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CADASIL with balance disturbance indentified CRP abnormalities on DTT: CASE report

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INTRODUCTION

Cerebral autosomal dominant arteriopathy with subcortical infarcts and leukoencephalopathy (CADASIL) is a genetic disorder that causes stroke and dementia and main symptoms are migraine and cognitive impairment. CADASIL is caused by a mutation in the Notch3 gene on chromosome 19. We report a case of CADASIL diagnosed with dizziness and balance disturbance and analyzed the cause of balance disturbance through diffusion tensor tractography (DTT).

CASE REPORT

A 58-year-old man visited the emergency room with disorientation for one day. The patient had a history of left thalamus infarction 6 years ago and a history of infarction of left basal ganglia and corona radiata 3 months ago. The father of the patient had a history of cerebral infarction. The patient had no history of hypertension, diabetes, or arrhythmia. 3 months ago, c.1630C> T mutation was detected through NOTCH3 gene analysis and CADASIL was diagnosed. At admission, the patient complained of vomiting with dizziness, unable to maintain standing posture due to difficulty in balance control. The cognitive function of the patients was relatively preserved with an MMSE of 26 points. The patient was assessed to be at least grade 4 in the right extremities muscle strength. Hypesthesia of the right side was noted, but proprioception was normal. Cerebellar function test showed abnormal in tandem gait. The patient was diagnosed with acute infarction of the left corona radiata by magnetic resonance imaging (MRI) diffusion weighted image (DWI). In the gradient recalled echo (GRE) images, numerous microhemorrhages and subcortical white matter lesions were observed in the bilateral basal ganglia, thalamus, and pons regions. In corticospinal tract, medial lemniscus, and corticoreticular pathway (CRP), the left bundle of nerves was not connected to the cortex and the bundle of neurons in the left side of arcuate fasciculus was decreased in volume compared to the right on the MRI DTI. The ponto-cerebellar, cingulum, fornix tract showed normal findings. Patient was treated with anticoagulant therapy for acute infarction, physical therapy including balance training, and occupational therapy including hand manipulation training.
 After one week of hospitalization, the patient still had difficulty in control the balance. After 10 days of hospitalization, dizziness of aspect of vertigo recurred. On a repeat brain MRI DWI, a high

intensity signal was seen in the left frontal lobe. The patient was already taking anticoagulant and started the antivertigo treatment. After one month of hospitalization, dizziness was relieved, the patient was able to walk himself in hospital room. The patient planned an outpatient visit after discharge.

CONCLUSION

We report a case of CADASIL patient who complain of dizziness and balance disorders. The cause of dizziness and balance disorders in this patient is thought to be due to abnormalities in the CRP.

