First 2 cases of monogenic diabetes (MODY) from Kazakhstan, Almaty with proven heterozygous mutation in hepatocyte nuclear factor 1-alpha (HNF1A) gene

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Introduction:

•It is important to make correct diagnosis of monogenic diabetes or MODY in children. Most of the patients are misdiagnosed with diabetes type 1 or type 2 and undergo unnecessary treatment with insulin or oral medications. We report first 1 case of MODY with heterozygous mutation in HNF1A gene when Insulin treatment was changed to sulphonylurea treatment and 1 case of compound heterozygote of glucokinase (GCK) gene and HNF1A gene mutations.

Case 1:

•An 11-year-old girl presented with diabetes with HB A1c 10.4%. Mutations HNF1A p.Q170E and p.R171Q were found in her case, MODY 3. Gliclazide was initiated and insulin therapy was stopped. Her glucose level improved. Mother and aunt have the same mutations, HNF1A p.Q170E and p.R171Q and were treated with Gliclazide oral sulphonylurea that normalized glucose level. MGM, MGF, 6 sisters and 1 brother have diabetes. Analysis of HNF1A is pending in the other cases of this family. We report first 1 case of MODY with heterozygous mutation in HNF1A gene in Kazakhstan, in which Insulin treatment was succesfully stopped and changed over to oral sulphonylurea therapy.

Case 2:

•A 7-year-old girl presented with diabetes with Hb A1c 6.8 % at diagnosis. Heterozygous mutation p.Ser433Ala (c.1296delC) in GCK gene and Heterozygous mutation in HNF1A gene p.Thr190Ala (c.568 A>G) were found. Her glucose control has been well controlled by diet so far, similar to other cases of MODY-2 secondary to GCK gene mutations. Mother has diabetes with Hb A1c 7.5%, her gene analysis is pending.

Conclusions:

•The confirmation of the MODY diagnosis results in a personalized treatment, discontinuation of unnncessary insulin treatment. Children with diabetes and negative ß-cell antibodies, positive family history of diabetes need to be screened for MODY in Kazakhstan. In this population the frequency of known MODY cases can be increased with genetic analysis at diagnosis.

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