Paediatric tic-like presentations during the COVID-19 pandemic

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ABSTRACT
Background and aim Clinical centres have seen an increase in tic-like movements during the COVID-19 pandemic. A series of children and adolescents are described.

Methods A retrospective chart review of 34 consecutive paediatric patients presenting with sudden onset tic-like movements, seen over 6 months. Results 94% of patients were female, with an average age of sudden onset or increase of tic-like movements of 13.7 years. 44% had a previous diagnosis of tics, and 47% initially presented to an emergency department. Comorbid psychiatric and neurodevelopmental disorders were reported in 91% with 68% reporting anxiety.

Conclusion We highlight a dramatic presentation of sudden onset functional tic-like movements in predominantly female adolescents to help inform identification and management. There is need to research the neurobiological underpinnings and environmental exacerbating factors leading to these presentations and to explore effective therapeutic strategies.

INTRODUCTION
Viewpoint papers have emerged internationally reporting an increase in functional tic-like movements, seemingly coincident with the COVID-19 pandemic. The patients described presented with sudden onset, often complex tic-like movements, which appear functional in nature rather than part of a chronic tic disorder (CTD) or Tourette syndrome (TS). The diagnosis of functional tic-like movements can be challenging. Criteria that differentiate functional from other movement disorders (distractibility and suggestibility) are clinical features also seen in tics. Though pathophysiology of functional tic-like movements and tics is different, shared pathways are likely considering the overlapping features. As medications used for tics are usually ineffective in functional tic-like movements, it is important to differentiate the two.

The pandemic could have impacted negatively on the mental health of young people with existing mental health and/or neurodevelopmental difficulties through biopsychosocial factors including worry, illness/bereavement, loss of routine, domestic factors and social isolation.

The aim of this case series is to describe the clinical characteristics of children presenting with sudden onset or escalation of functional tic-like movements during the COVID-19 pandemic to allow for earlier recognition and accurate diagnosis.

METHODS
This is a retrospective case note review of children assessed between November 2020 and April 2021 in tic clinics in the UK (Evelina London Children’s Hospital ELCH and Great Ormond Street Hospital GOSH) London) and Canada (Alberta Children’s in Calgary). Criteria for inclusion were: (A) Sudden onset or increase of possible tics or tic-like movements within a period of less than 5 days and (B) age 8–17 years.

A multidisciplinary team assessed children and screened for co-occurring conditions using interviews and screening questionnaires. All children were administered the Yale Global Tic Severity Scale (YGTSS) and the Children’s Global Assessment Scale (CGAS). Previously diagnosed psychiatric and neurodevelopmental co-occurring conditions were recorded as reported by parents/guardians. In a subgroup of patients at Calgary and GOSH, Diagnostic and Statistical Manual of Mental Disorders-5th edition (DSM-5) criteria were used.

RESULTS

A total of 34 children were evaluated with most participants being female (94%) and Caucasian (79%). The average age at presentation was 13.7 (SD 2), respectively, 13 (SD 2.5) and 14 (SD 1.6) years for patients with (44%) and without (56%) previous tic diagnosis.

Table 1 shows the differences between patient and clinical characteristics seen in this case series, compared with frequencies previously described in CTD/TS research. In this series, there is a high female preponderance, late age of onset, low prevalence of wax-and-wane pattern and high prevalence of pali/echo/copro-phenomena compared with CTDs/TS.

The YGTSS total tic severity score is high in this series compared with previous tic research. The perceived severity is also indicated by the high proportion of these patients (47%) who presented to the emergency department with abnormal movements, 44% (7/16) of them receiving acute medication. Another indication of the impact of these movements is shown through the low mean CGAS of 45 (range 35–75) in this series.

Statistical analysis was performed with SPSS V.25. Frequencies and percentages were used for categorical variables; depending on their distribution, mean and SD or median and range were used for dimensional variables.

DISCUSSION

Functional tic-like movements, based on previous case series with adults, have been characterised by a female preponderance, late age of onset, lack of premonitory urge, suppressibility and wax-and-wane pattern with an absence of a family history of tics. In this paediatric sample, these patterns were similar, with some exceptions. There is a high percentage of copro-phenomena compared with other studies. Premonitory urge and suppressibility are still common. This study lacks qualitative data, and we can thus not differentiate the types of urges in this series from those described in patients with CTDs. Family history of tics was reported in 29% of patients.

In only 15% of cases there was a reported past positive COVID-19 test either in the patient or in their first-degree family members. None reported being medically unwell with COVID-19.

Seventy-seven per cent of patients reported watching videos of ‘tics’ on social media, mostly prior to onset of symptoms. Fourteen participants presented with a characteristic pattern of movements almost identical to those seen in social media videos, including at least two of the following: thumping chest, slapping own and/or parents’ head, clapping hands, whistling, head nod and copro-, pali- or echolalia. In 56% of cases, there were other people in the environment with presentation of tics/tic-like movements.
and ASD in this case series suggest that these are associated with functional tic-like movements.

What has contributed to or caused such a sudden increase in presentation of functional tic-like movements? Factors such as social isolation, difficulty with adjusting to online schooling and loss of routine in relation to the pandemic have been proposed. Unrecognised and unsupported ASD and/or ADHD can lead to increased anxiety in everyday life, which can be compounded by pandemic-related stress.

Social media apps promoting the sharing of videos of tic-like movements could play a part in the escalation of sudden onset movements. Mechanisms for this 'imitation' phenomena could include echophenomena with suggestibility and some sort of neurological mimicry. Peer support and a sense of belonging gained by watching or posting videos of tics were reported in some cases, which may inadvertently reinforce symptoms. Underlying neurobiological and genetic factors are likely to interact. An international collaboration has been proposed to further explore potential mechanisms.

Once a diagnosis of functional tic-like movements is made, management may include psychoeducation with an integration of neurological and mental healthcare. It is important to ensure children and families understand the diagnosis and the usefulness of psychological support and intervention when necessary. The aims of management should be to prevent adverse impact on socialisation, education and emotional functioning in the context of the pandemic. Psychoeducation and general well-being support can result in a dramatic resolution of symptoms. The long-term prognosis of functional neurological presentations is not yet known.

As a small case series, this study has inevitable limitations. One limitation is that psychiatric and neurodevelopmental comorbidities were reported and not diagnosed in all cases. Furthermore, only tertiary specialist centres were involved, and cases might not be representative of the wider UK experience.

CONCLUSION
This case series highlights a group of predominantly teenage girls presenting with sudden onset functional tic-like movements. This may be one of the less well-recognised increased mental health presentations temporally associated with the COVID-19 pandemic, most likely resulting from multiple biopsychosocial factors that are yet to be fully identified. The role of social media, neurogenetic vulnerability and neurodevelopmental factors will be a subject of further research. Elucidation of the potential mechanisms involved in the emergence of this presentation will aim to inform future management options.