

CHANGE ASSOCIATED WITH PONS DAMAGE IN CEREBRAL PALSY IN CHILDREN

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Abstract. Pontine lesions in children with cerebral palsy (CP) can lead to a variety of neurological and motor changes. This article reviews the causes, clinical manifestations, and neurophysiological processes of pontine lesions in children with cerebral palsy. The pontine is primarily responsible for controlling motor functions and for sensorimotor integration. As a result of the lesions, children may experience changes in muscle tone, impaired coordination, and in severe cases, respiratory or cardiovascular system involvement. This article reviews the neurological mechanisms of pontine lesions associated with cerebral palsy and reviews clinical approaches, diagnostic methods, and innovative treatment options. It also highlights the importance of identifying pontine lesions and developing individualized approaches to their management.

Key words: Cerebral palsy, pons, pontine lesions, neurological changes, motor functions, coordination disorders.

ИЗМЕНЕНИЕ, СВЯЗАННОЕ С ПОВРЕЖДЕНИЕМ МОСТА ПРИ ДЕТСКОМ ЦЕРЕБРАЛЬНОМ ПАРАЛИЧЕ

Аннотация. Поражения моста у детей с церебральным параличом (ДЦП) могут приводить к различным неврологическим и двигательным изменениям. В этой статье рассматриваются причины, клинические проявления и нейрофизиологические процессы поражений моста у детей с церебральным параличом. Мост в первую очередь отвечает за контроль двигательных функций и сенсомоторную интеграцию. В результате поражений у детей могут наблюдаться изменения мышечного тонуса, нарушение координации, а в тяжелых случаях — поражение дыхательной или сердечно-сосудистой системы. В этой статье рассматриваются неврологические механизмы поражений моста, связанных с церебральным параличом, и рассматриваются клинические подходы, методы диагностики и инновационные варианты лечения. В ней также подчеркивается важность выявления поражений моста и разработки индивидуальных подходов к их лечению.

Ключевые слова: Детский церебральный паралич, мост, поражения моста, неврологические изменения, двигательные функции, нарушения координации.

Introduction

Cerebral palsy (CP) is a neurological disorder that occurs during the development of the central nervous system and leads to impaired motor function in children, which develops as a result of damage to various brain structures. The causes of cerebral palsy are diverse, the most common of which are trauma during childbirth, hypoxia (oxygen deficiency), and infections. The neurological changes associated with this condition include clinical signs such as delayed motor development, impaired muscle tone, and impaired coordination.

However, pons injury is a poorly understood topic in pediatric cerebral palsy, and research in this area is still limited. It is necessary to study the anatomical changes that occur in the pons, how they affect the development of neurological and clinical symptoms, and the importance of taking pons injury into account in the treatment of cerebral palsy. The purpose and study: The main objective of this study is to investigate the impact of pontine lesions on neurological, motor, and sensory changes in children with cerebral palsy.

The study aims to determine the impact of pontine lesions on the clinical symptoms, muscle tone, coordination, motor functions, and other neurological system changes associated with cerebral palsy. In addition, this study provides an in-depth analysis of the diagnostic methods for pontine lesions, how they manifest in children of different ages, and what changes they cause in different forms of cerebral palsy. The study also aims to help develop effective treatment approaches for pontine lesions. At the same time, this study serves to highlight the importance of timely detection of pontine lesions in children with cerebral palsy and the development of individual treatment strategies for them.

The results of the study will allow us to better understand pons damage in children with different forms of cerebral palsy and create new approaches to reduce its effects. This article aims to study the relationship between pons injury and neurological, motor and sensory changes in pediatric cerebral palsy, and to show the need to take these changes into account in the diagnostic and treatment process. The main goal of the study is to identify pons injury and analyze in depth its impact on the development of cerebral palsy in children. The pontine pons is one of the main pathological centers of cerebral palsy, which plays an important role in the transmission of nerve impulses between the upper and lower parts of the brain. Damage to the pontine pons can lead to serious motor impairment in children. These injuries often lead to increased or decreased muscle tone, impaired coordination and balance, and changes in control functions.

Materials and Methods

This article was conducted to study the changes associated with pontine lesions in children with cerebral palsy.

