

## Case Study

# Could a Sudden Change in a Child's Behavior be Brought on by Something as Common as Strep Throat? | Many Experts & Distraught Parents Agree!

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### Introduction

Jake was diagnosed with Autism Spectrum Disorder (ASD) at 3 years of age, was high functioning and doing well. He was only five-years-old when he woke-up one morning very angry; raging, even.

To his mother, he appeared confused, with dilated pupils, and was complaining of a severe headache. He expressed his anxiety about going to school that day so he stayed home, but as the day progressed his symptoms worsened. He developed light sensitivity, and was unable to leave his bedroom without performing ritualistic behaviors. His mother grew incredibly worrisome at the sudden change in her beloved child (Figure 1).

After getting no answers from their family pediatrician, Jake's mother visited specialist after specialist, eventually consulting with a child psychologist, who then diagnosed Jake with obsessive-compulsive disorder (OCD). However, the average age of children affected by early-onset Obsessive Compulsive Disorder (OCD) is ten... Jake was only five...! Dissatisfied with the psychologist's single conclusion and feeling that something was being overlooked, Jake's mother discovered my holistic medicine practice and bought him to me for an evaluation.

By that time, Jake had missed a week of school. His body was thin and frail; he was refusing to eat, and he was very angry. I was informed that Jake had tried to stab his sister with a knife. His mother was an absolute wreck, stricken with lack-of-sleep and worried sick that her son was becoming psychotic.



Figure 1: Jake with Autism Spectrum Disorder (ASD).

Luckily for Jake, I had gone through something very similar with my own son and at least several other patients by that time. Jake had PANDAS. And as it turns out, he had strep throat right after his best friend had it a week prior. It was then that Jake came down with these bizarre behaviors.

### This begs the question—what is PANDAS?

PANDAS or Pediatric Autoimmune Neuropsychiatric Disorders Associated with Streptococcal Infections [1-11] occurs when strep triggers a misdirected immune response using the molecular mimicry phenomenon against the basal ganglia and ultimately resulting in severe inflammation in the brain. In turn, the child quickly begins to exhibit life-changing symptoms such as OCD, anxiety, tics, personality changes, diminished mathematical and handwriting abilities, sensory sensitivities, restrictive eating habits, and more [1,3].

The hallmark trait for PANDAS is sudden, acute and debilitating onset of intense anxiety and mood lability accompanied by OCD-like behaviors and/or tics in association with a streptococcal-A (GABHS) infection that has occurred immediately prior to the symptoms.

In some instances, onset can even begin four to six months after the infection of strep if antibiotics did not fully eradicate the bacteria.

Many pediatricians do not know the latent variability of strep — rheumatologists and streptococcal experts, however, do [4,9] (Figure 2).

#### PANS Triggers

- Strep
- Lyme Disease
- Other Trick Borne Infections
- Brucella
- Mycoplasma
- Vaccines
- E pestin Barr
- Chicken Gunya
- CoxSackie
- Mycotoxins
- Parasites

Figure 2: PANS Triggers.

