

RESEARCH ARTICLE

FACTITIOUS HYPOGLYCEMIA: A DIAGNOSIS NOT TO BE OVERLOOKED

Nour El Houda Benchaib, Aziza El Ouali, Sara Anane, Amal Hamami, Ayad Ghanam, Abdeladim Babakhouya and Maria Rkain

Manuscript Info	Abstract
<i>Manuscript History</i> Received: 31 May 2024 Final Accepted: 30 June 2024 Published: July 2024	Munchausen syndrome by proxy is a rare psychiatric disorder characterized by inducing symptoms of illness in a child by a close relative, usually the mother, leading to various consultations and more or less invasive medical interventions. Factitious hypoglycemia, a factitious disorder caused by the administration of insulin or other hypoglycemic agents, results in hypoglycemias with severe sequelae. Diagnosis relies on measuring insulin levels, which will be high, and C-peptide levels, which will be low or even undetectable. We report the case of a female infant presenting with factitious hypoglycemia due to an insulin injection, revealed by severe hypoglycemias.
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Introduction:

Factitious disorder, formerly known as Munchausen syndrome by proxy, was first described by Meadow in 1977[1]. This syndrome represents a form of abuse where individuals responsible for children, usually mothers, provoke or fabricate illnesses in them. Diagnosing this syndrome requires great vigilance, as it can manifest in various ways and tests the trust between pediatricians and parents, which is a crucial element of their relation ship [2].

Factitious hypoglycemia is a clinical presentation of this syndrome where generally the mother, as the perpetrator of the disorder, induces hypoglycemia through the exogenous administration of insulin to her child, as is the case withour young patient. Raising awareness among health care professionals about this disorder is essential [2,3].

Case Presentation:

This is a female infant admitted to pediatric emergency services at 24 months of age for a convulsive crisis in the context of apyrexia. Clinical examination on admission found the infant to be drowsy, normocardiac with a heart rate of 98 beats per minute, eupneic at 26 cycles per minute, with a capillary blood glucose level of 0.49 g/l, and no ketones in the urine. She weighed 12 kg and measured 90 cm, both within normal ranges, and no other clinical abnormalities were noted, including no hepatomegaly. Anamnes is with the mother revealed that the child had been known to be diabetic and on insulin since 18 months of age, but this was undocumented and the insulin therapy had been discontinued for some time. She had normal psychomotor development, she was from non-consanguineous parents, and was an only child. In her history, the patient had experienced convulsions secondary to hypoglycemia three months prior to this episode, which required hospitalization in a provincial hospital where she was treated with intravenous 10% glucose, and everything had returned to normal.

During her hospitalization, a recurrence of hypoglycemia was observed, measured at 0.35 g/l, occurring in a sporadic but primarily nocturnal pattern. This was quickly corrected with a 10% glucose infusion for a few hours, followed by several episodes of severe hypoglycemia that did not respond to correction. At this point, the medical

and paramedical team was surprised by the mother's disproportionate reaction, who remained calm despite the situation, and by the fact that stopping insulin therapy should have led to hyperglycemia or normal glycemia if our patient was in the honeymoon phase, rather than severe hypoglycemia.

Continued monitoring of our infant was carried out, and a biological assessment during the hypoglycemia showed hyperinsulinemia at 104.80 μ U/ml (normal: 1.9 to 23 μ U/ml) and a low C-peptide level of 0.29 ng/ml (normal: 0.5 to 2.0 ng/ml). Other tests, including liver function tests, a blood ionogram, 8 am cortisol levels, lactate, and ammonia levels, were normal. These biological results confirm exogenous hyperinsulinemia.

Further questioning of the mother revealed the presence of a rapid-acting insulin vial near the patient, indicating that the mother was secretly injecting insulin in the evenings, causing the exogenous hyperinsulinemia. An urgent psychiatric evaluation of the mother was conducted, followed by psychiatric follow-up and regular monitoring of the child in our clinic.

