The Prevalence of Urinary Symptoms in UK Children with Paediatric Autoimmune Neuropsychiatric Disorder associated with Group A Streptococcus (PANDAS)

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Introduction

PANDAS is a condition marked by the sudden onset of neuropsychiatric symptoms, such as obsessive-compulsive disorder (OCD), tics, and other behavioural issues in children following a Group A beta-haemolytic streptococcus infection.

Previous reports suggest enuresis as a significant early sign of PANDAS. Our study is the first in the UK and Europe to investigate the association between enuresis and PANDAS.

Objectives

1. To explore the prevalence of urinary symptoms in a UK cohort of children diagnosed with PANDAS between Aug 2021 - Sept 2022.
2. To assess the treatment response in our total cohort of PANDAS patients and those also presenting with enuresis symptoms.

Discussion and Conclusion

Enuresis is common in paediatrics; the Avon longitudinal study of parents and children (ALSPAC) shows that **15.5% of children experience bedwetting**. (1)

Our study found that **51% of children with PANDAS experienced enuresis**, a significantly higher rate than in the general paediatric population. This higher prevalence of enuresis seen in children with PANDAS is in line with previous research studies (2, 3).

Given the high prevalence of enuresis in PANDAS patients, and the lack of specific investigation in the UK population previously, **it is crucial that clinicians consider PANDAS as a differential for enuresis**, particularly when routine investigations for infection has failed to yield a positive result.

What is the relationship between PANDAS and enuresis?

The exact mechanism of why PANDAS results in enuresis is not clear; however, it would be reasonable to suggest that it is due to **basal ganglia dysregulation associated with PANDAS with onward dysregulation of the normal regulatory pathways in control of urination**. Functional MRI studies in children with enuresis have shown evidence of neural pathway dysregulation, implicating the frontal lobe, anterior cingulate cortex, and insula in nocturnal enuresis. These are geographically closely related to the basal ganglia.

Half of children diagnosed with PANDAS experience enuresis

Notably, 89% of these children show significant improvement in PANDAS symptoms following treatment

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Clinicians should be aware that enuresis may be a presenting sign of PANDAS

References

1. Butler RJ, Golding J, Northstone K. Nocturnal enuresis at 7.5 years old: prevalence and analysis of clinical signs. BJU Int. [Research Support, Non-U.S. Gov't]. 2005 Aug;96(3):404-10.
2. Swedo SE, Leonard HL, Garvey M, Mittleman B, Allen AJ, Perlmutter S, et al. Pediatric autoimmune neuropsychiatric disorders associated with streptococcal infections: clinical description of the first 50 cases. The American journal of psychiatry. 1998 Feb;155(2):264-71.
3. Murphy ML, Pichichero ME. Prospective identification and treatment of children with pediatric autoimmune neuropsychiatric disorder associated with group A streptococcal infection (PANDAS). Arch Pediatr Adolesc Med. [Case Reports]. 2002 Apr;156(4):356-61.

Methods and definitions

- We conducted a retrospective clinical audit of children between Aug 2021 to Sept 2022 with PANDAS.
- The children were assessed by a paediatric consultant with expertise in the diagnosis and treatment of PANDAS using standardised methodology.
- Subjects included in the study needed to fulfill all 5 of the NIMH criteria and were <19 years of age at the time of the original clinical assessment.

Treatment

The treatment pathway varied between patients but typically involved a **two-week course of antibiotics** followed by a **four week course of low dose antibiotic prophylaxis**. Occasionally, a short course of **corticosteroids** or **non-steroidal anti-inflammatory drugs** were used.

The response to treatment was assessed with an interview with the parent to ascertain the **"percentage improvement"** in symptoms from treatment. From this, the patient was categorised to their degree of response to treatment in one of the four categories as tabulated on the right:

Treatment response	Percentage improvement (%)
Excellent	> 70
Very good	50-70
Good	30-49
Poor	<30

Figure 1: Categorising the perceived "percentage improvement" of symptoms after PANDAS treatment

Results

Population characteristics

- The study collected data from **109** children
- The mean age was **13.2** years old
- The male to female ratio was **1.2 : 1**
- Ethnic backgrounds: Caucasian (92.7%), Asian (4.5%), Afro-Caribbean (2.8%)
- **56** of the 109 patients (**51%**) **had enuresis** as a presenting symptom alongside their PANDAS diagnosis

♂ **61** male
♀ **49** female

Response to treatment

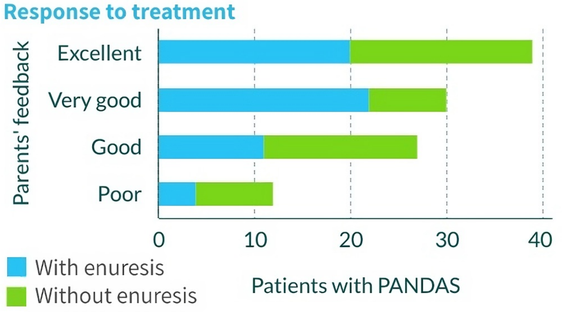

Figure 2: Patients diagnosed with PANDAS and their parents' feedback on improvement of symptoms with treatment, with proportion of patients with enuresis highlighted in each category