Identifying Autism Spectrum Disorder (ASD) in Young People Presenting with Functional Tic-Like Behaviours

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Background

Functional tic-like behaviours (FTLB) are characterised by multiple, complex, vocal, and motor tics, with rapid onset, usually in adolescence[1]. Diagnosis is made from biopsycho-social indicators. Emerging research suggest neurodevelopmental disorders may be vulnerability markers for FTLB development[2], as unaddressed neurodevelopmental disorders increase anxiety/stress[3], elevating the risk of comorbid psychiatric disorders[4].

International studies using pooled data have reported ASD rates in FTLB as 24%[5]. However, non-pooled data demonstrated that ASD prevalence rates varied depending on clinic site, with GOSH Tic Disorders Service reporting higher prevalence rates. It was unclear whether this disparity was due to differences in population groups or ASD screening and diagnosing practices. The GOSH Tic Disorders Service uses the DAWBA at pre-assessment and direct clinical screening for ASD at assessment for all patients. This study aims to (1) compare ASD in those with TS and/or FTLB and (2) explore the utility of the DAWBA in identifying ASD in young people with FTLB.

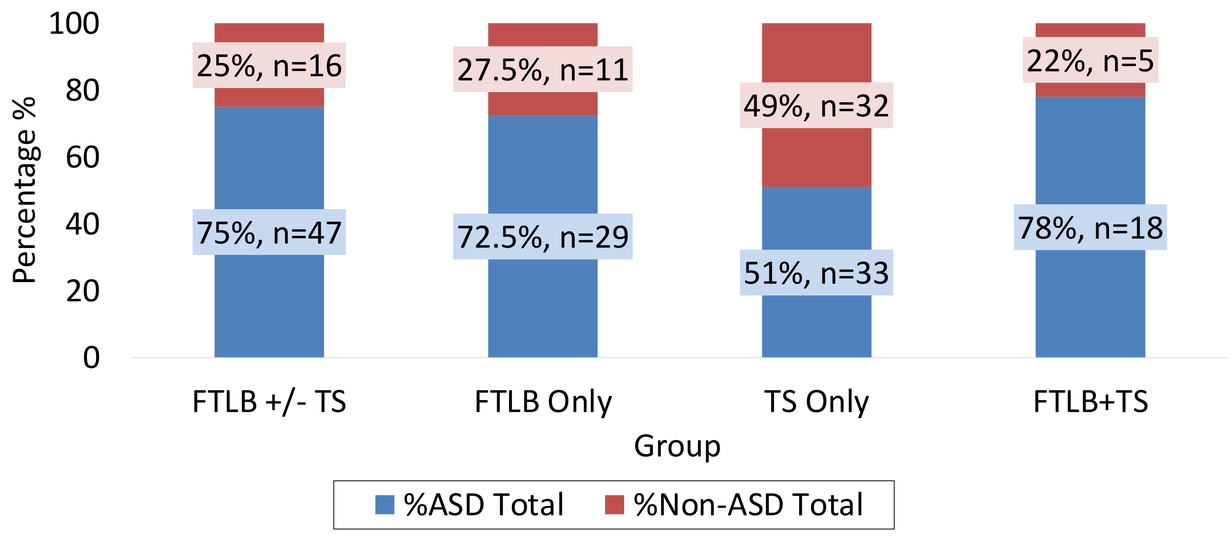
Method

128 young people aged 8-17 presenting to GOSH Tic Disorders Service between August-2020 and May-2022 with FTLBs and/or Tourette Syndrome (TS) were included. Demographic and clinical variables were determined through retrospective review of referral and assessment letters. Within FTLB cohort, those with and without ASD were compared. Within ASD cohort, FTLB only, TS only and FTLB+TS groups were compared.

Results

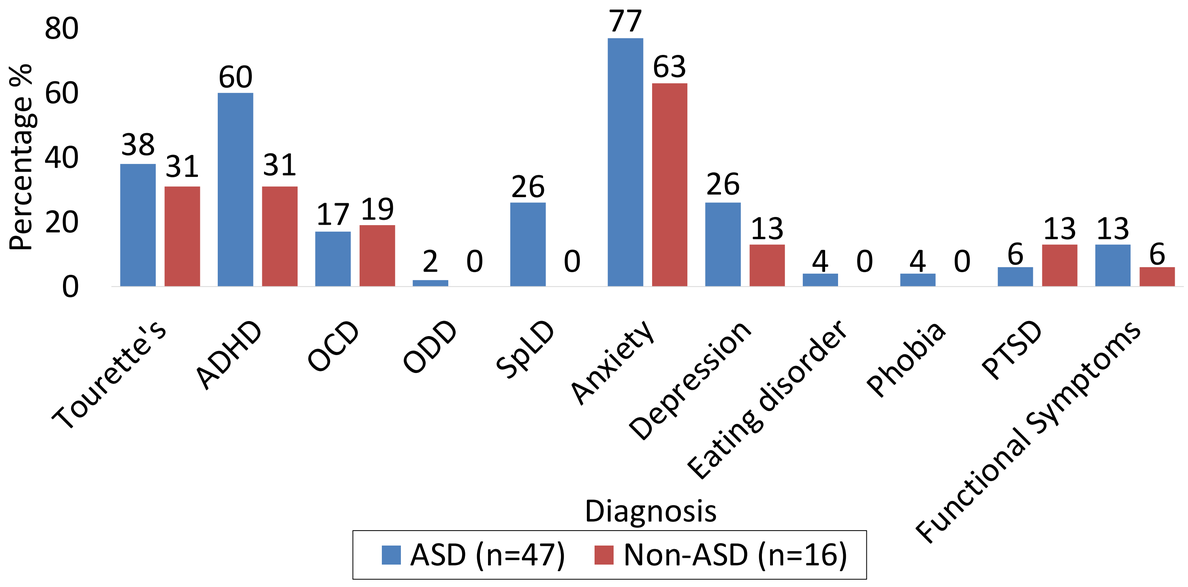
62.5% of all patients with FTLB and/or TS were diagnosed with ASD. 75% of young people with FTLB had ASD, whilst 58% with TS had ASD. When the sample is split into 3 discreet cohorts (FTLB only, TS only, FTLB+TS), results are displayed in *Figure 1.*

