), a calcium entry blocker with mild D2 blocking activity, we have so far treated 34 patients with 53% overall improvement and good compliance. Doses ranged from 10 to 30 mg/day with a mean of 15 mg/day. Out of 53% of patients benefiting from treatment, all decided to continue on a long-term basis, 23.5% of whom developed side effects including mild parkinsonian signs and depression which promptly improved on dose reduction.

Our present findings from the first large Argentinian series show that GTS in Latin America exhibits a pattern of tic expression not dissimilar to that described elsewhere.

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