Demographic and Clinical Profile of Children and Adolescents Newly Diagnosed With Tourette Syndrome

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BACKGROUND

- In populations with Tourette syndrome (TS), psychiatric comorbidities are prevalent (eg, anxiety disorders, attention-deficit/hyperactivity disorder [ADHD], and obsessive-compulsive disorder [OCD])[1-3]
- It is estimated that more than half of patients with TS will have ≥1 comorbid psychiatric disorder during their lifetime,[3] but studies on the real-world clinical profile of children and adolescents at the time of TS diagnosis are limited

OBJECTIVE

- To characterize the clinical profile of children and adolescents newly diagnosed with TS using a large US electronic health records (EHR) database

METHODS

- Data were analyzed retrospectively using an EHR database (TriNetX Dataworks-USA Network) that contains information for >119 million individuals
- Analysis included children and adolescents (aged 6-17 years) newly diagnosed with TS, identified through the following sequential steps:
  - Health care encounter with International Classification of Diseases (ICD), 9th Revision, Clinical Modification diagnosis code 307.23 or ICD, 10th Revision, Clinical Modification code F952
  - No previous encounters with diagnosis code for TS within 18-month period prior to index date (ie, newly diagnosed)
  - ≥1 provider encounter with any diagnosis code during the baseline period (18 months prior to index [TS diagnosis] date) and during an 18-month post-index period, thereby selecting for patients with multiple encounters in the medical system

RESULTS

- 12,015 children and adolescents with newly diagnosed TS met selection criteria and were included in the analysis (**Table**)
  - The majority of the 12,015 patients were male (71.5%), white (75.1%), and non-Hispanic/Latino (81.0%)
  - Of 6392 patients with BMI data, 32.7% were considered overweight or obese

Table. Demographic and Baseline Characteristics in Children and Adolescents Newly Diagnosed With TS

Characteristics	Population (N=12,015)
Age, mean (SD), y	11 (3)
Age group, n (%) 6-11 y 12-17 y	 6267 (52.2) 5748 (47.8)
Male, n (%)	8594 (71.5)
Race, n (%)* White Black Other Missing	 9026 (75.1) 814 (6.8) 297 (2.5) 1878 (15.6)
Ethnicity, n (%) Not Hispanic or Latino Hispanic or Latino Missing	 9730 (81.0) 1082 (9.0) 1203 (10.0)
BMI category, n (%)* Underweight Normal weight Overweight Obesity Missing	 319 (2.7) 3980 (33.1) 932 (7.8) 1161 (9.7) 5623 (46.8)
Metabolic syndrome, n (%)† Unknown Mild Moderate	 10,335 (86.0) 1565 (13.0) 115 (1.0)

*Underweight (BMI z-score <−1.6); normal weight (BMI z-score −1.6 to <1.0); overweight (BMI z-score 1.0 to <1.6), and obese (BMI z-score ≥1.6). †Metabolic syndrome conditions defined as: abdominal obesity (ie, any BMI result indicating obesity), hypertension, any triglyceride result(s) ≥100 mg/dL, any HDL-C result(s) ≤50 mg/dL, and prediabetes, diabetes, or any fasting glucose result(s) ≥110 mg/dL. Mild defined as 1 to 2 metabolic syndrome conditions; moderate defined as 3 to 5 metabolic syndrome conditions.
BMI = body mass index; HDL-C = high-density lipoprotein-cholesterol; TS = Tourette syndrome.

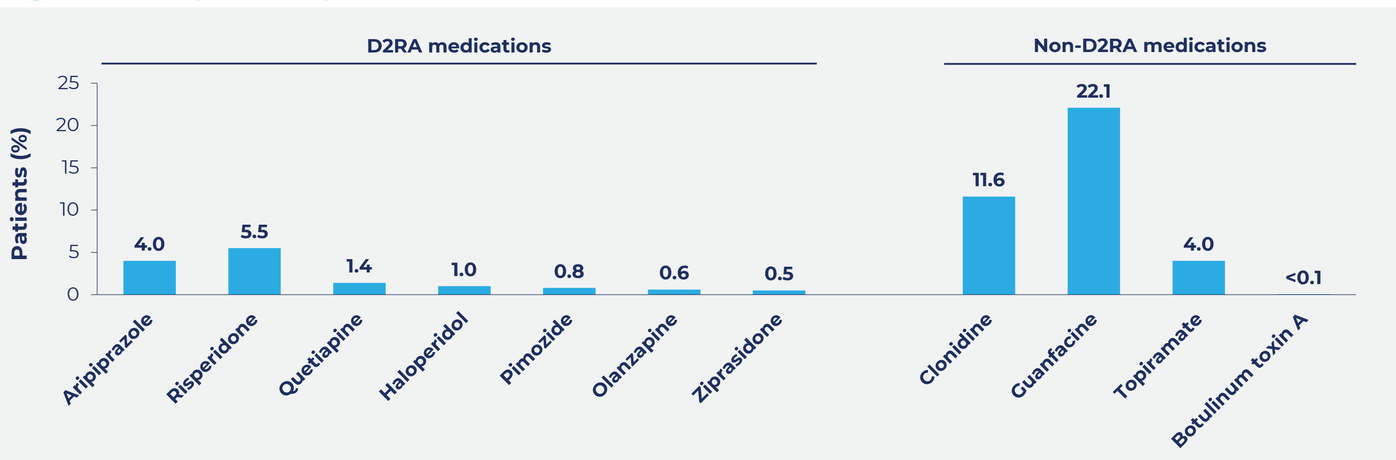
- The most common comorbid psychiatric disorders, among those examined, were ADHD (38.8%), anxiety (38.2%), OCD (12.4%), and autism spectrum disorder (10.2%; **Figure 1**)

