



Pediatric autoimmune neuropsychiatric disorders associated with streptococcal infection (PANDAS) associated with obsessive compulsive disorder among children and adolescents

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Abstract

PANDAS, is an abbreviation for Pediatric Autoimmune Neuropsychiatric Disorders Associated with Streptococcal Infections. The term is used to describe a subset of children and adolescents who have Obsessive Compulsive Disorder (OCD) and/or tic disorders, and in whom symptoms worsen following strep. Infections such as "Strep throat" and Scarlet Fever. Although the exact underlying cause of PANDAS has not been proven, studies suggest that it may be an autoimmune disorder. Since the cause is unclear the main aspect of treatment is to relieve symptoms. To avoid future episodes of PANDAS, it may be helpful to use antibiotics as prophylaxis (prevention) against strep infections.

Keywords: children and adolescents, autoimmune neuropsychiatric, PANDAS, obsessive compulsive disorder (OCD)

Introduction

The history of PANDAS had begun to unwrap in the second half of 1990 by a group of clinical researchers at national institutes of mental health. They have described a subgroup of children with obsessive compulsive disorder and /or tic disorder after exposure to infectious illness, particularly the streptococcal infection and they have termed this disease as PANDAS (Pediatric Autoimmune Neuropsychiatric Disorders Associated with Streptococcal Infections). The annual incidence of PANDAS has ranged between 0 per 10,000 cultures to 10 per 30,000 cultures, depending upon the strain of group A streptococcus and other factors. Although it is a rare disease, some researchers suggest that it may account for $\geq 10\%$ of childhood-onset obsessive-compulsive disorder (OCD) and tic disorders.

Definition

Pediatric autoimmune neuropsychiatric disorders associated with streptococcal infections (PANDAS) is characterized by rapid onset of obsessive-compulsive disorder (OCD) or tic disorders and these symptoms are caused by group A beta-hemolytic streptococcal (GABHS) infections

Etiology

- Exact cause is not clear
- Autoimmune Disorder-Studies suggests that the disease is caused by the autoimmunity due to the 'molecular mimicry' hypotheses mainly due to some similarities between the antigen and the proteins of brain. The antibody released by the body against the streptococcal infection will attack and destroy the neuronal brain tissues of basal ganglia mistakenly.

Signs and Symptoms

The symptoms in PANDAS is sudden and dramatic onset where the obsessive thoughts, compulsive behaviors, and

motor or vocal tics can be developed overnight and will reach its peak within 24-48 hours, which is contrary to the OCD where the symptoms begin gradually. These severe symptoms typically last from several weeks to several months. After a gradual improvement, children may not experience any additional problems until they contact with another strep infection. Children may also experience the following signs and symptoms during a PANDAS episode:

1. Separation anxiety
2. Emotional lability and/or depression
3. ADHD symptoms
4. Irritability, aggression and/or severely oppositional behaviors
5. Behavioral regression such as talking baby talk, throwing temper tantrums, etc
6. Deterioration in academic abilities like decline in math.
7. Fine motor changes like difficulty in handwriting
8. Somatic signs and symptoms, including sleep disturbances, bedwetting at night or urinary frequency at day time.

Diagnosis

- Currently no tests available to confirm a diagnosis of PANDAS.
- It can be diagnosed on the basis of clinical picture, which should be ruled out from thorough history taking and physical examination.
- Rapid throat swab and 48 hour strep culture will help to identify the presence of streptococcus infection which is the root cause of PANDAS.

Treatment

Since the exact cause is unknown the treatment is symptomatic. Antibiotics like Amoxicillin, penicillin, azithromycin, and cephalosporins are commonly used to treat group A streptococcal infections. Special attention should be taken to replace or sterilize tooth brush during the antibiotics

treatment, to prevent the reinfection of streptococcus. Obsessive-compulsive disorders are usually managed with SSRI medications such as fluoxetine, fluvoxamine, sertraline, or paroxetine and cognitive behavioral therapy. Tic disorders are often treated with a variety of medications, as well. Plasmapheresis and/or intravenous immunoglobulin (IVIG) is another mode of treatment suggested by some researchers in order to treat autoimmune disorders. Which may be a treatment option for children with PANDAS. Plasmapheresis helps to remove antibodies from the blood and IVIG can sometimes be used to alter the function or production of abnormal antibodies. Even though the effectiveness of both therapies were evidenced by some studies it is reserved only in severely affected children as it can experience severe side effects.

Prevention

Prophylactic antibiotics may be helpful in preventing streptococcus infection which is the common cause of PANDAS. Two small clinical trials of prophylactic antibiotics in PANDAS showed that the rate of recurrent episodes of PANDAS were reduced as the antibiotics are effective against streptococcal infection

Conclusion

PANDAS is a disorder caused by the destruction of basal ganglia cells in brain that affects children both physically & mentally. It is a disorder with rapid onset and lasts for several weeks to months. Since the exact cause is not known symptomatic treatment is done to reduce the severity of disease. Research studies on the disease is in evolving stage. Hope soon our scientists will find out the root cause of the disease & exact treatment for this & thereby saving many children's life.

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