

BIRTH TRAUMA: CEPHALOHEMATOMA IN NEWBORNS

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Abstract:

The article under discussion depicts birth trauma – cephalohematoma in newborns. The main risk factors influencing the formation of birth trauma are pregnancy complications such as high birth weight, gestosis, as well as some complications during childbirth (premature rupture of amniotic fluid, labor anomalies, disruption of the biomechanism of childbirth).

Keywords: birth injury, cephalohematoma, childbirth, damage, subperiosteal hematoma, pathogenesis.

Introduction

Birth injuries to the head, despite the fact that they have accompanied humanity throughout its history, are still one of the main causes of child mortality and disability. The most common marker of damage to the baby's head during childbirth is cephalohematoma [5].

Main Part

Cephalohematoma (subperiosteal hematoma) is an accumulation of blood in the space formed by blood between the bone and the periosteum detached from it. According to various sources, it occurs in 0.2-3% of newborns. The uniqueness of the problem of birth head trauma is determined by the anatomical and physiological characteristics of the newborn. At the time of birth, the fetal head is the largest part of its body in circumference. For example, in a full-term newborn it is 33-37.5 cm, which is 1-2 cm more than the chest circumference. It is the fetal head that most often forms the birth canal. Therefore, even during physiological childbirth, it is exposed to maximum mechanical stress from the natural forces of expulsion and resistance of the birth canal [3]. The main mechanism for the formation of cephalohematoma in a newborn is displacement of the skin and periosteum of the head during the movement of the fetus along the birth canal and its return between contractions. During the period of

“expulsion” of the fetus, the head not only moves forward and backward, but also rotates, which is the most traumatic. The source of bleeding is the vessels of the subperiosteal space, less often intraosseous vessels in the area of skull fractures, which occur in 10–25% of children with subperiosteal hematoma [2].

The main factors in the pathogenesis of the formation of cephalohematomas include:

- mechanical factor: it is indicated by the predominance of the adhesion of the periosteum to the tissues of the birth canal over the connections of the periosteum and the bones of the fetal head. Mechanically damaging effects on the fetus are caused by excessive force of uterine contractions, prolonged labor, and translational and rotational movements of the fetal head as it passes through the birth canal;
- hydraulic factor: includes the early discharge of amniotic fluid, which is a shock absorber that protects the fetal head;
- the difference in atmospheric and intrauterine pressure has a suction effect on blood and tissue fluid, which is aggravated during cesarean section, vacuum extraction, and rapid labor;
- anatomical factor: includes stagnation of blood as a result of umbilical cord pathology (short umbilical cord, bend or tension of the umbilical cord, entanglement of the fetal neck) [1].

Depending on the size of the hemorrhage and the volume of the cephalohematoma, experts distinguish three degrees:

- with the first, the diameter of the formation does not exceed 4 cm;
- with the second, the diameter ranges from 4.1 cm to 8 cm;
- with the third degree the indicators exceed 8 cm.

Taking into account the combined injuries that the child could receive during the birth process, cephalohematomas are distinguished:

- with a fracture of the skull bones;
- with brain damage;
- with a neurological syndrome.

Symptoms of cephalohematoma are especially pronounced 2-3 days after the birth of the child. The shape of the head becomes asymmetrical due to the formation of an elastic and soft formation. The outlines of the swelling coincide with the boundaries of the flat bones of the skull, since the periosteum is firmly attached to their edges. Typical localization of cephalohematoma is the parietal and occipital regions of the head. The skin over the formation is unchanged, elastic, and fluctuation is detected on palpation (fluid movement when pressed). A distinctive feature of cephalohematoma is a gradual increase in formation during the first 2-3 days of the baby's life.

The amount of blood under the periosteum can range from 5 to 150 ml. Under favorable conditions and small sizes, the cephalohematoma regresses on its own within a week after its formation.

With an isolated cephalohematoma, the general condition of the child is satisfactory. In the case of combined pathology, neurological symptoms appear. Most children experience depression of the central nervous system: a sluggish reaction to pathogens, a decrease in the severity of reflexes. Some newborns experience excessive excitation of the central nervous system, such as a hypertensive or hydrocephalic symptom complex.

