Understanding how congenital hyperinsulinism causes persistent hypoglycemia in children

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Introduction

Congenital Hyperinsulinism (CHI) is a rare condition that causes hypoglycemia in new-borns and children due to abnormal release of insulin. Insulin is a hormone produced by the pancreas that helps transport sugar from the blood to the body's cells. Children secrete insulin even when blood sugar levels are low. This can lead to dangerously low blood sugar levels, which can lead to brain damage if left untreated.[1] In addition to the need to measure blood sugar levels, CHI is associated with significant stress and anxiety for families, especially due to the need for frequent meals and fear of hypoglycemia. In addition, there is a need to raise awareness of bronchitis among all health care professionals caring for new-borns and infants, and new drugs are urgently needed to ensure that all patients with bronchitis receive the best possible treatment. Early signs of CHI are often subtle and nonspecific, such as nervousness, loss of appetite, lethargy, high-pitched or faint crying.

Description

There is a need to improve effective screening of her newborn for CHI, and prompt referral to specialized treatment centers to ensure the best outcome for the patient and family. More serious manifestations of neurohypoglycemia include apnea, seizures, severe hypersensitivity, coma, or status epilepticus.[2] Hypoglycemia most often occurs within the first week of life and presents as seizures in about half of patients diagnosed in the first year of life, few patients are seen and diagnosed after the first year of life.

The etiology of CHI can be acquired or genetic. Acquired forms in the neonatal period are usually associated with conditions such as perinatal stress and maternal gestational diabetes and are often transient. Genetic CHI may be due to single-gene mutations in the insulin secretory pathway or in genes that cause syndromes with several other relevant factors.[3] Transient/acquired forms usually resolve in days or weeks, but can still cause abnormal neurodevelopment in up to a third of children. Histologically, genetic CHI is classified as focal, diffuse, or atypical. The focal form of CHI is usually a small area of islet cells with scattered minimal exocrine tissue, while the diffuse form involves the entire pancreas and is characterized by some islet cell nucleomegaly. Early diagnosis and effective treatment are critical to prevent the neurocognitive disorders that dramatically increase treatment costs and have the greatest impact on the lives of patients and their families.[4] Although the neurodevelopmental outcomes of focal and diffuse forms of CHI are similar, the focal form may be cured whereas the diffuse form of CHI is at continued risk of increasing hypoglycemia. This suggests that hypoglycemia before the first treatment may be the peak of brain injury.

Conclusion

CHI imposes a significant psychosocial and economic burden on families, yet effective tools to assess and quantify quality of life for patients and families are currently lacking. Diagnosis and treatment are often delayed, resulting in preventable brain damage and developmental delays in these children. Caring for a child with CHI is extremely difficult and requires constant vigilance to avoid potentially life-limiting neurological damage that is often exacerbated by nutritional problems. Children with CHI report having constant worries and fears that negatively impact their mental health.

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Conflict of interest

The author has nothing to disclose and also state no conflict of interest in the submission of this manuscript.

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