

PANDAS Exacerbation Post-Tonsillectomy, Acute Response to Fentanyl & Dexamethasone

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Background

- Description:** Pediatric Autoimmune Neuropsychiatric Disorders Associated with Streptococcal Infection (**PANDAS**) is a controversial diagnosis pertaining to children who develop specific psychiatric symptoms following Group A Streptococcal infection (**GAS**)
 - first described by Swedo et al. in 1998¹
 - Later broadened to Pediatric Acute-onset Neuropsychiatric Syndrome (**PANS**), to cover presentations without specifically GAS as the inciting infection²
- Diagnosis:** criteria included in Figure 1 below

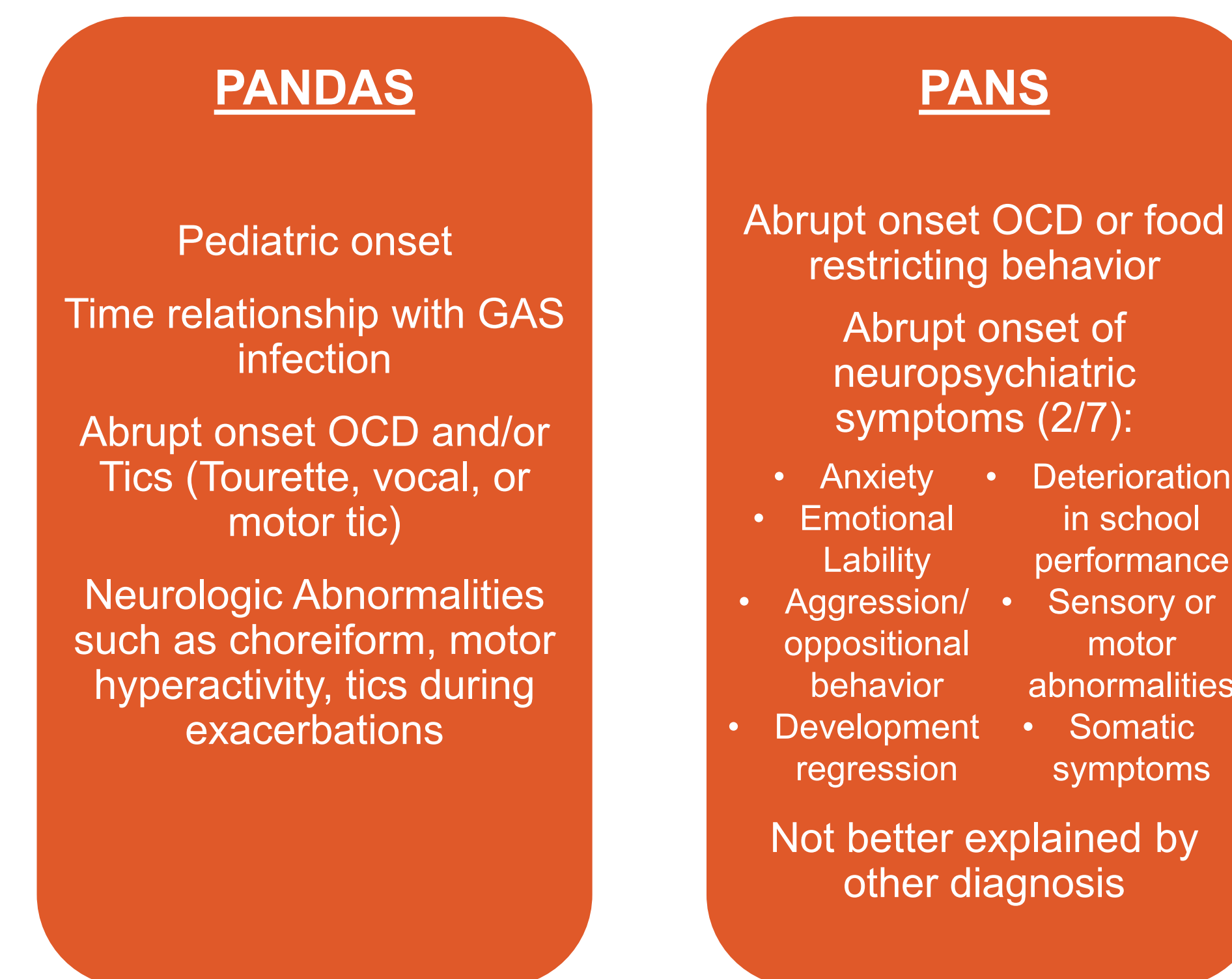


Figure 1. Diagnostic criteria of PANDAS and PANS^{1,3}

- Pathogenesis**
- Thought to be due to molecular mimicry against GAS antigens, later causing autoimmune reaction to basal ganglia¹ (Figure 1.)
 - similar proposed mechanism for Sydenham's Chorea, seen in Acute Rheumatic Fever



Figure 2. Illustration of antibody development against GAS infection with subsequent autoimmune reactivity against the brain by way of molecular mimicry.

