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INTRACRANIAL HYPERTENSION IN NEWBORN INFANTS: CAUSES, CLINICAL COURSE, AND DIAGNOSIS

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Rajabaliyeva Mohruhsor Amandullo kizi
Mingaliyeva Shaxrizoda Dilmurod kizi
Termiz University of Economics and Service,
Faculty of Medicine, Students
Email: mohruhsorrajabaliyeva@gmail.com
shahrizodamingaliyeva780@gmail.com

Abstract

Intracranial hypertension in newborns is a pathological condition characterized by increased intracranial pressure, which can lead to severe damage to the nervous system. This article discusses the main causes, clinical manifestations, and diagnosis of intracranial hypertension. The disease may result from prenatal factors (fetal hypoxia, infections, genetic disorders), perinatal factors (birth trauma), or postnatal factors (neuroinfections, hydrocephalus). Clinical symptoms include excessive head growth, bulging fontanelles, muscle tone disorders, vomiting, seizures, and irritability. Diagnosis is carried out through neurosonography, CT/MRI, ophthalmoscopy, and cerebrospinal fluid pressure measurement. Early diagnosis and timely treatment are crucial for the child's future development.

Keywords

intracranial hypertension, intracranial pressure, fontanelle, hydrocephalus, congenital pathology, hypoxia, asphyxia, vomiting, irritability, ophthalmoscopy, computed tomography.

ВНУТРИЧЕРЕПНАЯ ГИПЕРТЕНЗИЯ У НОВОРОЖДЁННЫХ: ПРИЧИНЫ, КЛИНИЧЕСКОЕ ТЕЧЕНИЕ И ДИАГНОСТИКА

Раджабалиева Мохрухсор Амандуллоевна
Мингалиева Шахризода Дилмуродовна
Термезский университет экономики и сервиса,
Студенты медицинского факультета
Email: mohruhsorrajabaliyeva@gmail.com
shahrizodamingaliyeva780gmail.com

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Аннотация

Внутричерепная гипертензия у новорождённых – это патологическое состояние, характеризующееся повышением внутричерепного давления, что может привести к серьёзному повреждению нервной системы. В данной статье рассмотрены основные причины, клинические признаки и диагностика Внутричерепная гипертензия. Заболевание может развиваться вследствие пренатальных (гипоксия плода, инфекции, генетические заболевания), перинатальных (родовые травмы) и постнатальных (нейроинфекции, гидроцефалия) факторов. Клинические проявления включают чрезмерный рост окружности головы, выбухание родничков, нарушение мышечного тонуса, рвоту, судороги и повышенную раздражительность. Диагностика проводится с помощью нейросонографии, КТ/МРТ, офтальмоскопии и измерения ликворного давления. Ранняя диагностика и своевременное лечение имеют решающее значение для будущего развития ребёнка.

Ключевые слова

внутричерепная гипертензия, внутричерепное давление, родничок, гидроцефалия, врожденная патология, гипоксия, асфиксия, рвота, беспокойство, офталмоскопия, компъютерная томография.

Relevance of the problem. Intracranial hypertension in newborns is a pathological condition characterized by increased intracranial pressure, which can lead to severe damage to the central nervous system. This condition contributes to the development of neurological disorders, negatively affecting the quality of life and overall development of infants. Today, the early diagnosis, prevention, and effective treatment of intracranial hypertension remain urgent issues in pediatrics and neonatology. Since failure to detect the disease in its early stages may result in serious consequences, in-depth research on this problem is necessary.

Intracranial hypertension is widespread among newborns, and its primary causes are associated with prenatal, perinatal, and postnatal factors.

Prenatal factors include fetal hypoxia, intrauterine infections (cytomegalovirus, toxoplasmosis, herpes), genetic disorders, and chronic maternal diseases during pregnancy.

Perinatal factors include birth trauma, intrauterine hypoxia, prolonged labor, and birth asphyxia.

Postnatal factors include neuroinfections (meningitis, encephalitis), hydrocephalus, intracranial hemorrhages, and congenital brain abnormalities.