Figure 1. Percent distribution of ASD diagnosis by group



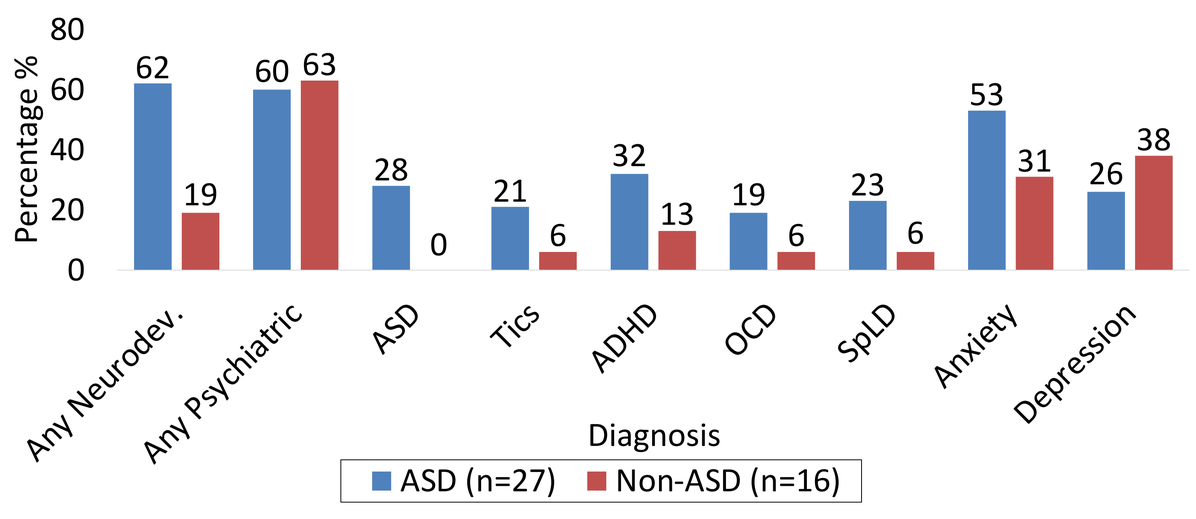
Patients with ASD were more likely to have both FTLB and TS (23%), compared to those without ASD (10%). Those with FTLB and ASD were more likely to have additional neurodevelopmental conditions (62%), compared to those with FTLB without ASD (38%) *Figure 2.*