Case Description

- 19 year old Male with past medical history of PANDAS and recurrent tonsillitis presenting August 2022 following tonsillectomy for the indication of chronic tonsillitis and diagnosis of PANDAS.
- Patient's PANDAS symptoms emerged at age 14, persisting and evolving into adulthood
- Home medications: ceftriaxone, doxycycline, dapsone, valacyclovir, hydroxychloroquine, atovaquone, nitazoxanide, methylene blue, dupilumab infusions
- Day prior to admission, patient undergoes outpatient tonsillectomy. Is observed 3 hours post-op, and discharged home.
- Following discharge home, patient experienced severe motor tics of the head and neck, resulting in acute onset throat pain and oral bleeding.
- At outside ED, patient given nebulized and IV TXA, and transferred to our hospital for admission to Medicine

Intervention

- Required acute suppression of tics
- No improvement with prior PANDAS maintenance therapy (home medications above)
- Symptoms managed acutely with IV Fentanyl, & Dexamethasone for uvular edema
- ENT consulted for evaluation and management. Oral bleeding was controlled with irrigation and re-suturing of operative site. Uvulectomy also performed given marked uvular edema
- Fentanyl given again in PACU. No recurrence of severe tics following repair.
- Observed for 1 day, and discharged home.
- No evidence of repeat admission or post-operative complications.

Discussion

- The neuropsychiatric symptoms of PANDAS are thought to stem from the same pathogenesis of Sydenham's Chorea, molecular mimicry of GAS antibodies attacking the basal ganglia¹
- Treatment differs from other related disorders (Figure 3).
- While appropriate treatment for acute GAS infection with Sydenham chorea is antibiotics, no RCTs have shown efficacy for antibiotics in PANDAS.³

Discussion (cont.)

Sydenham Chorea	Antipsychotics, antiepileptics, benzodiazepines ⁴
Tourette	Education, for severe/refractory symptoms antipsychotics, dopamine depleters (valbenazine, tetrabenazine) ⁵
OCD	CBT, SSRIs, SNRIs, TCA (clomipramine) ⁶
PANDAS / PANS	Antibiotics, IVIG, plasmapheresis, NSAIDs, corticosteroids, tonsillectomy, cognitive behavioral therapy ³

Figure 3. Common treatments associated with Sydenham Chorea, Tourette, OCD, and PANDAS/PANS

- IVIG therapy shows mixed results in RCTs, and those with positive results were poorly controlled.³
- Glucocorticoid therapy in retrospective analysis demonstrated decreased PANDAS flare duration, though not as abortive therapy.³
- Limited data exists for acute opioid therapy in the peri-operative period for the purpose of tic abatement
- Control of these aberrant movement disorders, seen in Figure 3, focus on maintenance therapy. However, in the setting of acute exacerbation, PANDAS management may benefit from addressing the provoking noxious stimuli.
- It is possible that alongside pre-operative glucocorticoids, analgesic control and mild sedation from fentanyl allowed for resolution of the patient's motor tics.

Conclusion

- PANDAS/PANS are a controversial set of diagnoses with similarly controversial treatments. This case is intended to highlight this disease that is not frequently seen in adult medicine, as well as an atypical treatment course of an acute exacerbation.
- Agreement exists for the treatment of acute Streptococcal infections (Sydenham Chorea), but PANDAS treatment as an autoimmune condition or spectrum other neuropsychiatric syndrome remains unproven and unclear.
- Management of our patients acute symptoms with glucocorticoids and peri-operative opiates, while not previously documented, allowed for an uncomplicated post-operative course.

References

- Swedo SE, Leonard HL, Garvey M, Mittleman B, Allen AJ, Perlmutter S, Lougee L, Dow S, Zamkoff J, Dubbert BK. Pediatric autoimmune neuropsychiatric disorders associated with streptococcal infections: clinical description of the first 50 cases. *Am J Psychiatry*. 1998 Feb;155(2):264-71. doi: 10.1176/ajp.155.2.264. Erratum in: *Am J Psychiatry* 1998 Apr;155(4):578. PMID: 9464208.
- Dop D, Marcu IR, Padureanu R, Niculescu CE, Padureanu V. Pediatric autoimmune neuropsychiatric disorders associated with streptococcal infections (Review). *Exp Ther Med*. 2021;21(1):94. doi:10.3892/etm.2020.9526
- Sofia Sigrá, Eva Hesselmark, Susanne Bejerot, Treatment of PANDAS and PANS: a systematic review, *Neuroscience & Biobehavioral Reviews*, Volume 86, 2018, Pages 51-65, ISSN 0149-7634, <https://doi.org/10.1016/j.neubiorev.2018.01.001.1>.
- Oosterveer DM, Overweg-Plandsoen WC, Roos RA. Sydenham's chorea: a practical overview of the current literature. *Pediatr Neurol*. 2010;43(1):1-6. doi:10.1016/j.pediatrneurol.2009.11.015
- Jankovic J. Treatment of tics associated with Tourette syndrome. *J Neural Transm (Vienna)*. 2020;127(5):843-850. doi:10.1007/s00702-019-02105-w
- Brock H, Hany M. Obsessive-Compulsive Disorder. In: *StatPearls*. Treasure Island (FL): StatPearls Publishing; August 15, 2022.