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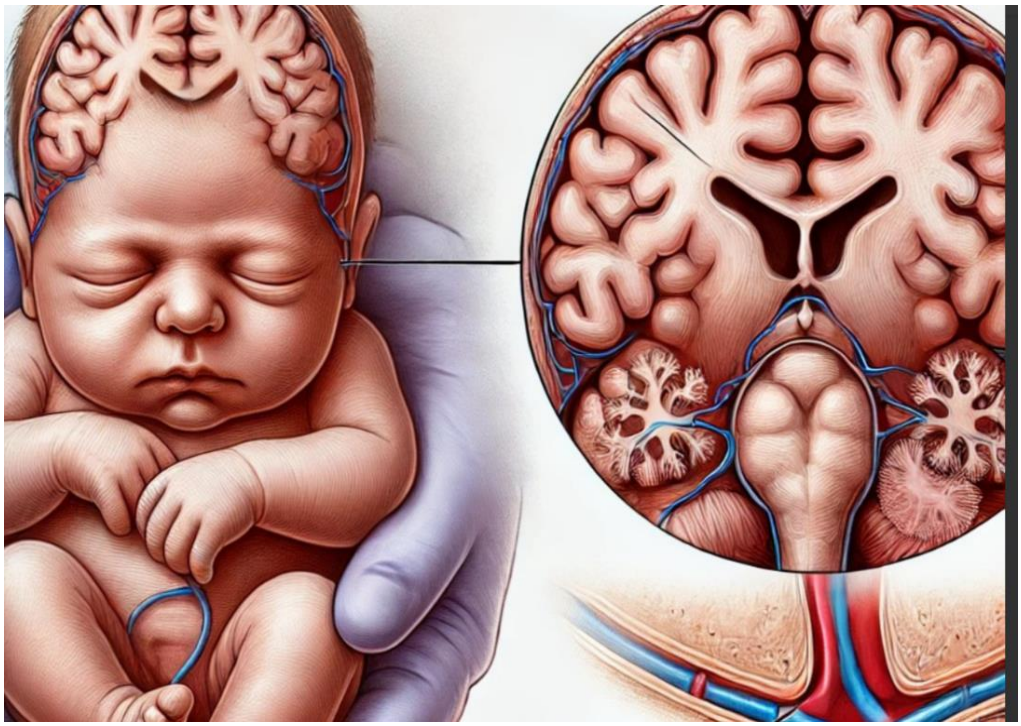
Failure to diagnose and treat intracranial hypertension in a timely manner can lead to serious complications in newborns, such as: Hydrocephalus – accumulation of cerebrospinal fluid in the brain ventricles, leading to increased pressure on brain structures. Neurological disorders – muscle tone disturbances, epileptic seizures, and autonomic dysfunctions. Psychomotor developmental delays – impaired speech development, motor coordination, and cognitive functions. Visual impairment – optic nerve atrophy and blindness due to increased pressure in the eye fundus. Since the clinical signs of intracranial hypertension are often nonspecific, delayed diagnosis is a common issue. Therefore, modern diagnostic methods play a crucial role in detecting the condition. These methods include: Neurosonography (NSG) – a non-invasive ultrasound technique used to examine brain structures through an open fontanelle. Computed tomography (CT) and magnetic resonance imaging (MRI) – advanced imaging techniques for detecting structural abnormalities and circulatory disturbances in the brain. Ophthalmoscopy – an examination of the eye fundus to assess optic nerve swelling. Cerebrospinal fluid pressure measurement – an invasive but accurate method for diagnosing intracranial hypertension. Early diagnosis significantly improves treatment outcomes and prevents severe complications.



PREVENTION STRATEGIES. Reducing the risk of developing intracranial hypertension in newborns requires effective preventive measures, such as: Monitoring maternal health during pregnancy – conducting regular medical check-ups and preventing fetal hypoxia. Ensuring proper management of labor – optimizing the birth process to prevent complications such as asphyxia and birth

trauma. Conducting initial neonatal screenings – performing thorough postnatal examinations to identify early signs of intracranial hypertension.

Statistics on intracranial hypertension (ICH) in newborns: Although precise statistical data on intracranial hypertension (ICH) in newborns is limited, some relevant figures are available. For instance, arachnoid cysts are rare anomalies, found in only 3% of examined newborns.

Hydrocephalus, on the other hand, is one of the most common developmental abnormalities in children. According to statistical data, the incidence of hydrocephalus ranges from 1 in 1,000 to 1 in 3,000 newborns, with most cases being diagnosed within the first three months of life.

Conclusion. Intracranial hypertension in newborns is not only a neurological issue but also a significant global medical concern. Prevention, early diagnosis, and effective treatment are crucial for improving the future development and quality of life of affected infants. Therefore, timely detection and appropriate management of intracranial hypertension play a decisive role in ensuring a newborn's long-term health. Preventive strategies, such as monitoring maternal health during pregnancy, optimizing labor management, and conducting early neonatal screenings, are essential. With early diagnosis and high-quality medical interventions, the likelihood of healthy development in affected infants significantly increases.

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