

From Tonsils to Basal Ganglia: Diagnosis and Treatment of PANDAS

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ABSTRACT

PANDAS syndrome (Pediatric Autoimmune Neuropsychiatric Disorders Associated with Streptococcal infections) is a neuroimmunological disorder in children, linked to autoimmune reactions following an infection with group A beta-hemolytic streptococcus. Symptoms include anxiety, irritability, aggression, sleep disturbances, sudden food selectivity, obsessive-compulsive behavior, and tics. Parents are often confused by the abrupt behavioral changes, failing to associate them with streptococcal infections such as pharyngitis and tonsillitis, which can act as triggers for this syndrome. Diagnosis is based on clinical presentation, history of streptococcal infections, and laboratory tests (throat swab, ASO titers). An otorhinolaryngologist conducts treatment with antibiotics, and for children with recurrent infections or tonsillar hypertrophy, tonsillectomy may be recommended according to ISKRA guidelines. Post-tonsillectomy care focuses on parental education, postoperative pain management, and early recognition of complications. Nursing interventions are essential in postoperative care, pain relief, infection prevention, and the management of postoperative complications, as well as providing emotional support to the family. PANDAS syndrome requires a multidisciplinary approach, involving otorhinolaryngologists, pediatricians, immunologists, psychiatrists, nurses and medical technicians. Timely diagnosis and treatment are essential for reducing neuropsychiatric symptoms and improving the child's quality of life.

Keywords: PANDAS Syndrome, Streptococcal Infections, Tonsillectomy, Nursing Interventions

Introduction

PANDAS syndrome (pediatric autoimmune neuropsychiatric disorder associated with streptococcal infection) is a neuroimmune disorder in children, caused by autoimmune reactions to infection with group A beta-hemolytic streptococcus. The concept of PANDAS and PITAND (pediatric autoimmune neuropsychiatric disorders associated with infections) syndrome was first described by A. J. Allen Swedo and colleagues in the late 1990s. According to their hypothesis, certain neuropsychiatric disorders, such as obsessive-compulsive disorder (OCD), tics, and some forms of Tourette's syndrome, may be triggered by infection, particularly group A beta-hemolytic streptococcus (GABHS) infection. On the other hand, PITAND syndrome can be caused by other pathogens, including certain viruses and *Mycoplasma pneumoniae* [1]. In children with PANDAS syndrome, a sudden development of neuropsychiatric symptoms is observed, including fear, tics, attention deficit disorder and

obsessive-compulsive behavior. Today, it is considered that the basic pathophysiological mechanism of this syndrome is an autoimmune reaction that leads to dysfunction of the basal ganglia [2].

Epidemiology and Clinical Picture

Although the exact prevalence of PANDAS is unknown, it is estimated to affect about 1% of children. In primary health care, between one and three new cases are expected per year [3]. The syndrome occurs more often in boys, with a ratio of 2.6:1, and usually occurs between the ages of 3 and 12, with the highest incidence between the ages of 6 and 8 [1]. The clinical picture of PANDAS includes sudden onset of obsessive-compulsive disorder and/or tics that coincide in time with GABHS infection. Children can show other neuropsychiatric symptoms such as anxiety, aggressiveness, irritability, sleep disorders and sudden pickiness when taking food. Parents often do not associate these symptoms with previous streptococcal infections, such as pharyngitis and tonsillitis, although these infections can be the triggers of the syndrome [2-5].

Diagnosis of PANDAS Syndrome

According to A. J. Allen Swedo et al., the diagnosis of PANDAS is based on the following criteria:

1. Presence of obsessive-compulsive disorder (OCD) and/or tics [6, 7].
2. Onset of symptoms after the third year of life, but before puberty.
3. Episodic course with sudden onset and exacerbations, while the patient may be symptom-free between episodes.
4. Association with streptococcal infection (positive throat swab and/or positive ASO titer).
5. Association with neurological abnormalities, particularly motor hyperactivity and adventitious movements, such as choreiform movements and tics.

To establish a diagnosis of PANDAS with greater certainty, it is necessary to confirm an association between at least two episodes of symptoms and a previous streptococcal infection [6,7].

