

OLGU SUNUMU

CASE REPORT

ACUTE-ONSET HEMIBALLISMUS DUE TO THALAMIC HEMATOMA: A CASE REPORT

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ABSTRACT

Rapidly onset movement disorders after acute stroke not very commonly reported. The most commonly reported movement disorder after stroke is hemichorea-hemiballismus. Hemichorea; is sudden, spasmodic, irregular, short-term movements of fingers, hands, arms, face, tongue or head involving one half of the body. Ballismus means high amplitude, violent, tossing or throwing movements. In general, hemichorea-hemiballismus; may occurred as a result of damage in localizations such as contralateral basal ganglia, subthalamic nucleus and thalamus in central nervous system. Neurodegenerative diseases, vascular causes, metabolic disorders and genetic diseases should be investigated for its etiology. In this paper, a hemiballismus case that developed acutely after thalamic hemorrhage and successfully responded to haloperidol treatment is presented.

Keywords: Hemiballismus, thalamic hemorrhage, hyperkinetic movement disorder.

TALAMİK HEMATOMA BAĞLI GELİŞEN AKUT BAŞLANGIÇLI HEMİBALLİSMUS: OLGU SUNUMU

ÖZ

Akut inmeden sonra hızlı başlayan hareket bozuklukları çok yaygın olarak bildirilmemiştir. İnme sonrasında en çok bildirilen hareket bozukluğu hemikorea-hemiballismustur. Hemikorea; vücudun bir yarısını içine alan ani, spazmodik, düzensiz, kısa süreli, parmak, el, kol, yüz, dil veya baş hareketleridir. Ballismus kavramı ise yüksek amplitüdü, şiddetli, savurma ya da atma şeklindeki hareketleri tanımlar. Genel olarak hemikorea-hemiballizm; merkezi sinir sisteminde kontralateral bazal gangliyon, subtalamik çekirdek ve talamus gibi lokalizasyonlarda hasar sonucu meydana gelebilir. Etiyolojisinde nörodejeneratif hastalıklar, vasküler sebepler, metabolik bozukluklar ve genetik hastalıklar araştırılmalıdır. Bu yazıda talamik kanama sonrası akut gelişen ve haloperidol tedavisine başarıyla yanıt veren bir hemiballismus olgusu sunulmuştur.

Anahtar Sözcükler: Hemiballismus, talamik hemoraji, hiperkinetik hareket bozukluğu.

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INTRODUCTION

Hemiballismus is a hyperkinetic involuntary movement disorder, which is caused by damage to the central nervous system, involves the contralateral arm and leg, and is characterized by intermittent, sudden, violent, and high amplitude movements such as flinging (1). It develops as a result of damage to the inhibitory pathways in the basal ganglia structures. With the decreased excitatory transmission of the globus pallidus internus (GPi) and the disinhibition of the thalamus, it creates an overactivation of the corticospinal and corticobulbar tracts with random firing. Commonly reported causes include intracranial hemorrhages, ischemic strokes, hyperosmolar hyperglycemic nonketotic coma, demyelinating disorders, infectious agents, vasculitis, and toxic conditions. Medical treatment includes the use of first and second-generation anti-dopaminergic drugs targeting dopamine 2 (D2) receptors. Risperidone, haloperidol, pimozide, chlorpromazine, benzodiazepines (clonazepam), anti-epileptics (topiramate), and tetrabenazine constitute the medical treatment options (2). Surgical methods can be applied in more severe cases (2).

Our case was a 74-year-old male patient with hemiballismus developed following a thalamic hemorrhage. The response of the patient to neuroleptic treatment that was initiated at a low dose was good. This study discussed the causes of hemiballismus, localization of the lesions, and treatments to be administered in light of the literature.