Figure 1. Most Common* Comorbid Psychiatric/Neurologic Conditions in Children and Adolescents Newly Diagnosed With TS

*≥9.0% of patients. †Included mood disorders.
ADHD = attention-deficit/hyperactivity disorder; ASD = autism spectrum disorder; OCD = obsessive-compulsive disorder; TS = Tourette syndrome.

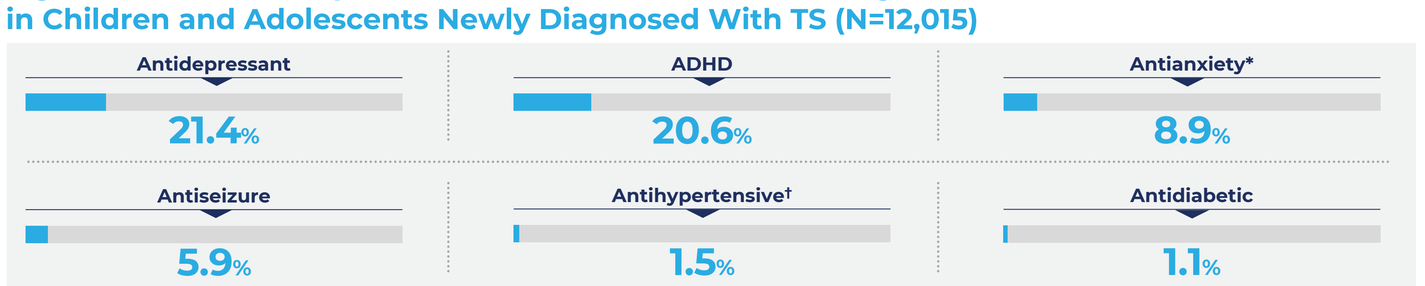
- Common medications for TS and other comorbid conditions identified during the 18-month baseline period were guanfacine (22.1%) and clonidine (11.6%); dopamine D2 receptor antagonist/partial agonist use was infrequent (**Figure 2**)
- Of 6 additional medication classes examined, antidepressant (21.4%) and ADHD (20.6%) medications were most commonly identified during the 18-month baseline period (**Figure 3**)

Figure 2. Baseline Period Medication Records in Children and Adolescents With Newly Diagnosed TS (N=12,015)



D2RA = dopamine D2 receptor antagonist/partial agonist; TS = Tourette syndrome.

Figure 3. Relative Frequencies of Other Medications During 18-Month Baseline Period in Children and Adolescents Newly Diagnosed With TS (N=12,015)



*Benzodiazepines and buspirone. †Aldosterone antagonists, alpha-adrenoreceptor angiotensin-converting enzyme inhibitors, angiotensin II receptor blockers, antagonists, beta-blockers, calcium channel blockers, diuretics, and methyldopa.
ADHD = attention-deficit/hyperactivity disorder; TS = Tourette syndrome.

DISCUSSION AND CONCLUSIONS

- A substantial percentage of children and adolescents had psychiatric comorbid conditions at time of TS diagnosis
- The relative frequencies of several comorbid conditions in this cohort should be interpreted with caution, as features of the study design may have resulted in over- or under-reporting, and neurodevelopmental and psychiatric diagnoses in routine patient care may not have adhered to diagnostic best practices
- Future research is warranted to better understand the relationship between TS and these psychiatric comorbid conditions and the impact of these psychiatric conditions/other baseline parameters on safety and efficacy outcomes of TS treatments
- Findings derived from EHR samples are subject to documented limitations, including incomplete/variable data, which may influence generalizability

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