P 3-74

Deletion of Ca2+-dependent Activator Protein for Secretion Gene in a Patient with Cerebellar Ataxia

Seungbeen Hong[1*], Su Ji Lee[1], Seok Young Chung[3], Sung-Rae Cho[1,2†]

Yonsei University College of Medicine, Department of Rehabilitation Medicine and Research Institute[1], Yonsei University College of Medicine, Brain Korea 21 PLUS Project for Medical Science[2], Gangnam Severance Hospital, Rehabilitation Institute of Neuromuscular Disease, Yonsei University College of Medicine, Department of Rehabilitation Medicine[3]

Introduction

Cerebellar ataxia is characterized by impairment of balance and coordination caused by dysfunction of cerebellum. It has heterogeneous etiology. Chronic progressive ataxia is the most common form of hereditary cerebellar ataxia, although its rate of progression and severity are variable depending on the causative gene. Various genes are related to cerebellar function. Here, we present a 33-year-old male patient with cerebellar ataxia. He was first considered to have a psychiatric conversion disorder but supposed to have de novo Ca2+-dependent activator protein for secretion (CADPS) gene deletion.

Case Reports

A 33-year-old male patient visited the clinic of our hospital to be evaluated for weakness of bilateral lower extremities and balance problem. He recognized weaknesses in both lower extremities since January 2017. Several examinations including brain MRI and C-spine MRI revealed no specific findings. When he was referred to our hospital in April 2017, he showed weakness for both legs along with poor standing balance, resulting in an inappropriate ambulation without hand support. To assess causes of his symptoms, we performed nerve conduction studies and somatosensory evoked potential studies. Results did not show any evidence of peripheral neuropathy or central conduction defect. Laboratory results for anti-GM1 antibody, anti-GD1b antibody, and anti-myelin associated glycoprotein antibody were all negative. Official readings of brain MRI and C-spine MRI were within normal limits. Since cerebellar ataxia pattern was definitely seen in physical examinations, we decided to perform brain PET-CT scan despite normal brain MRI findings. Findings of brain PET-CT scan revealed decreased FDG uptake in the anterior cerebellum. (Figure 1) We also performed next-generation sequencing(NGS) to identify genetic mutations. Copy-number variation was detected by NGS result due to chromosomal deletion at 7q31.2 - 7q31.32. We conduct chromosomal microarray study to confirm the possibility of genetic deletion. Comparative genomic hybridization by

oligonucleotide arrangement (microarray) showed a deletion of approximately 8.6Mb in the 'q' arm of chromosome 7 involving band 7q31.2q31.32 (Table 2) known to be associated with CADPS2 gene deletion and autism spectrum disorder. Genetic analyses from the patient's parents were also performed. We could not find gene deletion in 7q31.

Discussion

We present a 33-year-old male patient with cerebellar ataxia diagnosed after adulthood without a specific birth history or past medical history. It is important to consider the possibility of ataxia caused by various gene mutations after excluding common causes of ataxia. Moreover, further study is necessary to reveal a number of diseases not presently diagnosed and determine the fundamental treatment of diseases.

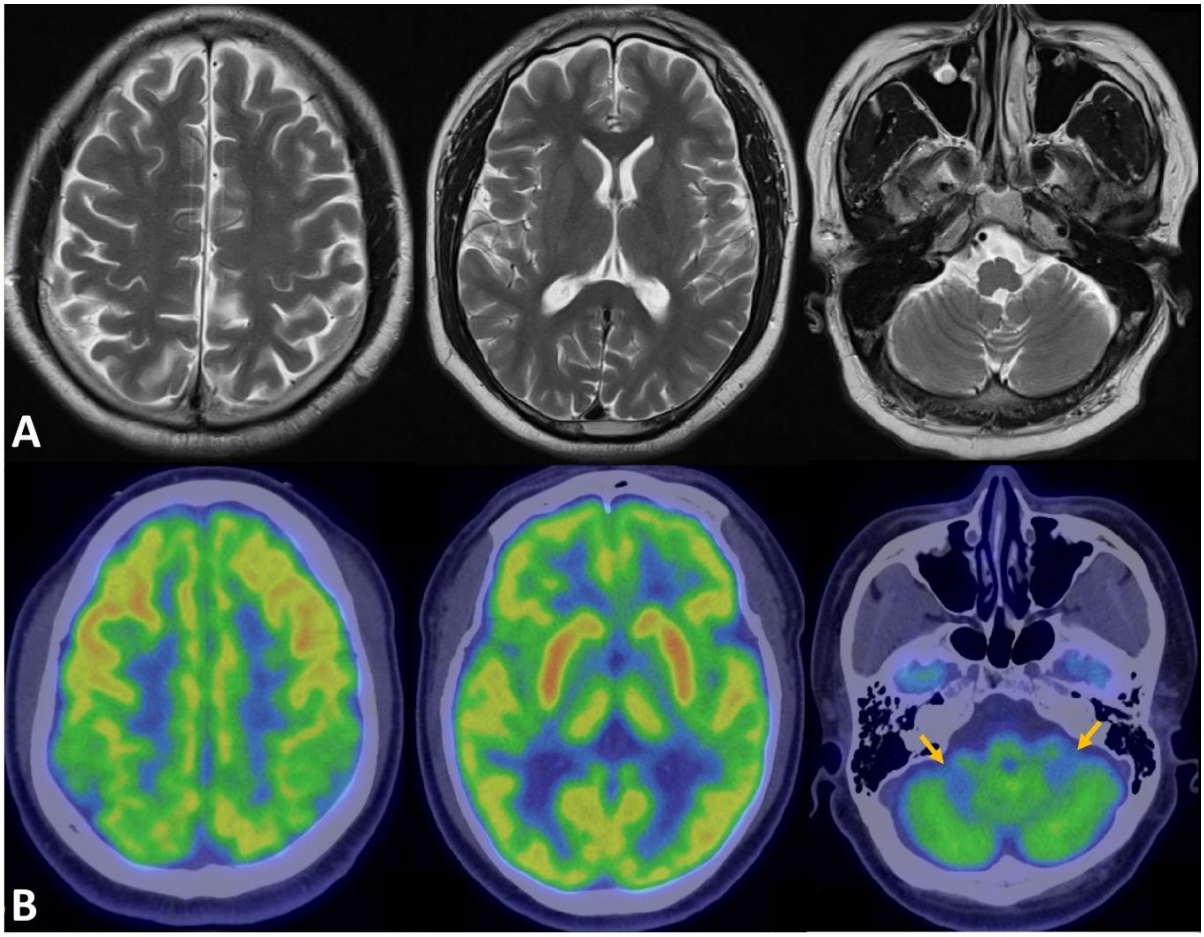

Figure 1. Brain MRI images and PET-CT fusion images. There was no remarkable finding in brain MRI images (A), although hypometabolism in the anterior cerebellum was noted (B; arrow).