Different Clinical Findings in Maturity Onset Diabetes of The Young due to B-Lymphocyte kinase gene mutation

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Background: B-Lymphocyte kinase gene (*BLK*) gene acts on insulin synthesis and secretion, and mapped locus on chromosome 8p23. Although, BLK overexpression is accompanied by 70% increase in insulin, the BLK knockdown was associated with a tendency to lower insulin content. Monogenic diabetes due to BLK gene mutation is very rare and it's named as MODY11.We aimed to present differences in clinical, laboratory and treatment of the patients with BLK mutations.

Methods: The Human Gene Mutation Database (HGMD), Clinvar, dbSNP and Exac database used for known or new variants causes MODY. Classification of variants performed according to ACMG 2015 Guidelines.

Results: Case 6 and 7 were siblings and their parents were first cousin. OGTT performed in six patients. Seven patients have heterozygous mutation in *BLK* gene. Clinical, laboratory and genetic results of the patients were given in Table. Mutation in siblings were novel. Although basal and bolus insulin therapy for Case 3 and metformin therapy for Case 4 were given, diet was enough to regulate blood glucose.

No, Sex	Case 1, F	Case 2, M	Case 3,M	Case 4, F	Case 5, F	Case 6, M	Case 7, M
Age at diagnosis, years	15.4	13.08	12.08	11.72	7	4.24	5.88
Birth weight, gr	2850	3400	2900	3200	NA	2730	3730
Affected parents		Father		Mother			
Gestational DM in mother	No	No	Not performed	Yes	No	Yes	Yes
BMI, kg/m2	20.69	15.52	21.05	15.73	18.06	16.28	21.10
BMI-SD	0.18	-0.58	0.92	-1.02	1.19	0.46	2.52
Fasting Glucose mg/dL	77	104	279	141	157	112	130
2 hr-glucose, mg/dL	68	173	Not performed	166	137	102	102
Fasting insulin, uIU/mL	11.5	8.9	3.6	4.1	5.09	3.8	4.3
2 hr-insulin, uIU/mL	28	64.3	Not done	21.1	33.76	9.2	18.4
Fasting c-peptide, ng/mL	1.6	0.88	0.09	NA	1.57	0.68	1.48
HbA1c,%	5.4	5.7	12.2	6.3	4.5	5.5	5.0
Autoantibody positivity's		No	No		No	No	No
Treatment	Diet	Diet	Insulin	Metformin	Diet	Diet	Diet
Exon	11	4	4	4	9	9	9
cDNA variants	c.1075 C>T	c.211G>A	c.211G>A	c.211G>A	c.223C>G	c.900C >A	c.900C >A
Amino acid change	p.Arg359Cys	p.Ala71Thr	p.Ala71Thr	p.Ala71Thr	p.Arg75Gly	p.Tyr300Ter	p.Tyr300Ter
ACGM 2015 guideline	Uncertain significance	Likely Benign	Likely Benign	Likely Benign	Uncertain significance	**Novel**	**Novel**

Conclusion

We found one novel mutation in *BLK* gene. Also two uncertain significances in *BLK* gene were presented. More patient information is needed to identify patients' referral findings and treatment modalities.