Teaching Case Report

Uncontrollable movements in patient with diabetes mellitus

The Case: A 63-year-old woman presented to the emergency department after experiencing uncontrollable, irregular jerking movements of her right arm for 1 week. The movements were increasingly painful and were making it difficult for her to sleep; however, they disappeared during sleep. She reported no other symptoms.

The patient had type 2 diabetes mellitus for 23 years, hypertension and arthritis. Cancer of the right breast had been treated with radiation and mastectomy 2 years before the current presentation. Her medications included tamoxifen, oxycodone, fentanyl, triazolam, enalapril, ranitidine, lasix, amitriptyline and indomethacin. She started taking insulin 10 years ago, with poor glycemic control. She checked her glucose infrequently and followed up with her family physician rarely. Blood glucose levels on test strips ranged from 20–30 mmol/L.

On examination the patient's vital signs were stable. Results of language testing, and cranial nerve and motor examinations were normal. There were continuous and irregular jerking movements of her right arm and hand and, to a lesser extent, her right leg. She could not willfully suppress the movements nor appreciably minimize them forcibly with the other hand. There was infrequent grimacing of the right side of her face (see video clip, available at www.cmaj.ca/cgi/content/full/175/8/871/DC1). Deep-tendon reflexes were absent in all limbs, and there was no Babinski sign. Vibratory sense was bilaterally diminished to the ankles. There was dysmetria in the right arm and leg and an unsteady gait, in keeping with the degree of involuntary movements.

The complete blood count and electrolyte, blood urea nitrogen, creatinine and calcium levels were normal. The random glucose level was elevated, at 17.2 (normal 3.3–11.0) mmol/L. Also elevated were the hemoglobin A1c concentration (13.8% [normal 4.3%–6.1%]), creatine kinase level (668 [normal < 200] U/L) and cholesterol and triglyceride levels. A CT scan of the head showed hyperdensity of the left lentiform nucleus of the basal ganglia (Fig. 1).

The preliminary impression of the emergency staff was of a functional disorder, and the patient was discharged to the referring hospital. The patient was called back for a formal neurologic assessment after the emergency department physician subsequently reviewed the history and CT scan with the neurology team. A diagnosis of hemichorea–hemiballismus as a complication of nonketotic hyperglycemia was made.

Multiple medications in different combinations were tried, including haloperidol, olanzapine, quetiapine, clonazepam and tetrabenazine, with minimal immediate benefit. Severe pain from the continuous right arm
Box 1: Causes of hemichorea–hemiballismus

**Focal (contralateral basal ganglia)**
- Ischemic or hemorrhagic stroke
- Infection of central nervous system
- Neoplasm

**Diffuse systemic process**
- Nonketotic hyperglycemia
- Systemic lupus erythematosus
- Wilson’s disease
- Thyrotoxicosis

MRI scans. In most cases, these imaging features completely reverse after therapy. The prognosis of HC–HB as a complication of nonketotic hyperglycemia is excellent. In a meta-analysis, 97% of patients had resolution of the abnormal movements within 6 months. Rarely surgical interventions, such as thalamotomy and deep brain stimulation, are considered.

Our case illustrates the diagnostic challenges of movement disorders and an association of one with a common medical condition. Unfamiliarity with these disabling conditions may result in their attribution to psychological or psychiatric disturbances. A high index of suspicion is warranted for neurologic consultation and investigation of patients with abnormal movements.

**REFERENCES**

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