Discussion:

Hypoglycemia is a common situation in pediatrics, defined as a blood glucose level below 2.2 mmol/l in neonates, below 2.8 mmol/l in non-diabetic children, and below 70 mg/dl in diabetic children. It is a frequent acute complication of type 1 diabetes [4,5]. Typically, the etiological diagnosis of hypoglycemia relies on history, a complete clinical examination, and biological tests, with the frequency of different etiologies varying by age of onset [5,6].

Munchausen syndrome by proxy (MSBP), also known as factitious disorder imposed on another, is a rare psychiatric disorder first described by Meadow in 1977[1]. Women are often involved in this psychiatric disorder using medical methods [7]. MSBP represents a form of child abuse with various presentations, ranging from a mild form, where the caregiver amplifies the clinical picture and necessitates unnecessary and dangerous medical interventions, to a severe form, where the mother induces illness using medications or toxins [1]. MSBP accounts for 0.04% of child abuse cases [8], with infants being the primary victims due to their inability to articulate the abuse, while children over six years old make up only 25% [9]. The prevalence of factitious hypoglycemia in children and adolescents with diabetes is unknown [10,11].

One clinical presentation of MSBP is factitious hypoglycemia induced by the exogenous administration of insulin or oral hypoglycemics [2,3]. The diagnosis of factitious hypoglycemia is facilitated by measuring insulin and C-peptide levels during hypoglycemia, distinguishing between exogenous and endogenous hyperinsulinemia, and is an exclusion diagnosis in the presence of hypoglycemia [12]. Several cases of factitious hypoglycemia have been reported in the literature [13,14]. Kucuker et al. [15] reported a family where several children suffered from hypoglycemia induced by exogenous insulin administration, with the perpetrator also having Munchausen syndrome, inducing hypoglycemia through the same mechanism.

In our service, this is the first recorded case of this form of endocrine factitious disorder, although two other cases of organ disorders induced by the mother have been described, with a history of bleeding, such as hematemesis [16]. Another serious consequence of pediatric condition falsification is that it can lead the victim to develop a factitious disorder in adulthood. Conway et al. reported a case of a child whose mother manipulated sweat test results to simulate cystic fibrosis. Growing up with this diagnosis and undergoing numerous associated interventions, the child ultimately developed characteristics of an adult factitious disorder [17].

Factitious hypoglycemia presents a challenge for physicians. Most cases are diagnosed only after a series of medical consultations, often due to recurrent diseases, resistance to treatment, or multiple family members presenting with similar symptoms and clinical presentations [18,19,20]. Although most missed cases may involve disease fabrication and do not pose a mortality risk, those involving induced illness can present significant morbidity and mortality risks.

Considering that this issue represents a form of child abuse occurring in a medical setting, the child protection system in our state has a clear role to play. Child protection agencies are responsible for ensuring the safety of children who are victims of abuse—whether sexual, physical, or psychological—even if the abuse occurs at home or in the hospital. When handling cases of child abuse in a medical context, the fundamental principles, as with any

other case of abuse, are to ensure the immediate safety of the child, guarantee their future safety, and allow treatment to proceed in the least restrictive environment possible [21].

Conclusion:-

Factitious hypoglycemia is a complex and serious issue, especially when induced by a factitious disorder such as Munchausen Syndrome by Proxy, presenting particular challenges for healthcare professionals. As illustrated by the reported case, where an infant suffered severe crises due to exogenous insulin administration, this condition requires heightened vigilance and a rigorous diagnostic approach.

The diagnosis of factitious hypoglycemia relies on specific biological criteria, such as elevated insulin levels with low C-peptide, and often requires thorough investigation to identify the source of exogenous insulin. This case highlights the importance of ongoing monitoring and comprehensive evaluation when recurrent hypoglycemia is observed without an obvious explanation.

It is crucial for medical teams to remain alert to signs of child abuse in a medical setting and to work closely with child protection services when such cases are suspected. Early intervention, psychiatric evaluation, and rigorous follow-up are essential to ensure the child's safety and prevent serious complications. Ultimately, managing factitious hypoglycemia demands a combination of diagnostic skills, awareness of factitious disorders, and coordination between healthcare professionals and social services to protect vulnerable children and end abuse.

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