NEONATAL DIABETES MELLITUS IN VIETNAM NATIONAL CHILDREN'S HOSPITAL

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Introduction

Neonatal diabetes mellitus (NDM) is a rare (1:300,000–400,000 newborns) but potentially devastating metabolic disorder characterized by hyperglycemia combined with low levels of insulin. Two main groups have been recognized on clinical grounds, transient NDM (TNDM) and permanent NDM (PNDM)

Objectives:

To describle clinical features and laboratory manifestations of patient with NDM and evaluate outcome of management.

Methods:

Clinical features, biochemical finding, mutation analysis and management outcome of 38 cases from 38 unrelated families were study. Analysis of the coding regions and conserved splice sites of the *KCNJ11, ABCC8, INS, INSR, EIF2AK3, FOXP3, GATA4, GATA6, GCK, GLIS3, HNF1B, IER3IP1, PDX1, PTF1A, NEUROD1, NEUROG3, RFX6, SLC2A2, SLC19A2, WFS1* and *ZFP57* genes by targeted next generation sequencing. If the mutation of these genes has failed to detect, methylation – specific PCR will be done to detect the loss of methylated region on chromosome 6q24. If the mutaion of these genes has failed to detect, whole genome sequencing will be done to detect mutaion

Results:

38 cases were diagnosed NDM and were identified gene mutation

Demographics :

- Age of diagnosis was 7-357 days of age (median: 44.5)
- Gender: 22 males, 16 females
- Gestation age was 39.1 ± 1.9 weeks
- BW: 2705.5 ± 526.4 gram (42% cases has BW < 3 percentile)

1. Clinical Features and laboratory at diagnosis:

polydipsia, polyuria: 9/38 cases

diabetes ketoacidosis: 29/38 cases

Blood glucose levels on admitted: 36.24 ± 11.1 mmol/l

pH: 7.12 ± 0.19, HbA1C: 7.86 ± 2.89 %

2. **Results of gene mutation analysis** .

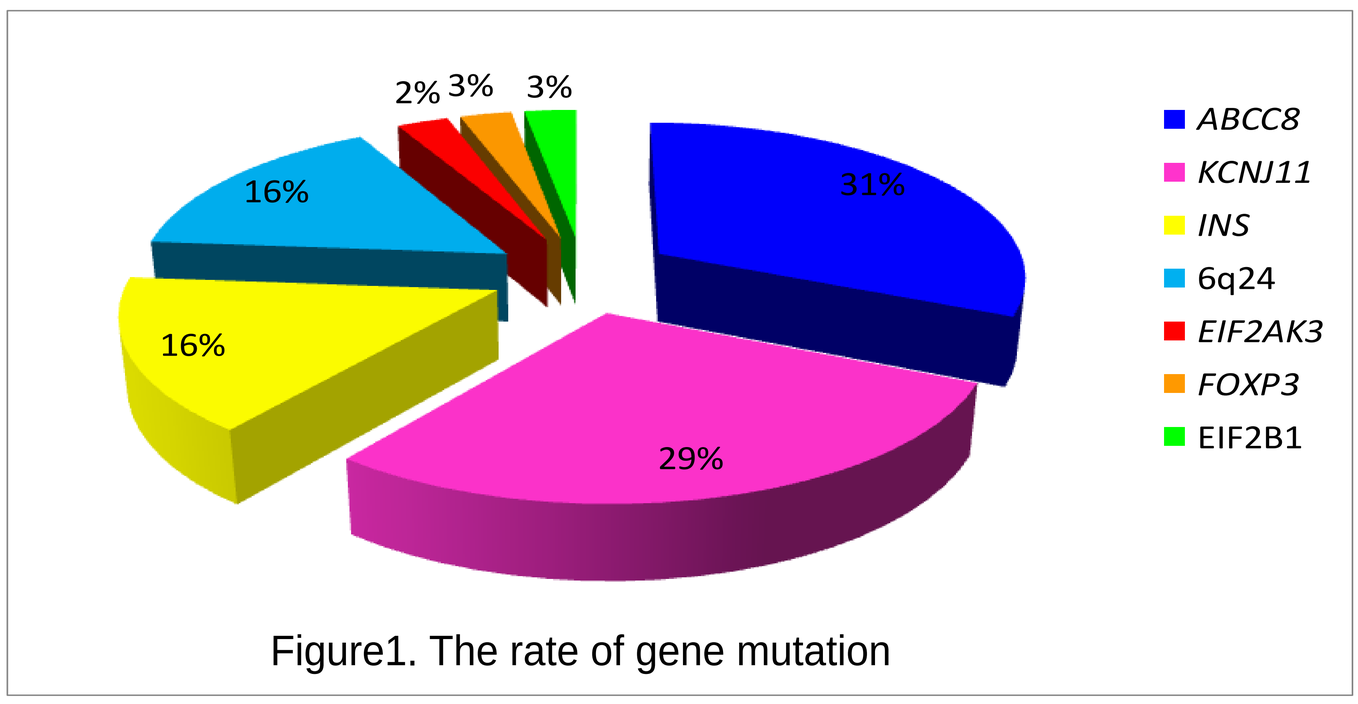

Figure1. The rate of gene mutation

Management and outcome: The patients have been follow up during 54.4 ± 46.6 months (4 months – 14 years):

- Ten patients with TNDM stop insulin at 8.25 ± 5.8 months of diagnosis: 6 cases have abnormal of 6q24, two cases has *ABCC8* mutation and two cases has *KCNJ11* mutation. Now all cases have normoglycemic (blood glucose: 5.0 and 5.9 mmol/l), one patient has mild development delay and 9 patients has normal development.
- 28 patients with PNDM: 19 cases successfully transferred onto sulfonylureas and did not need insulin injections, 8 cases require insulin, one case with *FOXP3* gene mutation died for immunodeficiency. In there, 2 case with DEND syndrome have development delay, others cases have normal mental development

Conclusions:

It is important to perform screening gene mutation for patients with diabetes diagnosed before 12 months of age to control blood glucose and follow up the patients

References:

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Conflicts of interest: None declared

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