Background

• TRNT1: CCA-adding transfer RNA nucleotidyl transferase
• TRNT1 enzyme deficiency is a newly reported inborn error of metabolism caused by defective post-transcriptional modification of mitochondrial and cytosolic transfer RNAs (tRNAs).
• TRNT1 mutations cause a complex multisystem disease leading to manifestations in most organs.
• We here described the effect of growth hormone (GH) treatment on short stature in two siblings with TRNT1 deficiency.

Case Presentation

• Two siblings presented with developmental delay, anemia, elevated transaminases, recurrent infection, hearing loss, macrocephaly and severe failure to thrive.
• Both were initially diagnosed with SIFD (sideroblastic anemia, immunodeficiency, fever, developmental delay).
• They were later confirmed to have TRNT1 mutation by whole exome sequencing.

Patient 1

• 6 years old female initially presented to endocrine clinic at 18 months of age for severe short stature and episodes of hypoglycemia.
• Lab evaluation was only remarkable for low IGF1. Other pituitary evaluation and hypoglycemia workup were unrevealing.
• She was started on GH treatment at 18 months of age. Her hypoglycemia resolved and growth velocity is also improving.
• As of now, she has been on GH treatment for 3.5 years. Her height SDS has increased from pretreat - 4.22 to current - 3.22.

Patient 2

• The younger male sibling of patient 1. He has more severe phenotypes than patient 1
• He presented to endocrine clinic at 14 months of age also for severe short stature evaluation.
• Lab evaluation revealed low IGF1 without other pituitary deficiency.
• He was started on GH treatment at 15 months of age. At 20 months of age, he became very ill due to recurrent infection and severe anemia. As a result, his GH treatment was on hold up to now.

Discussion

• TRNT1 mutations cause a spectrum of disease ranging from a childhood-onset complex disease with manifestations in most organs to an adult-onset isolated retinitis pigmentosa presentation. The severity of the signs and symptoms vary widely.
• The clinical manifestations in children can include cyclical, aseptic febrile episodes, sideroblastic anaemia, B lymphocyte immunodeficiency, retinitis pigmentosa, hepatosplenomegaly, exocrine pancreatic insufficiency and renal tubulopathy, sensorineural deafness, cerebellar atrophy, brittle hair, partial villous atrophy and nephrocalcinosis.
• About 20 cases have been reported in the literature so far.
• This is the first report of growth hormone treatment on short stature in the patients with TRNT1 deficiency. So far, the result of patient 1 appears to be encouraging although more long term data are needed.