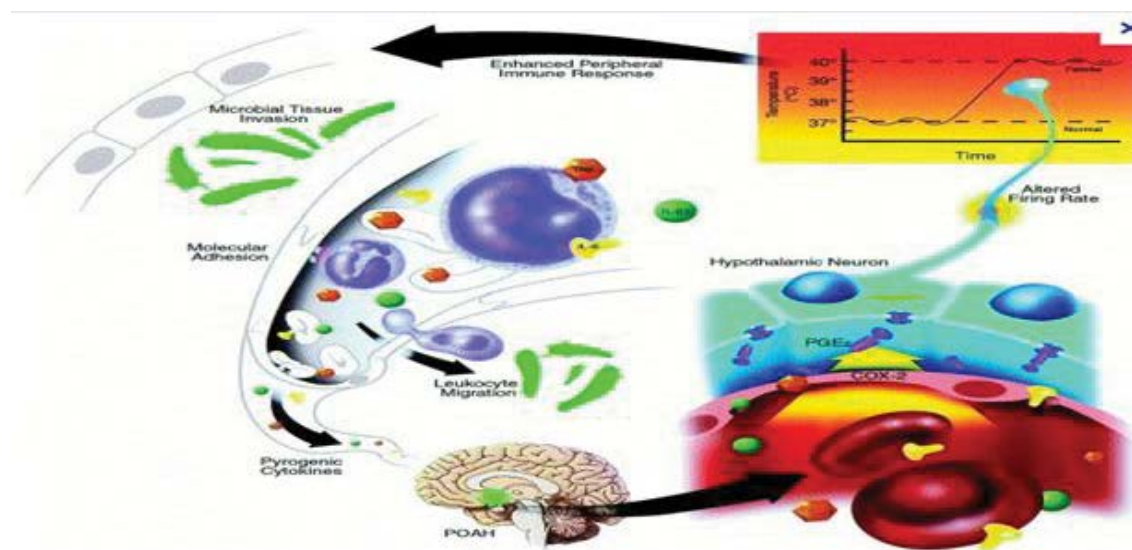


Figure 3: PANDAS or PANS?

### PANDAS or PANS?

PANS or Pediatric Acute Neuropsychiatric Syndromes [3] is caused by many other triggers (see in box) besides streptococcal infections. It can still be referred to as PANDAS if specific to a streptococcal infection. PANS consist of an atypical reaction to inflammatory cytokines in the brain with an alternative fever response. With genetic susceptibility as a possibility, PANS are not a disease per se and its quite rare but becoming better known as awareness increases (Figure 3).

**Though the obligatory feature is OCD in PANS and PANDAS, symptoms can include at least two or more of the following:** Acute dramatic anxiety specific to phobias, panic, irrational fears or separation anxiety; acute onset of one or more motor abnormalities including but not limited to tics, clumsiness/coordination disorders, or dysgraphia (especially marked deterioration of handwriting); sudden deterioration of learning abilities including concentration difficulties, or deterioration in mathematical ability; developmental regression including change in character of language, simplification of vocabulary, infantile-quality of voice, or loss of skills previously acquired; emotional lability symptoms including irritability and aggressive behavior or depression with suicidal or self-injurious thoughts; sleep disturbances including anxiety which prevents sleep or restless legs; and urinary symptoms including frequent bathroom visits (both in males and females—with or without polyuria—not better explained by medical causes of polyuria) [3,4,6].

Minor symptoms of PANS and PANDAS, though common, are alone insufficient for diagnosis but should also be noted, including: enhanced sensitivity to sensory stimuli, psychotic or hallucinatory symptoms, anorexia, and hoarding [1,8] (Figure 4).

The key here is in understanding how strep affects the brain. Group A Streptococcal (GAS) infections induce the production of Antibodies (abs) that cross-react with host neuronal proteins [6]. These anti-GAS mimetic Abs are

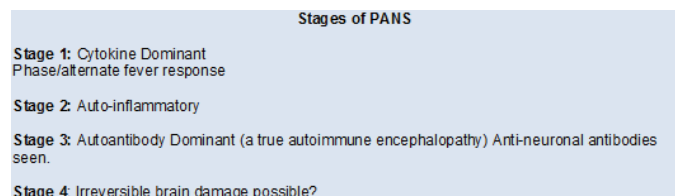


Figure 4: Stages of PANS.

associated with autoimmune diseases of the central nervous system. However, the mechanisms that allow these Abs to cross the blood-brain barrier and induce neuropathology still remain unknown. Findings in this area can provide insight into the immunopathology of neuropsychiatric complications that are associated with GAS infections and suggest that crosstalk between the CNS and cellular immunity may be a general mechanism by which infectious agents exacerbate symptoms associated with other CNS autoimmune disorders.

Multiple variables to take into consideration when understanding PANS and PANDAS include: toxins (heavy metals, amalgams, chemicals, etc.); biotoxins and mycotoxins (mold, fungus, etc.); parasites; nutritional deficiencies/biochemical imbalances; structural problems; energetic perturbations (scars, tonsils, etc.); food intolerances' geopathic stress; and unresolved emotional conflict or trauma.

### Diagnosing

When diagnosing my patients, aside from the standard labs, we run a multifaceted clinical assessment, composed of a complete neurological workup, developmental milestones, nutritional status/diet, bloodwork, family genetics and environmental history (epigenetics); perform Autonomic Response Testing (ART) and specialized metabolic testing, as needed, including Sensory Integration and Praxis Tests [1] (Figure 5).

**When viruses are present:** the child can suffer from debilitating anxiety; tinnitus and noise sensitivity; inability to explain manifesting as Oppositional Defiant Disorder (ODD);



**Figure 5:** Ordered Lab Work.

aggression, self-injurious behaviors; fatigue; low/rarely elevated white blood cell counts when symptoms worsen in acute situations; enlarged lymph nodes; and often cyclical cold and/or canker sores.

