



## COVID 19 aggravating PANDAS (Pediatric Autoimmune Neuropsychiatric Disorders Associated with Streptococcal Infections) - A Prelude

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### ABSTRACT

COVID 19 is associated with many types of co-infections and *Streptococcus Pneumoniae* is one of them. PANDAS (Pediatric Autoimmune Neuropsychiatric Disorders Associated with Streptococcal infections) is mostly related to Group-A beta-hemolytic streptococcal (GAS) infection. So there lies a possibility that COVID 19 associated *S.pneumoniae* in the form of co-infection can be the prelude for future aggravation of PANDAS. More sample based study is needed.

**KEYWORDS-** COVID 19 PANDAS co-infection

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### I. INTRODUCTION

PANDAS associated with streptococcal infections leads to Obsessive Compulsive Disorders (OCD) or tic disorders in childhood[1]. Currently the world is in the middle of SARS-CoV-2 pandemic, that has affected over 15 million people all over the world[2]. Previous respiratory viral pandemics revealed that bacterial coinfections causes higher mortality and morbidity[2]. Thus *Streptococcus Pneumoniae* coinfection in COVID 19 subjects can aggravate PANDAS in near future.

### II. DISCUSSION

The 5 criteria for PANDAS as done by Swedo *et al* established a homogenous subgroup of children with childhood onset obsessive-compulsive disorder (OCD) and/or tic disorders.[1] The five clinical characteristics that define the PANDAS subgroup are the presence of OCD and/or tic disorder, prepubertal age of onset, sudden onset and waning waxing symptom course, neurological abnormalities at the time of exacerbations and a temporal association between flare of symptoms and GAS infection. [3] These five criteria are used for research on the phenomenology and treatment for the PANDAS subgroup and also on pathophysiology of post-streptococcal OCD and tic disorders. [3] The etiology of OCD and tics in the PANDAS subgroup is still under scrutiny, but is predicted to occur because of post-streptococcal autoimmunity in same way like Sydenham's chorea.[4] The pathology starts with GAS infection in a susceptible host which causes production of antibodies to GAS that cross-react with the cellular components of the basal ganglia, mostly in caudate nucleus and putamen. The symptoms of OCD and other neuropsychiatric symptoms seen in these children are said to occur because of an interaction of these antibodies and basal ganglia.[4,5]

Bacterial coinfections are common with respiratory viral pathogens[2]. We are currently dealing with the SARS-CoV-2 pandemic that has created a havoc all over the nations. Pandemics on respiratory diseases before have revealed that these coinfections can lead to significant mortality and morbidity. [2] However, there is limited literature on the current SARS-CoV-2 pandemic and associated co-infections, which reported infection rates varying between 1% and 8% based on various cross-sectional studies. In one meta-analysis of coinfections in COVID-19, *Streptococcus pneumoniae* coinfections have been negligible when compared to

previous influenza pandemics. [2]. In a case series done on 3 case reports[2], the organisms causing coinfection were as follows: M. pneumoniae, Legionella pneumophila, Streptococcus pneumoniae, and C. pneumoniae [2]. Some studies have suggested more severe and complicated disease courses in cases of co-infection [6]. These can include aggravation of PANDAS in children.

### **III. CONCLUSION**

Thus COVID 19 co-infection in the form of Streptococcus pneumonia increases susceptibility to neuropsychiatric syndromes like PANDAS in future. Further research into this is of utmost importance not to prevent future catastrophes.

### **REFERENCES**

- [1]. Swedo SE, Leonard HL, Kiessling LS . Speculations on antineuronal antibody-mediated neuropsychiatric disorders of childhood. *Pediatrics* 1994; **93**: 323–326.
- [2]. Pal C, Przydzial P, Chika-Nwosuh O, Shah S, Patel P, Madan N. Streptococcus pneumoniae Coinfection in COVID-19: A Series of Three Cases. *Case Reports in Pulmonology*. 2020 Dec 10;2020.
- [3]. Snider LA, Swedo SE. PANDAS: current status and directions for research. *Molecular psychiatry*. 2004 Oct;9(10):900-7.
- [4]. Swedo SE, Rapoport JL, Cheslow DL . High prevalence of obsessive–compulsive symptoms in patients with Sydenham's chorea. *Am J Psychiatry* 1989; **146**: 246–249.
- [5]. Swedo SE, Leonard HL, Schapiro MB, Casey BJ, Mannheim GB, Lenane MC et al. Sydenham's chorea: physical and psychological symptoms of St. Vitus dance. *Pediatrics* 1993; **91**: 706–713.
- [6]. F. Zhou, T. Yu, R. Du et al., “Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study,” *Lancet*, vol. 395, no. 10229, pp. 1054–1062, 2020.