

Chorea Associated with Nonketotic Hyperglycemia: A Case Report

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Abstract

A 79 years old Chinese man presented with 2 episodes of unilateral chorea of left limb (with a short period of bilateral). MRI performed after the onset of the first episode showed multiple old infarctions at bilateral basal ganglia. The first episode lasted about 3 weeks, was resolved after blood glucose better controlled. About 1 week later, he had the second episode. MRI showed high signal intensity on T1-weighted images, low signal intensity on T2-weighted images. This episode was resolved in about 1 week with better glucose control and haloperidol. It suggested that there may be an association of chorea and changes of basal ganglia.

So far, there are very limited reports on chorea associated with nonketotic hyperglycemia, only few hundreds of cases reported. It affects elderly type 2 diabetics, is reported more common in Asians. It can be unilateral or bilateral. The pathogenesis remains unclear. Changes of basal ganglia and putamen seems be contributing.

Case Report

A 79 years old Chinese man presented to our hospital about 2 weeks after the first episode of chorea of the left lower limb, with random blood glucose of 29.3mmol/L and negative for ketone. MRI was performed and revealed high signal intensity on T1-weighted and low signal intensity on T2-weighted images on bilateral basal ganglia (Figure 1a), suggesting old infarction. He was treated with Aspart and Acarbose, and his blood glucose was better controlled. His chorea symptom was diminished in about 3 weeks. One week later, he had the second episode, with occasional chorea of right limb as well. His random blood glucose was 11.9mmol/L. MRI showed similar images to that of the first episode (Figure 1b). This time, he was given haloperidol 2mg bid and acupuncture, besides better glucose control with insulin pump. He was also given other medication such as aspirin, heparin, vitB12, Lipitor, and a-lipoic acid. The symptom was resolved in about 10 days.

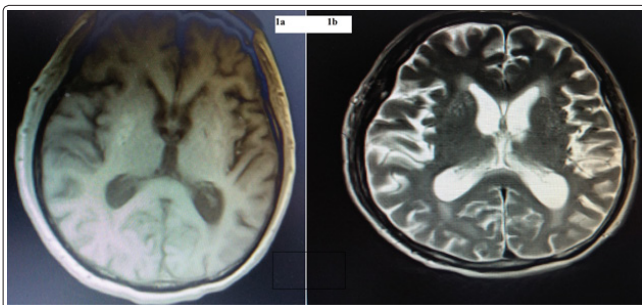


Figure: MRI of brain after two episodes of chorea. **Figure 1a:** after the first episode, MRI showed high signal intensity on T1-weighted and low signal intensity on T2-weighted images on bilateral basal

ganglia. **Figure 1b:** after the second episode, MRI showed high signal intensity similar to that of the first episode.

Discussion

The pathophysiology of chorea associated with nonketotic hyperglycemia remains unclear [1]. From the case reported, it appeared that there is an association with abnormality of basal ganglia, especially putamen, and hyperglycemic, hyper osmolality state [2]. There is a recent report with striatal hyperglycemic nonketotic signal changes occurring in the setting of a front temporal craniotomy for resection of a sphenoid wing meningioma [3]. It can be an initial presentation of diabetes mellitus [4]. Yet, it also presented in patients with normal blood glucose but history of poor diabetic control [5]. Some chorea resolved sooner and some rather slowly [6]. Few possible explanations have been proposed [1, 7]. First, it is the change in water/viscosity. Second, it is myelin breakdown. Thirdly, it may be the blood product. Fourthly, it could be the deposition of mineral/calcium. Fifthly, it might be wallerian degeneration. Sixthly, it seems associated with protein desiccation Wail.

Further and more prefunding explanation shall add great value for management of patients with chorea associated with nonketotic [8].

References

1. Wintermark M, F.N., Mukherjee P, Yuh EL, Dillon WP (2004) Unilateral putaminal CT, MR, and diffusion abnormalities secondary to nonketotic hyperglycemia in the setting of acute neurologic symptoms mimicking stroke. AJNR Am J Neuroradiol 25: 975-976.

2. Cosentino C, Nuñez Y, Suarez R, Velez M, Flores M, et al. (2016) Hemichorea/Hemiballism Associated with Hyperglycemia: Report of 20 Cases. *Tremor Other Hyperkinet Mov (N Y)* 6: 402.
3. Abou-Al-Shaar H, Alzhrani G, Gozal YM, Karsy M, Couldwell WT (2018) Hyperglycemic Nonketotic Signal Changes of the Striatum: An Unusual Complication in the Setting of Neurosurgical Procedures. *World Neurosurg* 118: 177-180.
4. Roy U, Mukherjee A, Biswas D, Pan K, Biswas A, et al. (2016) Irreversible Hemichorea-Hemiballism in a Case of Nonketotic Hyperglycemia Presenting as the Initial Manifestation of Diabetes Mellitus. *Tremor Other Hyperkinet Mov (N Y)* 6: 693.
5. Bizet J, Quansah R, Rodriguez E, Teleb M, Hernandez GT, et al. (2014) Chorea, Hyperglycemia, Basal Ganglia Syndrome (C-H-BG) in an uncontrolled diabetic patient with normal glucose levels on presentation. *Am J Case Rep* 15: 143-146.
6. Herath HMMTB, Pahalagamage SP, Senanayake S (2017) Case report of hyperglycemic nonketotic chorea with rapid radiological resolution. *BMC Med Imaging* 17: 54.
7. Hansford BG, Albert D, Yang E (2013) Classic neuroimaging findings of nonketotic hyperglycemia on computed tomography and magnetic resonance imaging with absence of typical movement disorder symptoms (hemichorea-hemiballism). *J Radiol Case Rep* 7: 1-9.
8. Balas B, Wang S, Cusi K. Allergic reaction to insulin detemir: resolution with continued use. *Endocr Pract.* 2008; 14(6): 796-7.

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