

# A Case of Pediatric Autoimmune NeuroPsychiatric Disorder Associated with Streptococcus Infection

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## ABSTRACT

Paediatric autoimmune neuropsychiatric disorder associated with streptococcus infection (PANDAS) is a group of disorders recognised as a clinical entity. A case of PANDAS described here, which remitted after 4 month of treatment. History of Group A Streptococcus infection should be considered in a child who presents with sudden onset of tics or obsessive compulsive symptoms.

**Keywords:** Paediatric autoimmune neuropsychiatric disorder, tic disorder, obsessive compulsive disorder

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## INTRODUCTION

PANDAS is an acronym for paediatric autoimmune neuropsychiatric disorder associated with streptococcal infection. As the term implies, there exists a subset of children with rapid onset of obsessive compulsive disorder and/or tic disorder and these symptoms are caused by group-A beta haemolytic streptococcus infection (GABHS). The proposed link between these disorders is that an initial autoimmune reaction to GABHS infection produces antibodies that continue to interfere with basal ganglion function causing symptom exacerbation.

## CASE REPORT

13 year old boy presented with chief complaints of excessive throat clearing and abnormal involuntary movements of face and shoulder for the last 3 months.

Around one month prior to the onset of these symptoms patients had an episode of high grade fever and sore throat. Patient had taken the treatment from paediatrician for 15 days. After, one month, parents noticed that patient's repeated throat clearing and also involuntary movements of face and shoulder. Parents reported that these movements were persisting when he is awake. It was not associated with loss of consciousness or head injury. Detailed psychiatric examination showed withdrawn behaviour with mild depressive features. Child was born of a non consanguineous marriage. His birth and developmental history was normal. There was no history of seizures. His mental status examination showed features of minor depressive disorder. Vitals were within normal limits. There were abnormal involuntary movements involving face and left shoulder. Movements were totally absent when patient was asleep. Rest of the nervous system and other body systems examination was normal

Haemoglobin was 12.9 g/dl, total leucocytes count was 6,500/cu mm. Differential count showed 60 % neutrophils, 28% lymphocytes, 10% monocytes and 2% eosinophils. ESR was 14 mm /1st hour were within normal limits, other blood investigations revealed normal blood sugar, electrolytes levels and liver function tests. Patients ASO titre were estimated and found to be high (200IU/ml).

CT scan was normal. Thus diagnosis of PANDAS syndrome was made, as our case met all the required diagnostic criteria's (table 1).

The patient was started on haloperidol 0.5mg and clonazepam 0.25mg. After one week of hospitalization, patient had significant improvement and was discharged. After a follow up of 2 weeks, his throat clearing has reduced significantly, but he still had tics. Then haloperidol dose was increased to 0.5 mg twice daily and on follow up after 4 months, the patient is doing well.

## DISCUSSION

PANDAS are a recently described subgroup of childhood disorders, and there has been a great deal of public and physician interest in their pathophysiology, diagnosis, and management. The first 50 PANDAS patients were reported in the literature in 1998 by Swedo et al. [1] PANDAS and SC have similar clinical features, including emotional lability, attention and impulsivity difficulties, motor hyperactivity, and clumsiness with deterioration in fine motor skills. The biologic evidence that PANDAS in an autoimmune-mediated process is compelling but not conclusive. Few recent studies documented that patients of PANDAS, with onset of symptoms following GABHS pharyngitis, responded to antibiotic therapy/surgical treatment like tonsillectomy. [2],[3] A potential B cell marker D8/17 has been identified. [4] MRI of the brain demonstrates basal ganglia changes consistent with inflammation, [5],[6] and immunomodulatory therapies have been studied with benefit in some patients. In PANDAS, it is believed that tics and OCD are produced in similar manner. It affects basal ganglia in PANDAS, which is believed to be responsible for movement and behavioural problems. Evidence against this mechanism also exists. A recent study refutes the role of antineuronal antibodies found in SC to be causative in PANDAS. [7] Also, antibiotic prophylaxis, although effective in SC associated with acute rheumatic fever, remains questionable in PANDAS.

## DIAGNOSIS

To make a diagnosis of PANDAS, patients must fulfill proposed criteria [1] [Table 1]. Evidence of GABHS infection includes a positive throat culture for GABHS, or elevated or increasing antibody titers (ASO, anti-DNase

**Table 1:** Criteria for autoimmune, neuropsychiatric disorders

Presence of a tic disorder, obsessive compulsive disorder or both as per the criteria established in DSM IV
Prepubertal onset of neuropsychiatric symptoms
History of sudden onset of symptoms, episodic course with abrupt symptom exacerbation interspersed with partial or complete remission or both
Evidence of a temporal relationship between onset of neuropsychiatric symptoms and infection with group A beta haemolytic streptococci
Adventitious movements (motor hyperactivity and choreiform movements) may be present during symptom exacerbation.

B) demonstrating a recent GABHS infection. In our case, high ASO titers suggested recent infection. Throat culture was negative for GABHS. As it is a post-infectious phenomenon and cases may occur even months after infection, [1] cultures may be negative by the time patient presents to the physician.

Though the laid down diagnostic criteria include episodic course of exacerbations (temporally correlated with GABHS infection) and remissions, what time period constitutes "temporal" association has not been defined. Abnormalities on MRI occur consistently in patients with SC, but in PANDAS, the clinical application of MRI studies is limited. [5],[6],[8] In our case also, the patient had a normal MRI of brain.

We had high index of suspicion in view of clinical picture and history of patient, and after investigations, we made the diagnosis of PANDAS.

**Therapeutic options:** Our patient responded to the standard drugs for control of symptoms. There are case reports showing the role of intravenous immunoglobulins (IVIG), plasma exchange, and steroids, but it is still not entirely clear that immunomodulatory therapies are beneficial. [9] It is possible that some of these children's symptoms, especially tics, spontaneously improve with time. IVIG and plasma exchange are invasive and costly therapies, often associated with side effects and at present are reserved for severe patients registered in therapeutic trials. [10] We did not use any immunomodulating agents.

**Antibiotic prophylaxis:** As of today, there is no recommendation for antibiotic prophylaxis for PANDAS. We did not put the patient on prophylaxis, but she is in our close follow-up.

**CLINICAL IMPLICATIONS:** Though at present the diagnostic criteria [Table 1] should be followed to make the diagnosis of PANDAS, it is a debatable issue in certain aspects. [10] For example, what time period forms "temporal association" is not defined. A unique specificity

of a clinical course consisting of abrupt onset or dramatic exacerbations has not been documented adequately. Clinical course does not seem particularly useful in distinguishing patients suspected of PANDAS from children with more typical cases of Tourette syndrome (TS) or OCD. <sup>[10]</sup> Even in the first episode, it may be prudent to consider PANDAS as diagnosis, as it guides the patient, family, and the physician in subsequent infections. These issues need scientific exploration. Close follow-up studies (of long durations) of streptococcal infections are needed in India where infections and carrier rate of GABHS are very high and literature on PANDAS is scarce.

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