Figure 2. Comorbid diganoses in patients with FTLB +/- ASD



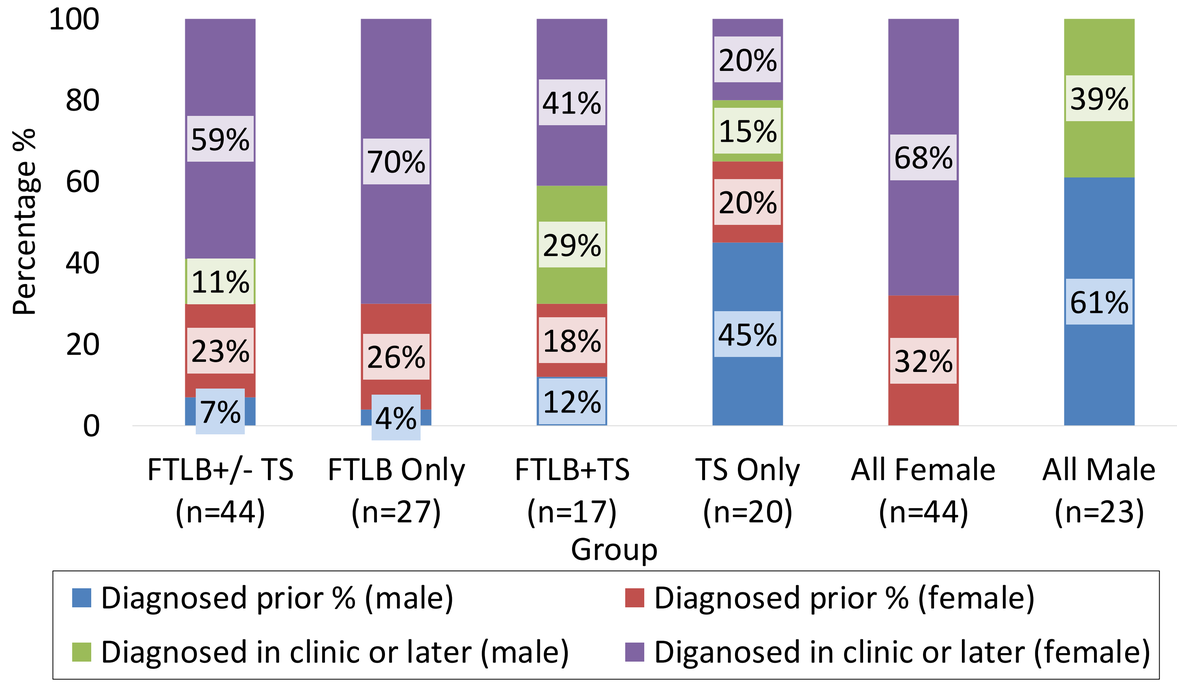
Demographic variables remained similar between the FTLB+ASD group and the FTLB-ASD group, except for the bimodal age of tic onset in the former (peaks at 6 and 13 vs 13), and fewer number of females (81% vs 94%). This aligns with the increased probability of combined FTLB+TS in individuals with ASD, whereby the early tic onset indicates TS tics, followed by subsequent FTLB exacerbation. FTLB+ASD group presented with higher SDQ scores, and rates of family history for both neurodevelopmental and psychiatric conditions, suggesting various comorbidities and genetic vulnerability. *Figure 3.*

Figure 3. Family history in patients with FTLB +/- ASD



30% of patients with FTLB and ASD were diagnosed with ASD prior to clinical assessment. There were more female FTLB patients whose ASD was diagnosed in clinic or follow-up than those diagnosed prior (84% vs 77%). *Figure 4.*

Figure 4. Distribution of ASD diagnosis timing by group and gender



Majority (59%) of all patients with a clinical diagnosis of ASD were scoring <3% probability for ASD on the DAWBA, indicating it to be an ineffective screening tool for ASD within this group. Similar results were found when the sample is split into 3 discreet cohorts (FTLB only: 62%, TS only: 66%, FTLB+TS: 61%). The ASD diagnoses made in this sample were split fairly evenly between different services: 42% were diagnosed prior to the assessment, 28% were diagnosed by the Tic Disorders Service and 30% were diagnosed by external CAMHS/Paediatricians. This suggests the increased ASD prevalence rate seen by TDS are not due to the overdiagnosis of ASD by the TDS, but likely due to differential screening practices (i.e. use of DAWBA).

Conclusion

Our findings suggest ASD to be highly prevalent in those with FTLB and/or TS. This is likely a reflection of increased vulnerability to stress in those with neurodevelopmental disorders. Young females were less likely to be diagnosed with ASD, which may be due to DAWBA's poor predictive value for identifying ASD in young people with FTLBs, in line with similar research[6], who found it to have reduced specificity in girls without learning disability. The FTLB cohort are more likely to be females with preserved intellect and therefore the DAWBA is not a sufficient screen for ASD in centres diagnosing FTLB. Early diagnosis and treatment of ASD may prevent FTLB.

References: 1) Pringsheim T, Ganos C, Nilles C, Cavanna AE, Gilbert DL, Greenberg E, Hartmann A, Hedderly T, Heyman I, Liang H, Malaty I. European Society for the study of Tourette syndrome 2022 criteria for clinical diagnosis of functional tic-like behaviours: international consensus from experts in tic disorders. European Journal of Neurology. 2023 Apr;30(4):902-10.2) Han VX, Kozlowska K, Kothur K, Lorentzos M, Wong WK, Mohammad SS, Savage B, Chudleigh C, Dale RC. Rapid onset functional tic-like behaviours in children and adolescents during COVID-19: Clinical features, assessment and biopsychosocial treatment approach. Journal of Paediatrics and Child Health. 2022 Jul;58(7):1181-7. 3) Zener D. Journey to diagnosis for women with autism. Advances in autism. 2019 Feb 28;5(1):2-13. 4) Vasa RA, Mazurek MO. An update on anxiety in youth with autism spectrum disorders. Current opinion in psychiatry. 2015 Mar;28(2):83. 5) Martino D, Hedderly T, Murphy T, Müller-Vahl KR, Dale RC, Gilbert DL, Rizzo R, Hartmann A, Nagy P, Anheim M, Owen T. The spectrum of functional tic-like behaviours: data from an international registry. European Journal of Neurology. 2023 Feb;30(2):334-43. 6) Coscini N, Srinivasan R, Skuse D. Validating the Developmental and Well-Being Assessment (DAWBA) in a clinical population with high-functioning autism. F1000Research. 2020 Jun 17;9:622.