Tonsillectomy as a Potential Therapeutic Option

The most common cause of bacterial tonsillitis is group A beta-hemolytic streptococcus, and surgical intervention, such as tonsillectomy or adenotonsillectomy, can be considered in children with frequent streptococcal infections. The ISKRA guidelines recommend tonsillectomy in children who meet the following criteria:

- ≥ 7 severe episodes of tonsillitis within one year,
- ≥ 5 episodes per year for two consecutive years,
- ≥ 3 episodes per year for three consecutive years.

Although tonsillectomy is being considered as a therapeutic option in children with PANDAS syndrome, the evidence for its effectiveness remains limited. Most of the data are based on case studies, where patients after surgery showed a reduction in the intensity and frequency of neuropsychiatric symptoms, but systematic reviews did not provide clear recommendations for or against tonsillectomy as a specific treatment for PANDAS [8].

Nursing Interventions in the Care of Children with PANDAS Syndrome

Nurses actively participate in the care of children with PANDAS syndrome, where the education of parents is of particular importance. They must be familiar with the nature of PANDAS syndrome, possible triggers, symptoms and ways to recognize infections that can cause exacerbation of the disease. Nursing interventions include educating parents on how to recognize the signs of streptococcal infections (such as pharyngitis and tonsillitis) and advising on preventive measures that can reduce the risk of new infections, including proper hygiene and avoiding contact with people who have symptoms of streptococcal infection. Early recognition of symptoms in children is crucial for timely treatment.

In addition to education, it is important to provide parents with information about therapeutic options, including a pharmacological approach (antibiotics and other drugs such as corticosteroids or immunoglobulins.) and the eventual need for surgical interventions in this case of tonsillectomy. Interventions by nurses are indispensable in all phases of treatment of children with PANDAS syndrome, especially in the context of otorhinolaryngology (ENT) care and postoperative care.

These interventions include:

- Preoperative education of parents and children about the procedure and postoperative expectations.
- Monitoring of vital functions and timely recognition of early complications after surgery (bleeding, respiratory difficulties).
- Alleviation of postoperative pain using analgesics and non-pharmacological methods,
- Maintaining hydration and adapted nutrition, which prevents dehydration and ensures adequate intake of nutrients.
- Prevention of infections and late postoperative complications
- Psychological support for parents, reducing their stress and helping them ensure quality post-operative care at home [8].

Nursing interventions are also essential in a multidisciplinary approach, which includes otolaryngologists, pediatricians, psychiatrists and immunologists. Their tasks include:

- Monitoring long-term effects of the disease - Children with PANDAS syndrome can have long-term neurological and psychological consequences, so it is important that nurses regularly assess their progress and any changes in their health status.
- Providing emotional support – Children with PANDAS syndrome often experience emotional changes, including anxiety, depression and social isolation. Interventions by nurses should ensure emotional support for the family, and the main task should be to raise awareness of the importance of cooperation with a psychologist or psychiatrist who are specialized in working with children.
- Creating a safe environment - Understanding and an empathetic approach to care help create a sense of security and support, which positively affects the child and his family [9].

With their knowledge and professional approach, the interventions of nurses ensure complete and high-quality health care for children with PANDAS syndrome, contributing to their recovery and a better long-term health outcome.

Conclusion

PANDAS syndrome is a complex neuroimmunological disorder that requires timely recognition and a multidisciplinary approach to treatment. Given its impact on the child's neuropsychiatric condition, it is crucial to ensure early diagnosis and appropriate therapeutic measures in order to reduce symptoms and improve the quality of life of affected children. Tonsillectomy, although not universally recommended as a therapeutic option, can have a positive effect in children with frequent streptococcal infections. Postoperative care, aimed at alleviating pain, preventing complications and educating parents, plays an important role in the entire recovery process.

Nursing interventions are indispensable in the care of children with PANDAS syndrome, especially in the context of parent education, postoperative care and providing emotional support. Their involvement in the multidisciplinary team contributes to better quality treatment and long-term monitoring of children with this syndrome. Further research is needed to better understand the mechanisms of PANDAS syndrome and improve diagnostic and therapeutic guidelines, enabling even more effective care for affected children.

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