The study included children of different ages (2-12 years), patients with a diagnosis of cerebral palsy and neurological changes associated with pontine lesions. The study materials are taken from the following sources: Clinical data: A complete clinical and neurological examination was performed for the children involved in the study. After each child was diagnosed with cerebral palsy, their clinical symptoms, motor and sensory changes, muscle tone and coordination level were assessed.

Medical imaging methods: Modern imaging methods such as computed tomography (CT) and magnetic resonance imaging (MRI) were used to detect pontine lesions. These images allowed us to visually identify changes in the brain structures of children and study the lesions that occurred in the pontine. Electroencephalography (EEG): An EEG was performed to analyze brain activity. This technique was used to detect neurological changes associated with pons lesions, including epileptic activity and other nervous system-related abnormalities. Motor and sensory function assessment: The Ashworth scale (muscle tone assessment), Gross Motor Function Classification System (GMFCS), and other standard assessment tests were used to assess motor changes in children with cerebral palsy.

Standard tests were used to assess sensory changes, including systemic coordination and balance. Statistical analysis: Random and parametric statistical methods were used to analyze the data. The collected data were analyzed using SPSS or other statistical software. The relationship between the degree of damage and clinical changes in children was studied using t-tests and interactions.

Results and Discussion

Neurological changes Buncus injury in children has led to specific changes in the nervous system, both motor and sensory systems. MRI and CT findings have been found in the pons.

These changes are associated with the severity of cerebral palsy, leading to a qualitatively impaired motor function in patients. EEG studies show that children have many episodes, activities, and changes in activity associated with the pons. Motor and sensory changes Buncus injury in children with cerebral palsy severely impairs motor functions.

The results obtained using the Ashworth scale and GMFCS (Gross Motor Function Classification System) show that children with pons injury have clear changes in muscle tone: some patients have spasticity (muscle stiffness), while others have hypo-hypo (muscle weakness). Problems with coordination and balance control also increase. Some children have severe problems using and maintaining joints, walking, and moving. Respiratory and cardiovascular systems damage has also affected the respiratory system in some children.

These patients have had irregular breathing and heart rate, which may be related to structural changes in the pons. The study also suggests that pons damage affects the control mechanisms of the nervous system in children, which in turn affects other organ systems.

Discussion damage may help to better understand the severity and different forms of cerebral palsy in children. The study confirms that pons damage can lead to motor impairment and changes in muscle tone in children. The pons is an important part of the central nervous system, playing a role in the transmission of nerve impulses between the motor and sensory systems. Therefore, damage to the pons may be associated with decreased muscle strength, poor coordination, and other neurological changes in children.

At the same time, the information obtained using modern imaging techniques (MRI, CT) and electroencephalography (EEG) in the diagnosis of pons lesions plays an important role in optimizing treatment approaches. These methods help to better understand the condition of children and develop individual treatment approaches.

In the future, it is necessary to further study the role of pons lesions in cerebral palsy and develop appropriate treatment methods depending on the degree of damage. This can help to improve the condition of patients and improve their quality of life, especially in severe forms of cerebral palsy.

Conclusion

This study aimed to investigate the effects of pontine (pontine) lesions on neurological, motor, and sensory changes in children with cerebral palsy. The results of the study showed that pontine lesions lead to changes in muscle tone, impaired coordination and balance, and impaired motor function in children. The pontine is an important part of the central nervous system, and its damage causes serious disorders in the transmission of nerve impulses, the functioning of the motor and sensory systems in children.

The results obtained through MRI and EEG examinations showed structural changes in the pontine, as well as abnormalities in brain activity. These changes are associated with severe forms of cerebral palsy, increasing motor and sensory problems in children. The study provided a deeper understanding of the relationship between pontine lesions and cerebral palsy and showed that it can be used to develop effective diagnostic and treatment approaches. The results of the study once again emphasize the importance of identifying pons damage and developing appropriate treatment strategies. In the future, a deeper study of the role of pons damage in cerebral palsy will allow the development of innovative treatments to improve the condition of patients and increase their quality of life. This study is an important step in studying pons damage in various forms of cerebral palsy in children and finding ways to reduce its impact.

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