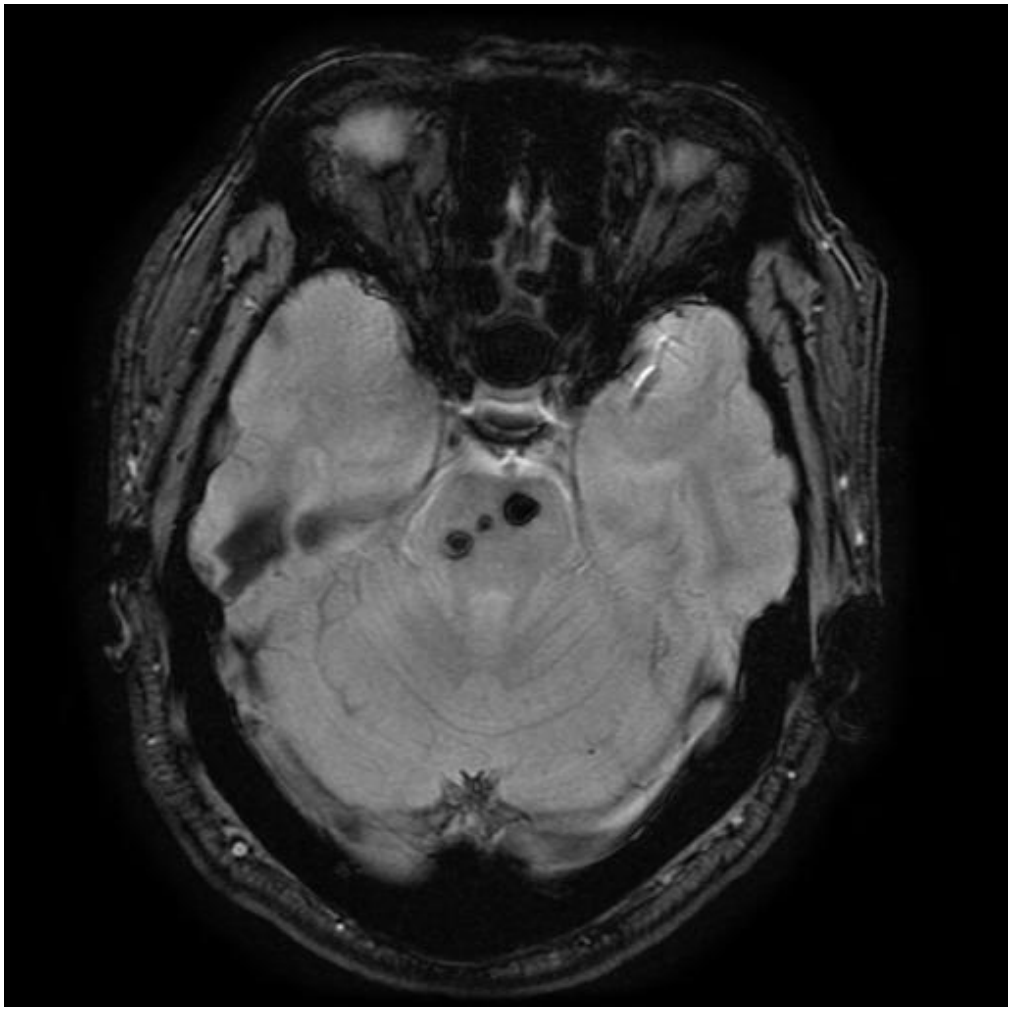

Figure.(1-A). Microbleeding in pons (1-A) and Brainstem (1-B) of MRI GRE.

