Interaction of immune response in Niemann pick disease type C 1 of children

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OBJECTIVE

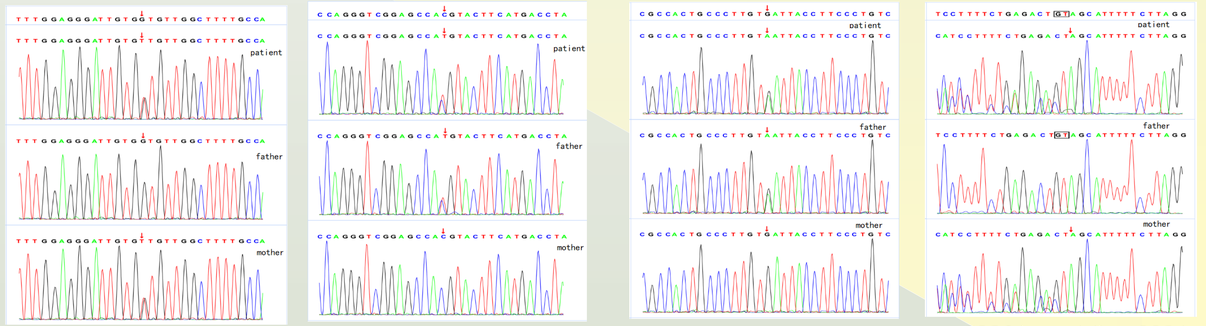
Niemann-Pick disease type C（NPC）is a group of rare autosomal recessive genetic diseases caused by mutations of NPC1 or NPC2 genes. However, the pathogenesis of NPC has not been fully understood, and there is no effective therapy. Miglustat is currently the only specific drug approved for the treatment of NPC especially in the early course of disease, but it has also been reported that it does not improve survival in early infantile-type children. Neuroinflammation may contribute to the development of neurodegenerative of NPC, thus causing activation of the immune system, and it is hypothesized that suppression of the immune response may improve the clinical manifestations

METHODS

The clinical and immunological characteristics of 2 children with NPC1 were summarized and their diagnosis and treatment were analyzed

RESULTS

Case1: A pervious healthy 7-year-old boy with abnormal walking gait, uncoordinated posture and gradual regression of intellectual development, language disorder was presented to our hospital on 2022. Physical examination showed vertical supranuclear gaze palsy (VSGP) and ataxia. He had a positive of anti-GQ1b-IgM in serum, while negative in CSF. The brain MRI and EEG were normal and the spleen was slightly enlarged by ultrasound. EMG showed possible damage to the left common peroneal nerve. The gene test showed the NPC1 compound heterozygous mutations. The boy was treated with IVIG 2g/kg divided in 2 days followed by IVMP (20mg/kg/day for 5 days) and gradual oral tapering, and intravenous ganciclovir for 2 weeks. The boy showed gradual eyes and gait improvements in a 4-month follow up



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Case2: A pervious healthy 11-year-old girl with abnormal walking gait, reduced ability of memory and speech disorder was presented to our hospital on 2019. Physical examination showed ataxia. The anti-EBV-CA-IgG was positive in CSF and increased IgA was also tested. The brain MRI showed deep bilateral frontotemporal sulci and subcortical lacunar foci and EEG was normal. The girl was treated with IVIG 2g/kg divided in 2 days followed by IVMP (20mg/kg/day for 5 days) and gradual oral tapering, and intravenous ganciclovir in 2 weeks, while she showed slight progress. Eight months after her discharge, walking gait worsen and IgA in CSF remained high. The head PEC-CT showed autoimmune encephalitis(AE). The gene test showed the NPC1 compound heterozygous mutations. The girl was diagnosed with NPC1 and AE. She receive immunotherapy again and showed slightly improvements

CONCLUSIONS

Immune response may play a role in the pathogenesis of NPC, and immunotherapy may improve some symptoms in children, which may become a new therapeutic target direction

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