Hyperglycemia Induced Hemichoreoathetosis, An Uncommon Presenting Symptom of Diabetes Mellitus

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Abstract- Chorea is brief, quasi-purposeful, irregular muscle contractions, not repetitive or rhythmic, but flows from one muscle to the next and athetosis is slow, writhing, continuous, worm-like movements of distal extremities (chiefly the fingers) which show bizarre positioning without posturing. Metabolic causes have been documented earlier, note worthy of that being Diabetes. Choreoathetosis has been reported earlier in diabetes mostly in an elderly female, diagnosed most often by Brain MRI. We report a case of hemichoreoathetosis in a male diabetic, whose involuntary movement completely resolved with glycemic control and diagnosis was easily confirmed with just a Brain CT.

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Keywords: Choreoathetosis; Diabetes; Glycemic control

Introduction

Chorea,athetosis,choreoathetosis,ballismus has been associated (1) with vascular events, infections, immunological injury and metabolic causes. Vascular events are common (2) and metabolic causes are uncommon as a etiology of choreoathetosis in the elderly age group. Choreoathetosis due to diabetes mellitus is easily treatable (3) and carries a good prognosis. Here we report a case of hemichoreoathetosis in a elderly male patient in whom ,this involuntary movement was the presenting symptom of diabetes mellitus.

Case Report

A 65 year old male, was admitted to the emergency department with complaints of involuntary movements of the right upper limb and lower limb for the past 5 days, sudden in onset, increased with activity, decreased with sleep. He gave a history of dryness of mouth, excessive urination for the past one month. He was a known case of Diabetes Mellitus for the past 5 years, on treatment with metformin 1500mg a day. He was also a Hypertensive for 5 years, on treatment with enalapril 5 mg a day. There was no previous history of fever, transient ischemic attack, coronary artery disease, drug intake, or seizures. Also, there was not any family history of similar illnesses. He was not a smoker or an alcoholic. On examination he was conscious, oriented, afebrile, mild dehydration was present. His pulse rate was 100/min; blood pressure was 130/90mmHg, no pallor, no pedal edema**.** On examination of the cardiovascular system and respiratory system were normal. Memory and orientation was normal. Cranial nerves examination was normal. There was proximal semi-purposeful non-repetitive and distal slow writhing involuntary movements of the right upper limb and proximal semi-purposeful non-repetitive in the right lower limb. The tones of the muscles in the right upper and lower limbs were mildly decreased in the proximal muscle groups. Power and reflexes were normal in all four limbs. His sensory system was normal. His investigation revealed fasting blood sugar of 268 mg/dl and postprandial blood sugar of 480 mg/dl. His HbA1c was 12.3%. His blood urea was 28mg and serum creatinine was 1.3mg. His total cholesterol was 159 mg, serum triglyceride was 111 mg, serum high density lipoprotein was 49 mg, serum low density lipoprotein was 88 mg. Urine examination showed, nil albumin, sugar 3+, ketones were negative. In ultrasonogram of the abdomen, there was fatty liver, rest of the organs appeared normal. Brain CT showed hyperdensity in the region of the putamen. Patient was started on insulin and metformin 1500 mg a day for glycemic control. After a few days he attained a good glycemic control and his hemichoreoathetosis completely resolved.

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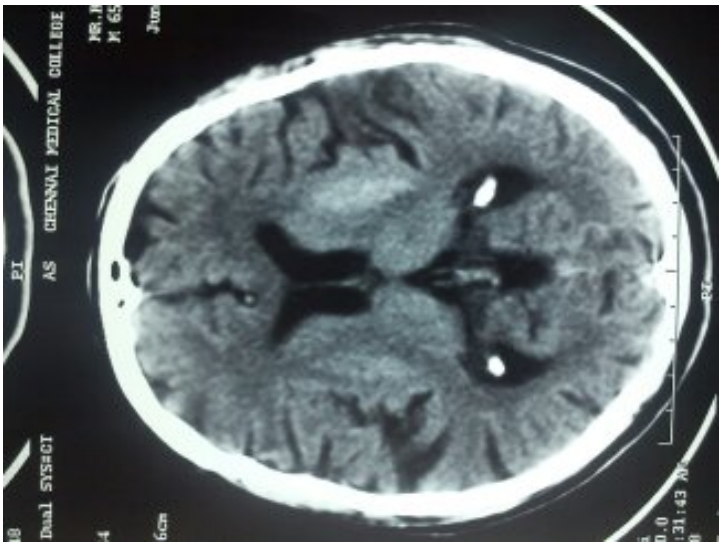

Figure 1. Brain CT showing hyperdensity in the region of the putamen.

Discussion

There are various causes (1ver) of choreoathetosis namely, a) Hereditary: Huntington's disease, benign hereditary chorea, ataxia telangiectasia, neuracanthocytosis, Wilson's disease, b) Drug induced: anticholinergics, anticonvulsants, phenytoin, carbamazepine, lithium, antiparkinsonism drugs, c) Metabolic: hyperglycemia/ hypoglycemia, hyperthyroidism/ hypothyroidism, hypoparathyroidism/ Pseudohypoparathyroidism, d) Infections: Sydenham's chorea, herpes simplex encephalitis, viral meningoencephalitis (mumps, measles, varicella), Lyme's Disease, HIV, E) Immunological: SLE, f) Perinatal: kernicterus, hypoxia. Metabolic cause is one of easily treatable and completely reversible cause of Choreoathetosis. The most common metabolic disorder in India is diabetes (4). Stroke and hyperglycemia secondary to diabetes mellitus remain as the major causes of hemichorea-hemiballismus (2). Majority of the patients reported with hemichorea-hemiballismus caused by non-ketotic hyperglycemia were Asians, due to possible genetic predisposition (5-8). It can be a presenting symptom of diabetes (9). Proposed hypothesis (10) for hyperglycemia as a cause of Choreoathetosis are a) Hyperglycemia and hyperosmolarity induces mild ischemia in the putamen via hypoperfusion, b) Hyperglycemia induces anaerobic metabolism which leads on to GABA depletion. It mostly occurs in females of 50- 80 years of age (3). Brain CT shows hyperdensity of putamen/caudate nucleus resolves eventually with resolution of symptoms (2). The cause of hyperdensity is due to protein hydration inside the cytoplasm of swollen gemistocytes. In conclusion, early recognition of hyperglycemia induced choreoathetosis is important, as the treatment of hyperglycemia will completely revert the involuntary movement (3). We also stress that a plain brain CT can confirm your diagnosis of hyperglycemia induced choreoathetosisis by showing hyperdensity in putamen/caudate nucleus.

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