Hyperinsulinemic Hypoglycemia refers to low plasma glucose levels in the presence of inappropriate insulin secretion by pancreatic β cells. Congenital Hyperinsulinism is one of the most common cause of nonketotic prolonged severe hypoglycemia in neonates. This is a rare condition affecting 1 in 50,000 live births.1

We report a case of severe Hyperinsulinemic Hypoglycemia in a neonate.

CASE PRESENTATION

A 1 day old full term male infant, delivered by Caesarean section presented with severe hypoglycemia few hours after birth. His birth weight was 3.6kg, APGAR score was 8 and 9 at 1 and 5 minutes. He was born to non-consanguineous parents. Mother did not have a history of gestational diabetes mellitus or intake of any medications during pregnancy.

General physical examination was unremarkable except for tachypnea for which he was closely monitored.

Glycemic monitoring revealed persistent hypoglycemia with a recording of plasma glucose 43 mg/dl (2.3 mmol/L), 14 mg/dl (0.7 mmol/L). Simultaneous Cortisol and GH levels were 690 nmol/l (171-536), >10ng/ml respectively and Urine ketones negative. Serum TSH was : 8.53 mIU/ml (1-39), Free T4: 2.32 ng/dl (0.93-1.7). Serum insulin was inappropriately elevated 16 IU/L with a corresponding plasma glucose 39mg/dl and Insulin-Glucose ratio 0.41 (<0.25). Post Glucagon challenge the plasma glucose rose by > 30 mg/dl (1.6 mmol/L).

18 F- DOPA PET/CT confirmed diffuse enhancement in pancreas with higher intensity at head and neck region.

Genetic investigation revealed two heterozygous mutations (Asp854Asn and Arg1394cys) in the ABCC8 gene.

DISCUSSION

Hyperinsulinemic hypoglycaemia (HH) in neonates, formerly described as Congenital Hyperinsulinism is characterised by persistently elevated insulin secretion resulting in severe persistent hypoglycemia.1 2 Already known etiology include inactivating mutations of the K-ATP channel genes (ABCC8 and KCNJ11), HNF4A, HNF1A, HADH, and UCP2 or activating mutations of GLUD1, GOK, and SLC16A1.4 Mutations of ABCC8 and KCNJ11 are likely the main causes of K-ATP-HH as seen in our patient. The most widely accepted treatment is initial treatment with a Glucose infusion as first line to normalise glycaemic level. Octreotide as second line in order to reduce the high Glucose infusion rate (GIR) and Diazoxide (K-ATP channel agonist) as a definitive medical line of management when diagnosis is confirmed.3 4

We successfully discontinued Diazoxide therapy in our patient at age 3 although not much information regarding this is available in literature. A recent study (2018) reports discontinuation of Diazoxide at a median age of 6.8 years in 5 children with Diazoxide- responsive probands HNF1A- and HNF4A.5

REFERENCES

2. Razenkova K et al: High Incidence of Heterozygous ABCC8 and HNF1A Mutations in Czech Patients with Congenital Hyperinsulinism. Dtsch. 10.1210/jc.2015-2763.