



CLINICAL CHARACTERISTICS OF CHILDREN WITH CONGENITAL HYPERINSULINISM: RESULTS FROM THE EUROPEAN REGISTRIES FOR RARE ENDOCRINE CONDITIONS (EURRECA) PROJECT

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INTRODUCTION

Congenital hyperinsulinism (CHI) is a group of rare endocrine disorders characterized by repeated episodes of hypoglycemia caused by an excessive insulin secretion from the pancreas beta cells. The etiopathogenesis, phenotype, treatment, and prognosis of individual CHI cases are variable and not completely described.

AIM

To gather and describe clinical and genetic data about CHI cases diagnosed within the large European Registries for Rare Endocrine Conditions (EuRRECa) network.

METHODS

From July 2018 to March 2020, a total of 17 investigators from 14 European reference centers embedded in EuRRECa programme (<https://eurreca.net/>) reported 77 cases of CHI using a simple e-Reporting (e-REC) tool. These investigators were subsequently asked to complete a web-based questionnaire that obtained information on the phenotype, diagnostic procedures, genotype, treatment, and long-term sequelae of reported cases. Cases with confirmed CHI genetic etiology and those with no genetic findings were compared.

RESULTS

The questionnaire was completed in 55/77 (71%) of reported cases from 9/14 (64%) centers. Out of 55 cases, 44 (80%) had a clinically confirmed diagnosis of CHI. Of these, all presented with clinical symptoms of CHI, in 41/44 (93%) laboratory results confirmed the diagnosis. Twenty out of 44 (45%) cases had proven genetic CHI etiology – variants in genes *ABCC8* in 13, *GLUD1* in 3, *GCK* in 2, and single cases of *KCNJ11* and genetically confirmed Beckwith-Wiedemann syndrome. Thirty-two patients (73%) presented first symptoms within the first 7 days of life. In 41/55 cases, the treatment modalities were reported. CHI cases were most frequently treated with intravenous glucose (28 cases), dietary recommendations (35 cases), diazoxide (33 cases), octreotide (4 cases), long-acting octreotide (1 case), and glucagon (1 case) application. Six children underwent surgery, 5 partial and 1 total pancreatectomy. Currently, 28/44 (64%) children have age-appropriate neurological status and 5/44 (11%) have delayed psychomotor development. Current neurological status was not reported in 11/44 (25%) cases. Compared to the children without known genetic etiology, those with genetically confirmed CHI were treated less frequently with diazoxide (60% vs. 88%), and more frequently with octreotide (20% vs. 0%) and with surgery (30% vs. 0%). The long-term outcomes did not differ between groups (psychomotor retardation was reported in 10% vs. 13%).

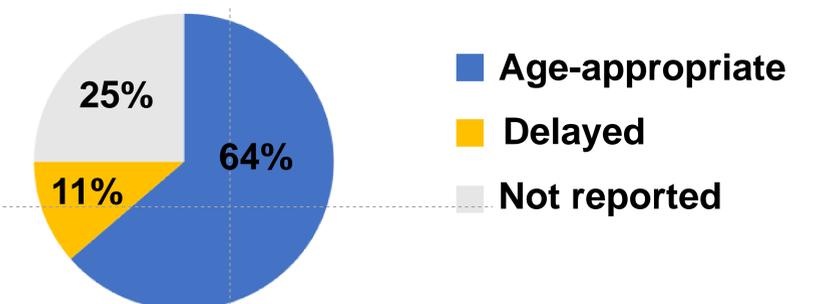


Figure 1 – Current neurological status of reported children with CHI

CONCLUSIONS

This first report on CHI from the EuRRECa network showed significant heterogeneity in etiology, phenotype, outcome, and treatment modalities. Children with genetically confirmed etiology presented with more severe symptoms requiring complex treatment. Octreotide treatment and surgery were used only in children with genetic diagnosis of CHI.

