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GENERAL DEGENERATION IN HUMAN EVOLUTION: THE IMPACT OF PHYSIOLOGICAL JAUNDICE ON COGNITIVE ACTIVITY

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Abstract: This article is about the negative effect of physiological jaundice on neurons and cognitive thinking, and how this effect causes mental degeneration in human evolution. It's about how we can't use the full potential of our brain due to the effect of unbound bilirubin on neurons.

Key words: fetal hemoglobin, bilirubin, gulikironyl transferase, neuroinflammation, phototherapy.

Relevance. Physiological jaundice is a condition in which the skin, whites of the eyes, and other mucous membranes become yellow due to a temporary increase in the level of bilirubin (a liver pigment) in the body. Physiological jaundice occurs mainly in newborns and is often associated with some temporary condition of the liver.

Causes of physiological jaundice:

The most common cause of physiological jaundice is an increase in bilirubin in newborns. This usually occurs within the first 2-4 days after birth. This condition is associated with the incomplete development of liver function in newborns. Bilirubin is a pigment formed from the breakdown of red blood cells in the body. After birth, the baby's liver does not work well enough to fully filter and remove this bilirubin, as a result of which its level increases.

The mechanism of development of physiological jaundice is as follows:

1. Formation of bilirubin: Red blood cells break down and bilirubin is released from them.
2. Insufficient liver function in processing bilirubin: After birth, the baby's liver system is not yet fully developed and does not function sufficiently to remove bilirubin quickly.
3. Accumulation of bilirubin in the blood and tissues: Bilirubin spreads throughout the body through the bloodstream and accumulates in the skin and whites of the eyes, which leads to jaundice.

Symptoms of physiological jaundice:

- Yellow skin: the main sign is the baby's skin turning yellow.
- Yellow whites of the eyes: the whites of the eyes turning yellow.

In infants, the blood-brain barrier is weak. The unbound bilirubin that occurs in physiological jaundice can cross this barrier and affect the neurons. The blood-brain barrier is also weak in the elderly, so if the amount of unbound bilirubin in them increases for a day or two, it can cause damage to the neurons. In infants with a weak blood-brain barrier and 1 week of physiological jaundice, exposure to unconjugated bilirubin can lead to a number of negative consequences:

1. Neurodevelopment: The accumulation of toxins and inflammatory substances in the brain due to a weak blood-brain barrier can negatively affect neuronal development.
2. Cognitive development: In the long term, these conditions can lead to delays or problems with cognitive development in infants, which can affect reading and learning skills.
3. Neuroinflammation: Increased inflammatory processes in the brain, which can damage neurons and their connections.
4. Motor skills: Physiological jaundice and exposure to bilirubin can lead to problems with motor development, such as difficulty coordinating movements.
5. General health: Problems with normal brain function can affect the overall health of infants, including the immune system.

The passage of unconjugated bilirubin across the blood-brain barrier and its effects on neurons is a very complex and advanced physiological mechanism. These processes are mainly associated with the increase in bilirubin and its effects on the central nervous system.

1. Bilirubin. General information
2. Blood-brain barrier

The blood-brain barrier (BBB) is a physiological barrier between the central nervous system (CNS) and the bloodstream. This barrier protects the brain and spinal cord from toxins, pathogens, and harmful substances contained in the blood. The BBB is sometimes selective, allowing some substances, including some toxins, to enter the central nervous system while restricting others.

3. The passage of unconjugated bilirubin across the blood-brain barrier.

Under normal conditions, the blood-brain barrier prevents the passage of harmful substances between the blood and cerebrospinal fluid. Unconjugated bilirubin is a highly toxic substance and can cross the blood-brain barrier and damage nerve cells (neurons). This condition is often seen in neonatal jaundice (increased bilirubin levels in newborns).

4. Effects of unconjugated bilirubin and neurons.

Unconjugated bilirubin has highly toxic properties, and its effects on the central nervous system can occur through the following mechanisms:

- Neurotoxic effects: Unconjugated bilirubin can damage neurons because it disrupts the proper functioning of glutamate and other neurotransmitters, which can disrupt normal nervous system function. Unconjugated bilirubin can damage the membrane of nerve cells and block their function.
- Oxidative stress of neurons: When bilirubin is present in excess, it can cause oxidative stress. This condition leads to neuronal death or dysfunction through oxidative damage to neurons (i.e., excessive production of free radicals).
- Neuropathy and encephalopathy: Newborns may develop a condition known as Kernicterus. This is a severe toxic injury to the brain and nervous system caused by high levels of unconjugated bilirubin. Kernicterus can cause serious neurological developmental defects (e.g., mental retardation, vision and hearing problems, and motor impairment).
- Apoptosis and necrosis: High levels of unconjugated bilirubin can accelerate the processes of apoptosis (death) or necrosis (complete damage) in nerve cells. These processes disrupt brain function and the normal functioning of the neurological system.

5. Unconjugated bilirubin and neuroinflammation

Unconjugated bilirubin can trigger inflammatory processes in brain cells. Inflammation can disrupt the normal functioning of the central nervous system, increase oxidative stress on neurons, and impair their function. The passage of unconjugated bilirubin across the blood-brain barrier and its effects on neurons is a serious medical issue, as these processes can have toxic effects on the brain and nervous system. If bilirubin levels are high and the liver's detoxification function is impaired, unconjugated bilirubin can cross the brain barrier and cause serious complications such as neurological disorders, inflammation, oxidative stress, and even kernicterus.

To prevent or treat this condition, monitoring bilirubin levels and early diagnosis are very important, especially in newborns.

Treatment

- Sunlight: Exposing the baby to sunlight, if the weather conditions are right, can help reduce jaundice. It is important to expose the baby to sunlight at the right time and for the right duration.
- Fluid intake: Increasing the baby's fluid intake (e.g., breast milk) can help reduce jaundice.
- Medical treatments: If the level of jaundice is high or other problems occur, the doctor may suggest the following medical treatments:
- Phototherapy: Reducing the level of jaundice using special lamps.
- Fluid therapy: Replacing blood serum or other medical methods.
- Monitoring: Regularly monitoring the level of jaundice and following the doctor's recommendations.

These treatments are used only if the duration of physiological jaundice is prolonged. I propose to completely eliminate physiological jaundice, because, based on the above definitions, physiological jaundice exists in human evolution due to mental degeneration, that is, a decline in cognitive function, and if we remove this from evolution, humanity can reach its highest cognitive potential and use its mental activity to the maximum.

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