The Calgary and Paris Adult Tic Disorders Registry

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Background:
In children, tics affect more boys than girls by a ratio of 4:1. In adults, the limited existing data suggest that the sex distribution is more equal between men and women. There is a need to accumulate information regarding the clinical dimorphism of tic disorders between sexes. The aim of this study is to assess the phenomenology of tics in adults and investigate how sex influences tic phenomenology, tic-related impairment and comorbidities.

Methods:
Adults with tics were recruited from our two specialty clinics in Canada and France and followed prospectively for 12 months. We examined the most common body areas affected and types of sounds. We compared age of onset, Yale Global Tic Severity Scale (YGTSS) scores, including detailed tic inventory and tic-related impairment, psychiatric comorbidities and treatments used in women compared to men. We distinguished primary tic disorders, including Tourette syndrome (TS), persistent motor and vocal tic disorder, from functional tic-like behaviours (FTLBs).

Results and Conclusions:
Since January 2021, 124 participants have been included in Calgary and Paris: 86 with TS (69.4%), 11 with persistent motor tic disorder (8.9%), 1 with other specified tic disorder (adult-onset) (0.8%), 1 with secondary tics (0.8%) and 25 with FTLBs (20.2%).
In patients with primary tic disorders (n=98): 30 (30.6%) were females, mean age at registration was 33.4 years (range 18-73), mean age at tic onset was 8.9 years (range 3-27) and it did not differ by sex. The most common simple tics were eye blinking (54.1%), head jerks/ movements (50.0%) and throat clearing (32.7%). The most common complex tics were complex hand movements (12.2%), tic-related compulsive behaviours (13.3%) and coprolalia (8.2%). Females presented more often with eye blinking (OR=2.6, p=0.039), simple eye movements (OR=4,3, p=0.006) and simple arm movements (OR=3.6, p=0.009) than males. There was no difference in tic-related impairment or in YGTSS total tic score by sex. The most common comorbidities in patients with primary tic disorders were anxiety (50.0%), mood disorders (32.7%) and attention-deficit/hyperactivity disorder (32.7%); only 17.4% had no psychiatric

comorbidities. Females were significantly more often affected by anxiety (OR=3.54, p=0.007). The most frequently introduced treatments were aripiprazole (34.7%), cognitive behavioural therapy for tics (26.6%) and botulinum toxin (23.5%); 23.5% were not treated for their tics. French patients were more often treated by aripiprazole (70%) than Canadian patients (10.3%).
In patients with FTLBs (n=25): 23/25 (92.0%) were females; mean age at registration was 19.9 (range 18-24). Tic number, intensity, complexity, interference, and YGTSS total tic score were higher than in patients with primary tic disorders, as was tic-related impairment (31.3 vs 19.0/50, $p < 0.00001$).
A total of 23/56 (41.1%) of patients with primary tic disorders had at least one family member with an autoimmune disease. A total of 35/56 (62.5%) patients with primary tic disorders and 11/13 (84.6%) patients with FTLBs had at least one family member with a neuropsychiatric disorder (mostly depression and anxiety, respectively); female sex was associated with a neuropsychiatric family history (OR 5.6, p=0.003).

Our ongoing prospective international registry of adults with tics allows us to identify the typical presentation and distribution of tics in this population, with, as it seems from these first analyses, few sex differences.