

Inpatient Rehabilitation of Delayed-Onset Chorea Related to Hyperglycemia

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INTRODUCTION

Chorea is a movement disorder that is characterized by irregular, rapid, flowing nonstereotyped and random involuntary movements that may have various etiologies such as hereditary, infectious, hormonal and vascular [1]. Previous reports of this condition shows an increased prevalence in females, elderly and Asian ethnicities [2]. Chorea and other movement disorders associated with hyperglycemia, is referred to as CHBG (chorea, hyperglycemia, basal ganglia) syndrome.

The pathophysiology is poorly understood but there have been several proposed theories including decreased perfusion and blood flow resulting in ischemia as well as a shift towards anaerobic metabolism. This shift leads to increased metabolism of gamma amino butyric acid (GABA) in the basal ganglia, the main inhibitory hormone, and results in uncontrolled movements [3,4].

Diagnosis of this condition is based on a triad of chorea, abnormal striatal abnormalities on neuroimaging and a diabetic patient with hyperglycemia. Classic radiographic findings include contralateral striatal hyper-intensity on T1-weighted images and/or hyper-density on non-contrast computed tomography (CT) scans [5].

CASE DESCRIPTION

Our case is of a seventy- eight year old Haitian female who was admitted to the inpatient rehabilitation unit for chorea secondary to new bilateral basal ganglia T1 hyper-intensities on MRI particularly in the right caudate nucleus favored to be hyperglycemia related (*see Image 1*). Her history was significant for a recent admission one month prior with encephalopathy, hyperglycemia greater than 700 and MRI imaging with diffuse low T2 signal in bilateral basal ganglia secondary to hyperglycemia.

She was started on the second generation antipsychotic Abilify at 5 milligrams twice a day for her abnormal movements which was continued during her rehabilitation admission. Furthermore, her blood glucose levels were tightly controlled and maintained less than 200 except for three isolated episodes over her fourteen day admission in rehabilitation.

Her prior level of function prior to this admission was independent with activities of daily living, transfers and mobility. She was admitted to inpatient rehabilitation to work with physical, occupational and speech therapies to work on her deficits in all three domains (*See chart in Figure 1*).