The diagnosis of cephalohematoma is based on physical examination of the infant and collection of antenatal, intrapartum and postnatal history. Identification of a pathological neoplasm on days 2-3 after birth, the size of which coincides with the edges of the skull bone, is the main clinical criteria for the disease. Cephalohematoma should be differentiated from a birth tumor, subgaleal hemorrhages, and cerebral hernia.

Instrumental diagnostics are prescribed to clarify the size, prevalence and nature of the pathological neoplasm, in order to exclude combined pathology (fracture of the base of the skull):

- radiography of the skull;
- neurosonography;
- CT scan.

Laboratory tests are carried out to study the child's blood clotting, determine the level of red blood cells, hemoglobin and bilirubin:

- general blood test (level of red blood cells, platelets, hemoglobin);
- biochemical blood test (determination of bilirubinemia);
- coagulogram.

There are two methods of treating cephalohematoma: conservative and surgical.

Conservative treatment is aimed at restoring blood clotting. Feeding a child in the first week after birth with an isolated cephalohematoma is breastfeeding, on demand. In case of neurological symptoms, expressed breast milk can be used.

Surgical treatment is indicated in the following situations:

- 3rd degree cephalohematoma (size greater than 8 cm);
- ineffectiveness of conservative treatment;
- infection of cephalohematoma.

Surgery to remove cephalohematoma is performed 10-14 days after birth. The contents under the periosteum are removed using the aspiration method, after which a tight bandage is applied. In case of infection of the hematoma, the formed cavity is drained and systemic antibacterial drugs are prescribed. When cephalohematoma ossifies, resection is performed.

After puncture of the cephalohematoma, the child spends up to 12 hours in a hospital setting. Length of hospital stay taking into account clinical manifestations. This period is extended if signs of purulent complications were revealed during the operation, which required opening the cavity and subsequent drainage.

During rehabilitation, the child should be constantly monitored by a pediatrician; it is also recommended to organize preventive examinations with a pediatric neurologist and surgeon. For 2-3 days it is necessary to feed the baby with expressed breast milk, after which he switches to full breastfeeding.

To prevent secondary infection and the development of inflammatory processes, antibacterial therapy is prescribed (for extensive hematomas with signs of infection). Calcium supplements and topical agents can also be used to accelerate tissue healing. Complications of cephalohematoma significantly worsen the prognosis regarding the child's complete recovery and restoration of nervous system function:

1. Anemia. As a result of the loss of 100-150 ml of blood (which is significant blood loss for a newborn's body), posthemorrhagic anemia develops;
2. Jaundice. Hyperbilirubinemia occurs with massive destruction of red blood cells that are located in the area of the cephalohematoma. This leads to yellowness of the skin, mucous membranes and sclera, which persists for more than 10 days;
3. Ossification. If the contents of the cephalohematoma do not resolve within 4 weeks, a dense capsule will form around it. In the future, this process can lead to the formation of exostosis and bone defect. The child's skull takes on an asymmetrical shape, and the resulting bone protrusions put pressure on the brain and provoke the development of focal neurological symptoms;
4. Infection. Suppuration of cephalohematoma occurs when the pathogen enters through damaged scalp. This process poses a serious threat to the child, since the newborn's immune system is vulnerable to pathogenic microorganisms. Local infectious inflammation can spread to the central nervous system (meningitis, arachnoiditis, encephalitis) and the entire body (sepsis, infectious bacterial shock) [3].

Conclusion

Thus cephalohematoma remains a pressing problem in obstetrics and requires the search for modern methods of diagnosis and prevention of its occurrence. Therefore, in a modern maternity hospital, in order to reduce birth injuries, it is necessary:

- carry out early diagnosis of fetal hypoxia;
- carry out rational management of childbirth with a large fetal mass with a timely solution to the issue of changing labor tactics;
- constantly improve the professional skills of doctors and midwives when providing obstetric benefits;
- introduce modern perinatal technologies and achievements of clinical neonatology into practice.

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