**When parasites are present:** the child can suffer from rashes on the chest or neck; elevated Eosinophils in CBC (10%); discoloration around the mouth; child may seem to eat what is good for parasite, not good for them; fatigue; aggravations around full moon (bloating, irritation, etc.); and pimples on the head within the hair.

Important point to note is that thus far all of the top PANS physicians concur that genetic Autism is not a predisposing factor in the onset of PANS [3,13].

Additionally, often the question arises regarding the site of streptococcal infection and the development of PANS syndrome. Clinically the majority of children with PANS do present with streptococcal pharyngitis and the laboratory findings usually include high titers of ASO and Anti-DNase B, AB (strep) [3,4,8,10,13].

## Treatment

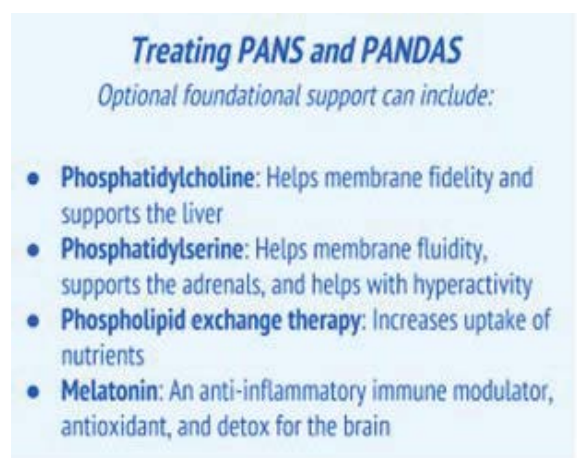
There are several treatment options available depending on the underlying pathophysiology of the condition, the age of the child, and any coexisting conditions. Antibiotics, IVIG, Plasmapheresis, and naturopathic approaches are considered [5,9,10,11]. Often, a good combination of allopathic or conventional, and naturopathic approaches using Clinical Herbalism and Homotoxicology have been shown to be the best option for recovery and wellness.

Herbal and Homeopathic options are a good match when it comes to supporting the detoxification systems in the body, activating the immune system, and the body's own healing pathways while achieving homeostasis in the autonomic nervous system. An autonomic balance is key as most of these children are in a sympathetic-overdrive whereas adequate parasympathetic activity is critical to initiate the repair and restorative mechanism in the body (Figure 6).

Thus, it is clinically extremely useful to include the



**Figure 6:** Treatment.



**Figure 7:** Treating PANS and PANDAS.

following in your treatment protocol: Electrolyte and cellular hydration; alkalize the body and reduce acute symptoms; balance magnesium and phosphorus levels; restoring adenosine triphosphate (ATP); including Vitamin D3, Vitamin C, DHA, probiotics and iodide (a fish or liver source is optimal). Use of antivirals help contribute to the thyroid, control inflammation, and is needed for Vitamin D and K2 receptors as well as nerve growth, and the formation of cholesterol and bile salts [12,13,14] (Figure 7).

Additionally, consider the effects of microbial toxins on the body, metabolic waste; biofilm, changes in membrane permeability, lowering of PH, enzyme inhibition, neurotransmitter imbalance, molecular mimicry, autoimmunity, and hypercoagulation [12].

Microbial Endo and Exotoxins are inherently neurotoxins and neurotoxins can cause central disruption in pineal gland, hypothalamus and pituitary, enzyme inhibition, major metabolic changes (Kryptopyroleurea), emotional problems, psychiatric presentation, neurotransmitter depletion, hormonal imbalance, and often demonstrate synergistic effect with heavy metals, xenobiotics, thioethers, and toxic root filled teeth in children [12,14].

## Post-Treatment Variables Improved

After treatment, children exhibit improved language skills with a desire to socialize. There is an increase of spatial



awareness, executive functions, gross motor coordination, focus, eye contact, visual motor processing/sensory regulation and listening comprehension. The bowels are usually regulated and the muscles are once again toned. Reading comprehension returns and handwriting improves.

One parent recently reported significant progress with functional language regained, the child now needs help with pragmatics only, has been mainstreamed, is making friends, able to stay calm, socializing, improved sibling interaction, affectionate with parents, great with math and reading skills, good coordination in sports, understands rules and follows them! Quality of life for the patient and the parents has improved manifold as a result.

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