IMAGING

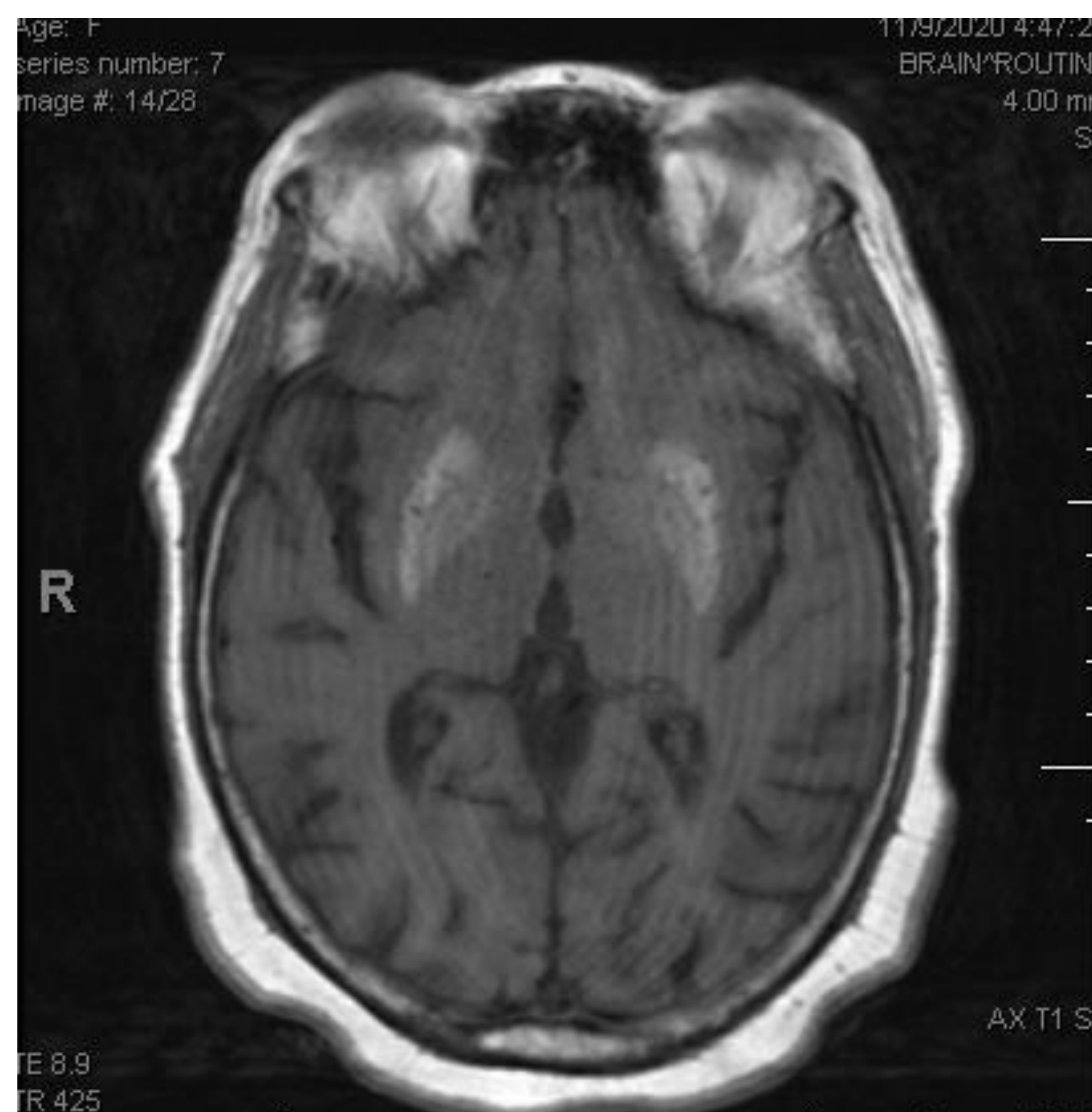


Image 1: MRI Brain with and without contrast showing prominent bilateral basal ganglia, in particular right caudate, T1 hyper-intensities.

DISCUSSION

Chorea is a movement disorder that may have numerous etiologies, such as metabolic disturbances including diabetes. This case represented a delayed onset of chorea about one month after the patient had an HHS episode. Her symptoms improved initially with the use of an atypical anti-psychotic, but her deficits required intervention with physical, occupational and speech therapies in an inpatient rehabilitation setting. After her admission to inpatient rehabilitation, her deficits considerably improved with different therapy techniques including cognitive distraction, balance activities in parallel bars, deep vibration with noted reduction in chorea movements and functional grasp tasks.

FUNCTIONAL ASSESSMENTS

	Admission Assessment	Discharge Assessment
Physical Therapy		
Bed Mobility	Independent	Independent
Transfers	Minimal Assistance	Supervision
Gait	Minimal Assistance (150 feet)	Supervision (150 feet)
Steps	Minimal Assistance (12 steps)	Supervision (12 steps)
Wheelchair Mobility	Maximal Assistance (150 feet)	Total Assistance (150 feet)
Occupational Therapy		
Eating	Supervision	Independent
Oral Hygiene	Supervision	Independent
Upper Body Dressing	Supervision	Independent
Lower Body Dressing	Minimal Assistance	Supervision
Bathing	Minimal Assistance	Supervision
Shower/ Toilet Transfers	Minimal Assistance	Supervision
Toileting	Moderate Assistance	Supervision
Speech Therapy		
Comprehension	Minimal Assistance	Standby
Expression	Minimal Assistance	Standby
Social Interaction	Moderate Assistance	Standby
Memory	Moderate Assistance	Minimal Assistance
Problem Solving	Maximal Assistance	Moderate Assistance

Fig. 1: Chart showing physical, occupational and speech therapy domains with improvements

CONCLUSIONS

Although rare, chorea may be a complication of uncontrolled diabetes and should be considered in patients with diabetes and a movement disorder. While medications exist that could treat this movement disorder, there have never been any reports of the benefits of a comprehensive therapy program. This case demonstrates the effectiveness of physical, occupational, and speech therapies in an inpatient rehabilitation setting along with various techniques used to help with choreiform movements. Prospective studies should evaluate if these therapies can consistently improve gait, balance and independence with activities of daily living while also addressing deficits with speech.

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