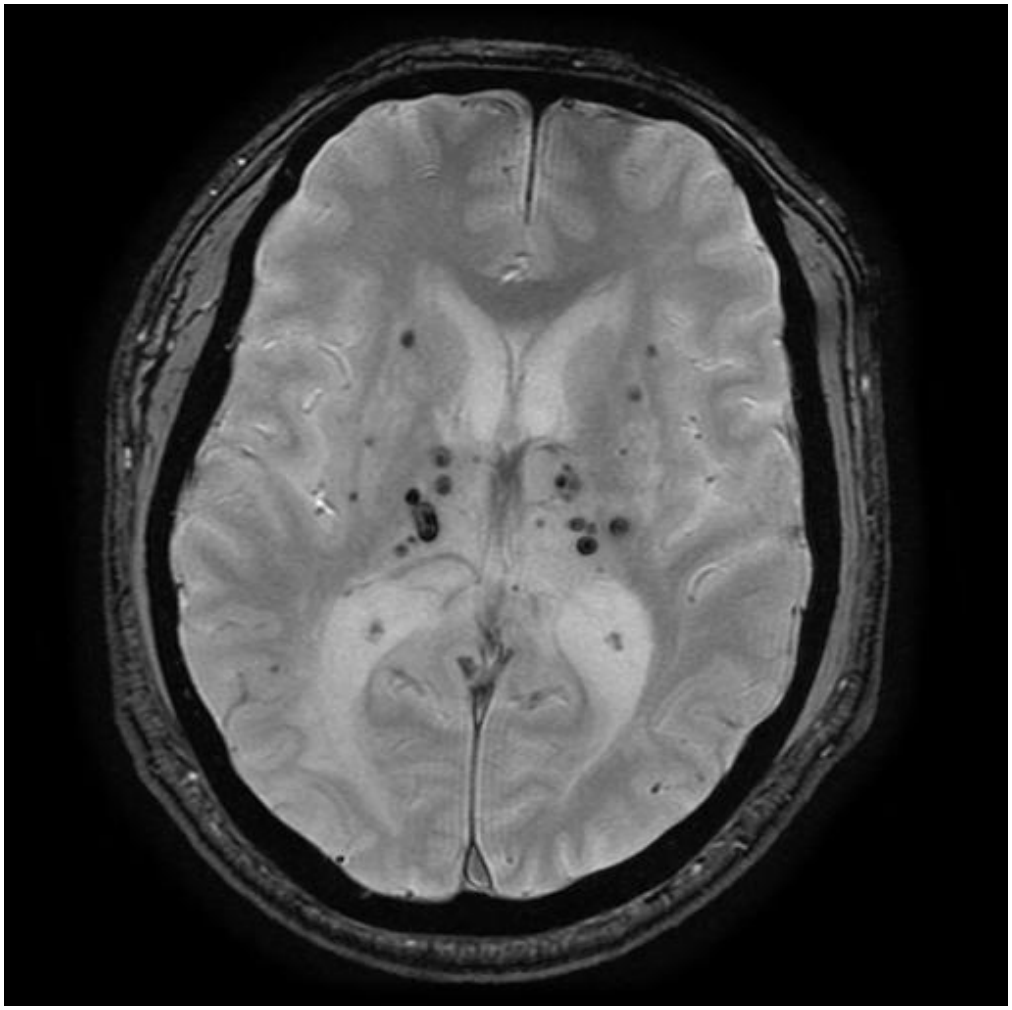

Figure.(1-B). Microbleeding in pons (1-A) and Brainstem (1-B) of MRI GRE.

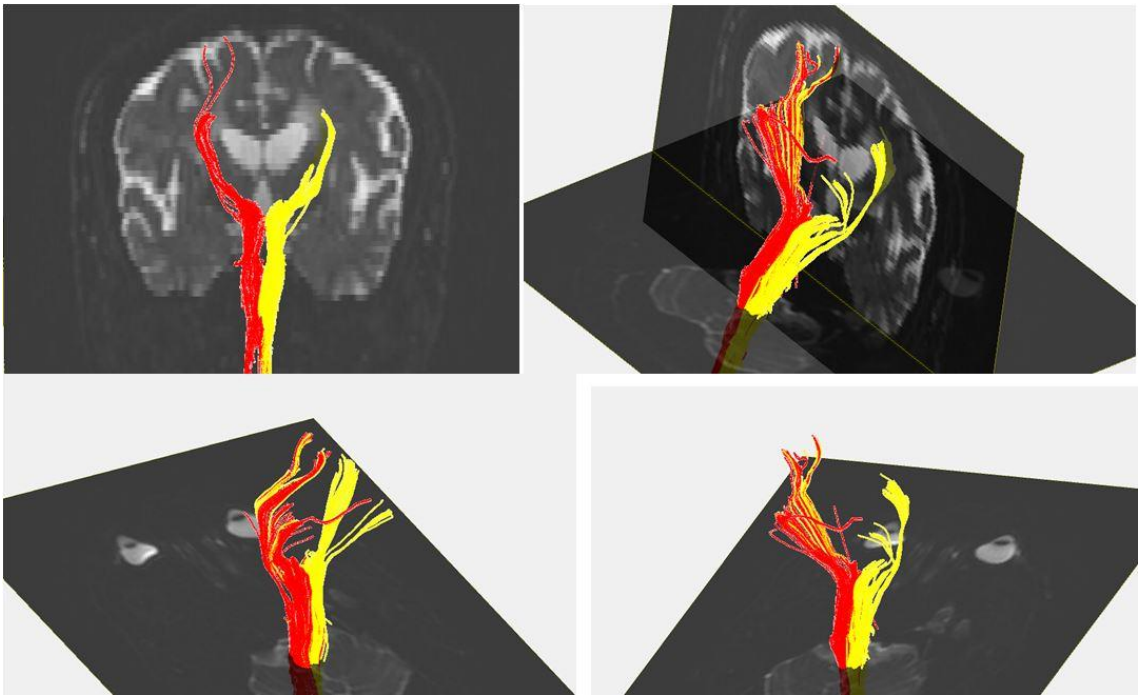

Figure2.