

Pediatric Autoimmune Neuropsychiatric Disorders Associated with *Streptococcus*

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Description

Neuropsychiatric conditions are mental disorders that are typically attributed to diseases that originate from the nervous system. Pediatric Autoimmune Neuropsychiatric Disorders generally associated with Streptococcal infection [1]. Strep throat is a normal part of childhood. Some kids get it again and again and a simple round of antibiotics usually clears it up. But for a small number of children, the infection triggers strange behavior changes known as PANDAS. The children usually have dramatic, including motor or vocal tics, overnight onset of symptoms like obsessions and compulsions.

History

The concept of PANDAS was derived from observations that some individuals with Sydenham chorea have associated anxiety, emotional lability, obsessive compulsive symptoms, tics or a combination [2]. In 1998 investigators at the National Institute of Mental Health report a series of 50 patients with similar features and proposed a distinct clinical entity.

Initially In 1998, Dr. Susan Swedo, paediatrics and neuropsychiatry researcher described about PANDAS [3]. In 2008, Lombroso and Scahill have given the diagnostic criteria for PANDAS. In 2012, National Institute of Mental Health has revised the criteria and guidelines for diagnosing the PANDAS and again it was updated in 2017 [4].

PANDAS

PANDAS is the sudden onset of symptoms like those of obsessive-compulsive disorder or Tourette's syndrome following the infection with streptococci bacteria [5], caused by an auto immune reaction that affects the basal ganglia of the brain.

Statistics

True lifetime prevalence of PANDAS is not known. A conservative estimate is 1 in 200 children in the US alone [6].

Age of onset:

- 3 years-11%
- 4-9 years-69%
- 10-13 years-19%
- Above 14 years-1%

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Causative organism

Streptococcus pyogenes (stained red), a common Group A streptococcal bacterium.

PANDAS [7] is hypothesized to be an autoimmune condition in which the body's own antibodies to streptococci attack in the basal ganglion cells of the brain, by a concept known as molecular mimicry.

Risk Factors

- Children from 3 years to 12 years who had a previous history of strep infection with last 4 to 6 weeks.
- Early spring and late fall season may be a suitable season for this illness.
- Children live in close quarters with large groups of people.

Mechanism

The molecular mimicry is a process in which antigen on the cell wall of the bacteria are similar in some way to the proteins of the heart valve, joints, or brain. Due to the antibodies set off an immune reaction which damage those tissues, patients with streptococci infection can get heart diseases, abnormal movements like motor tics, and or arthritis [8].

Signs and Symptoms of PANDAS

1. Psychological symptoms
 - Obsessive compulsive and repetitive behaviors
 - Separation anxiety, fear
 - Panic attack
 - Incessant screaming
 - Irritable mood
 - Mood instability
 - Regression
 - Hyperactivity or an inability to focus
 - Hallucinations may be visual or auditory type
 - Depression
 - Suicidal wishes
 - Memory impairments
2. Physical symptoms
 - Tics and unusual movements
 - Sensitivity to light, sound and touch
 - Deterioration of small motor skills. Ex: Poor hand writing

- Insomnia
- Lack of interest in food intake leads to weight loss
- Joint pain
- Frequent urination and also bedwetting
- Near catatonic state

Diagnostic Criteria

1. Presence of OCD and/or tic disorder, as defined by the DSM-IV-R or DSM-5
2. Symptoms on set in children aged 3 years to pre puberty. Symptoms can include emotional lability, personality changes, separation anxiety, age inappropriate behaviors and noticeable handwriting decline.
3. Abrupt and severely dramatic onset of symptoms, within days to a week. Symptoms may also exhibit relapsing-remitting fluctuations
4. Temporal relationship between group A streptococcal infection and symptom onset and exacerbation.
5. Neurologic abnormalities shown upon examination, most commonly as motoric hyperactivity and choreiform movements.

Lab Tests

- A throat swab (rapid and culture) to test for strep-can be done when symptoms first appear.
- If the throat swab does not show any signs of strep, a blood test for an antibody called ASO (Anti-Streptolysin O)

Treatment of PANDAS

1. Strep infections are treated with antibiotics which includes
 - Amoxicillin
 - Azithromycin
 - Cephalosporin
 - Penicillin
2. Treatment of psychological symptoms

Selective serotonin reuptake inhibitors decreases the symptoms of OCD

Fluvoxetine

Fluvoxamine

Sertraline

Paroxetine

Some steroids can works to control the symptoms of OCD, but it may worsen the symptoms of tics.

Therapy-cognitive behavioral therapy

3. Other treatments

Immunoglobulin transmission in order to improve the immune system of a child, if the child doesn't responds to drug and therapy.

Complications

- Decreased Performance in school and social situations.
- If PANDAS untreated it leads to permanent cognitive damage.

Health Education

- Sterilize or replace toothbrushes during and following the antibiotics treatment, to make sure that the child isn't re-infected with strep.
- Child's family members can make sure that none are "strep carriers" by undergoing throat cultures.
- Drugs may produce some side effects, tapering can be done slowly with proper consultation.
- Proper hand washing techniques can be followed.

References

1. Gilbert, Donald L, Mink Jonathan W, Singer Harvey S. "A paediatric Neurology Perspective on Paediatric Autoimmune Neuropsychiatric Disorder Associated with Streptococcal Infection and Paediatric Acute Onset Syndrome." *J Pediatr* 199(2018): 243-249.
2. "What Is PANDAS Syndrome?" *WebMD* (2020).
3. "Genetic and Rare Diseases Information Center." *NIH*.
4. "Children and Mental Health." *NIMH* (2018).
5. "What is OCD?" International OCD Foundation.
6. "PANDAS/PANS Prevalence." *Statistics* (2018).
7. Ann, Pietrangelo. "PANDAS: A Guide for Parents." *Healthline* (2019).
8. "PANDAS." *Wikipedia* (2021).

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