

Abnormal findings in the basal ganglia: a diagnostic clue for patients with diabetic striatopathy

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DESCRIPTION

A man in his early 70s was admitted to our hospital with uncontrollable bilateral arm movements that had started 2 days prior to the presentation. He had a negative history of chorea, diabetes mellitus, and exposure to manganese and organic mercury. He also had no family history of chorea. He was not taking any medications. However, he had not undergone a health check-up in the past decade.

Neurological examinations indicated involuntary ballism of bilateral limbs, mainly in the left arm (video 1). Laboratory test results showed a fasting blood glucose level of 188 mg/dL and a haemoglobin A1c level of 14.8% without the elevation of urine and serum ketone body levels. There were no abnormal findings in calcium, manganese, copper, ceruloplasmin, ammonia, C reactive protein, antinuclear antibody test and thyroid hormone levels.

CT scans showed high-intensity lesions in bilateral basal ganglia (figure 1A). MRI shows increased signal intensity on T1-weighted imaging (T1WI) (figure 1B). He was diagnosed with diabetic striatopathy (DS) and hospitalised. His ballism disappeared through the treatment with insulin injection therapy and a combination of intramuscular injection of haloperidol and oral risperidone. After 10 days of these treatments, haloperidol and risperidone were discontinued, but the ballism did not recur and he was discharged. Basal ganglia lesions on MRI remained 4 weeks after the onset. However, these findings disappeared 13 weeks after the onset.

DS is an uncommon condition presenting in patients with poor diabetic control and characterised by acute to subacute ballism/chorea.¹ Strict blood glucose control is required to treat DS. Moreover, additional anti-chorea medications may be needed in patients whose symptoms

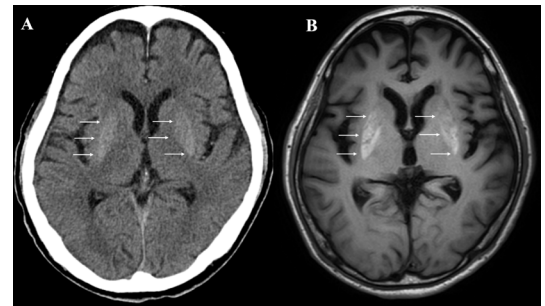


Figure 1 (A) CT scans showed high-intensity lesions in the basal ganglia bilaterally. (B) MRI showed increased signal intensity on T1-weighted images in the bilateral basal ganglia.

cannot be controlled by regulating blood glucose levels.¹

CT hyperintensity and increased signal intensity on T1WI MRI in basal ganglia are characteristic findings observed in 79% and 95% of patients with DS, respectively.² Pathologically, astrocytosis, haemosiderin-contained macrophages, haemosiderin deposits and erythrocyte extravasation are reported.² Therefore, microvascular haemorrhage is thought to be a probable cause of DS. Radiological abnormalities disappeared following improved blood glucose control in approximately 120 days on MRI and 24 days on CT, which considerably surpassed the time required for improvement in ballism/chorea.²

Acute to subacute ballism/chorea can also occur in patients with Huntington's disease, cerebrovascular disease, hepatic encephalopathy, Wilson's disease, systemic lupus erythematosus, poisoning (manganese and organic mercury) and several drugs (levodopa, antidepressant, phenytoin and cocaine). Among them, similar radiological findings on basal ganglia can be observed in patients with Wilson's disease, hepatic encephalopathy and poisoning (manganese and organic mercury).² Therefore, medical interviews and examination of these conditions may be necessary in addition to diabetes.



Video 1 Involuntary ballism affecting mainly his left arm was observed.



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Patient's perspective

I lost all control of my limbs and called an ambulance. I thought I had an abnormality in my brain. I never dreamed that diabetes was the cause of this symptom. I was treated and am now well. I would like to thank the doctors and staff.

Learning point

- ▶ Diabetic striatopathy (DS) is a rare but important diabetic complication characterised by acute to subacute ballism/chorea.
- ▶ Hyperintensity on CT and increased signal intensity on T1-weighted MRI in basal ganglia are characteristic findings of patients with DS. Teenao
- ▶ It could be noted that these abnormal findings in basal ganglia persist after a symptomatic improvement and also appear in Wilson's disease, hepatic encephalopathy, and several poisoning.

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Case reports provide a valuable learning resource for the scientific community and can indicate areas of interest for future research. They should not be used in isolation to guide treatment choices or public health policy.

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