Introduction

We report the case of a 19 years old male patient suffering from a multisystematic disease involving the skeleton, connective tissue, immune system, brain and endocrine system due to compound-heterozygote mutations in the NBAS gene, who has also developed an insulin-dependent Diabetes Mellitus at the age of 11 years. He has an immunodeficiency including decreased CD4+ T-cells, B-cells and NK-cells with expanded early CD8+ effector and activated T-cells, and absence of immunoglobulins.

Conclusions

NBAS gene mutation causes Insulin-dependent Diabetes Mellitus in a patient with a multisystem disorder consisting immunodeficiency and extremely short stature.

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NBAS Gene (Neuroblastoma amplified sequence gene)

This gene encodes a protein with two leucine zipper domains, a ribosomal protein S14 signature domain and a Sec39 like domain. The protein is thought to be involved in Golgi-to-ER retrograde transport of vesicles, allowing the distribution of proteins from the ER to the Golgi compartments.

Whole-exome DNA sequencing by our patient:

Compound heterozygote mutation (c.5741G>A [p.(Arg1914His)]; c.6565_6566insT [p.(Glu2189Valfs*7)])

Clinical features associated with NBAS mutation

Red: clinical features of our patient

- Short stature
- Optic nerve atrophy
- Retinal dystrophy
- Pelger-Huet anomaly of the granolocytes
- Normal intelligence
- Akute infantile liver failure
- Senile face
- Reduced skin turgor and elasticity
- Osteoporosis
- Skeletal dysplasia
- Hypogammaglobulinemia
- Elevated transaminases
- Hepatomegaly
- Cervical instability
- Cerebellum hypoplasia
- Inflammatory bowel disease
- Celiac disease

Appearance of Diabetes Mellitus

At the age of 11 our patient developed an insulin-dependent diabetes mellitus with a decreased c-peptid.

Conclusions

Our patient is the first patient with a mutation of the NBAS gene who has developed a diabetes mellitus. We suggest that the immune dysregulation associated with the NBAS gene mutation promoted the development of the diabetes.

The authors have nothing to disclose.