MUTATION IN UCP2 GENE: A RARE CAUSE OF HYPERINSULINEMIC HYPOGLYCAEMIA SYNDROME IN A SMALL-FOR-GESTATIONAL AGE NEWBORN

INTRODUCTION

Hyperinsulinism is a common cause of severe and persistent hypoglycaemia during the neonatal period. Eleven genes have been identified that lead to unregulated insulin secretion and hyperinsulinemic hypoglycaemia (HH). Inactivating mutations in UCP2 gene have been described in a very small number of patients with HH. UCP2 protein is an inner mitochondrial carrier protein and its loss of function causes enhanced glucose oxidation and increased intracellular ATP synthesis leading to HH.

CASE REPORT

Male newborn who presented hypoglycaemia since the first hour of life.

Family history: no consanguinity. Mother with hypertension. No history of hypoglycaemia nor diabetes mellitus.

Obstetric history: First gestation of 34 weeks’ duration. O’Sullivan test and TORCH serologies were normal. Third trimester ultrasound detected intrauterine growth restriction (IUGR) and signs of hemodynamic redistribution.

The patient presented persistent asymptomatic hypoglycaemia that required administration of intravenous glucose boluses and continuous enteral feeding by nasogastric tube. Carbohydrates were progressively increased up to 17.4 mg/kg/min. There were no clinical-biochemical markers of infection.

Complementary Tests

Results at 12 days of life under hypoglycaemia (35mg/dL)

<table>
<thead>
<tr>
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<th>normal value</th>
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<tbody>
<tr>
<td>Insulin</td>
<td>1.72 3 - 25 μU/mL</td>
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<tr>
<td>Serum ammonium</td>
<td>88 &lt; 53 μmol/L</td>
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<tr>
<td>Total free fatty acids</td>
<td>0.18 0.6 - 1.3 mmol/L</td>
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<tr>
<td>β-Hidroxibutirat</td>
<td>140 15 - 700 μmol/L</td>
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<tr>
<td>Lactate</td>
<td>1.2 0.3 - 2.1 mmol/L</td>
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<tr>
<td>Cortisol</td>
<td>16 5.27 - 22 -45 μg/dL</td>
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Serum amino acids, urine organic acids, acid-base equilibrium, liver and renal function tests were normal. Echocardiogram and abdominal ultrasound were also normal.

Evolution and treatment

Diazoxide was started at a dose of 5 mg/kg/day at the age of one month with a positive response. It allowed carbohydrate requirements to be significantly reduced, withdrawing the feeding by gastrolysis and prolonging the interval between takes. Diazoxide was well tolerated and suspended with a dose < 3.5mg/kg/day at the age of 3 months. Currently the patient has 13 months and tolerates normal fasting time for age.

CONCLUSION

We have described the case of a small-for-gestational age newborn who presented transitory HH caused by mutation in UCP2 gene, who responded to diazoxide treatment.

BIBLIOGRAPHIC REFERENCES