

Acute Subthalamic Stroke Presenting as Hemiballismus: A Review of Literature

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Abstract

Acute hyperkinetic movement disorders after cerebrovascular accidents are uncommon. Among post-stroke movement disorders, hemiballismus-hemichorea is the most common disorder. It can result from subthalamic nucleus lesions as well as thalamic, basal ganglia or cortical lesions. Prognosis is, in general, good with majority responding (completely/partially) to neuroleptics (typical/atypical). We are presenting a case report with review of acute ischemic stroke presenting as hemiballismus-hemichorea with complete response to haloperidol.

Key words: Hemiballismus-hemichorea, Movement disorders, Stroke

INTRODUCTION

Acute cerebrovascular accidents or strokes are characterized by abrupt onset negative symptoms, e.g., paresis/paralysis of limbs or numbness. However, less frequently positive symptoms, e.g., hyperkinetic movements such as hemiballismus-hemichorea, myoclonus, tics, or rubral tremors can also be the acute presentation of stroke. Movement disorders after stroke present in about 1% of cases.¹ The incidence of post-stroke hemichorea was 0.54% (27 out of 5,009 stroke patients) in a study by Chung *et al.*² Lesions in basal ganglia are most frequently associated with movement disorders; and therefore, stroke involving middle cerebral and posterior cerebral arteries are the usual culprits.

CASE REPORT

A 70-year-old hypertensive man presented in the emergency with abrupt onset flinging movements in the left upper limb and lower limbs for 2 h. On evaluation,

the patient was restless, responsive to verbal commands and oriented. He had hemiballismus-hemichorea of left upper and lower limb. He had hypertension (blood pressure 196/110 mm Hg) and his metabolic profile (random blood glucose, serum electrolytes, blood urea nitrogen, serum creatinine, liver function tests, and arterial blood gas analysis) was within normal limits. Noncontrast computerized tomography of head revealed acute right subthalamic infarct with age-related cerebral atrophy. The patient was reassured and initiated on oral antiplatelets, statins, antihypertensives. Patient's involuntary movements improved with oral haloperidol and haloperidol was gradually tapered and stopped.

DISCUSSION

Chorea consists of involuntary, continual, and irregular movements that flow randomly from one body part to another, and ballismus is a form of flinging high-amplitude and coarse chorea.³

Hemiballismus-hemichorea is the most common movement disorder after acute stroke.^{1,4} Dystonias are the second most common disorders after hemiballismus. The onset of involuntary movements after acute stroke is most commonly immediate but can range from days to few months.^{5,6} Hemichorea can appear early (mean 4.3 days post-stroke) compared to parkinsonism, which appears much later (mean 117.5 days post-stroke).^{3,7}

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Hemiballismus is classically considered to be secondary to contralateral subthalamic nucleus lesion. However, in the Lausanne stroke registry,¹ apart from subthalamic nucleus infarct, other sites were also involved like striatum, thalamus and pallidum, in the absence of subthalamic infarct. Similarly, Chung *et al.*² found the lesions in 27 post-stroke hemiballismus patients to be located in the caudate and putamen ($n = 6$), cortex ($n = 6$), thalamus and subthalamic area ($n = 4$), subthalamus ($n = 4$), putamen ($n = 3$), caudate ($n = 2$), and the globus pallidus ($n = 2$). Vidakovic *et al.*⁵ found subthalamic lesions in 27% of patients with hemiballismus while 27% had lesions in other parts of basal ganglia. Thus, apart from subthalamic lesions, thalamic, striatum or cortical lesions may also account for hemiballismus in post-stroke patients.

Long-term prognosis in post-stroke hemiballismus-hemichorea is usually good. Ristic *et al.*⁸ found complete response to haloperidol with/without diazepam in 56% patients, partial response in 37% and no response in 7% patients while Alarcon *et al.* found spontaneous complete recovery in 10% while partial recovery in about 83% patients.⁴

Treatment options in post-stroke hemiballismus-hemichorea are usually antidopaminergic drugs - traditional (e.g. haloperidol) or newer (olanzapine, quetiapine, clozapine); tetrabenazine; antiepileptics (valproate, topiramate) and benzodiazepines. Because of the risk

of drug-induced parkinsonism and tardive dyskinesias, tetrabenazine is preferred over haloperidol.³

CONCLUSION

Post-stroke hyperkinetic disorders are uncommon. Post-stroke hemiballismus-hemichorea is the most common hyperkinetic disorder. Prognosis in general is good with the majority of patients having complete/partial response with typical/atypical neuroleptics.

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