CASE REPORT

A 74-year-old male patient, who had no comorbidities other than known hypertension and chronic renal failure, presented to the emergency department due to sudden onset of headache, speech disorder, involuntary movements in the right arm and leg, and weakness in the right side of the body. According to the neurological examination, he was conscious, he could fully cooperate, and his orientation was complete. Motor dysphasia was found in speech. Muscle strengths in the right upper and lower extremities were 4/5 and hemiballismus was present on the right side. The measured blood pressure of the patient was 210/100 mmHg and blood glucose was 126 mg/dl. According to the laboratory tests,

hemoglobin was 13.3 g/dl and creatinine was 1.26 mg/dl. Other complete blood counts, biochemistry test results, and coagulation tests results were within normal limits. Hyperdense bleeding area was observed in the left thalamus in the cranial computed tomography (CT) performed on the patient (Figure 1). The hematoma volume was calculated as 1.125 ml with the ABC/2 formula. The patient was admitted to the neurology department. The patient's blood pressure was regulated. For hemiballistic movements, haloperidol was initiated at a dose of 1 mg/day and increased to a dose of 4 mg/day by increasing 1 mg/day at 5-day intervals. In the clinical examination performed at the neurology department on the 20th day after stroke, hemiballismus was found to be under control with haloperidol at a dose of 4 mg/day. In the CT that was performed on the 2nd Week after discharge, the bleeding area was completely resorbed (Figure 2). At the preparation phase of this study, a written consent form was obtained from the patient.

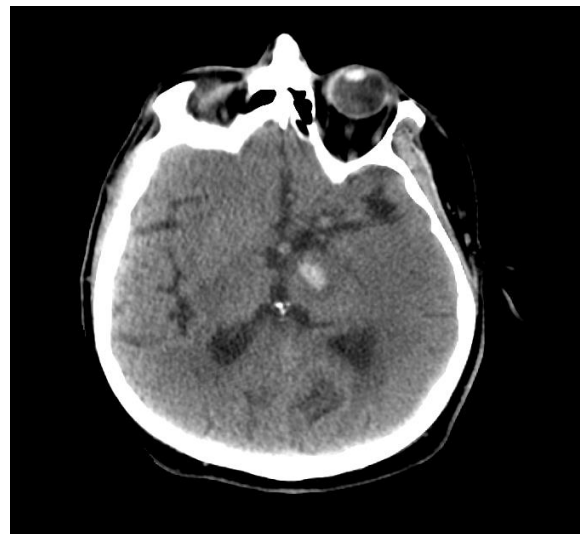


Figure 1. Computed tomography, axial section: Hyperdense bleeding area of approximately 1.125 ml in the left thalamus at the acute period.

DISCUSSION AND CONCLUSION

Hemiballismus is a hyperkinetic high amplitude movement disorder defined by James Purdon Martin in 1927. While Martin argued that this movement disorder only developed in subthalamic nucleus (STN) lesions until the 1950s, he thought that it could also be caused by non-STN

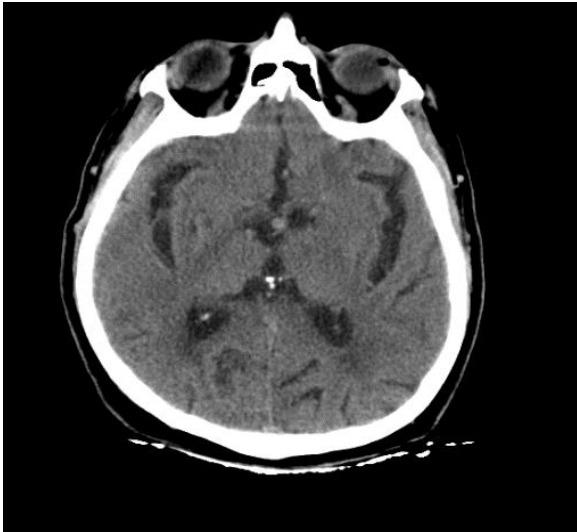


Figure 2. Computed tomography, axial section: The bleeding area is completely resorbed in the control computed tomography performed after discharge.

lesions in the late 1950s. Subsequent studies have demonstrated that the lentiform nucleus, thalamus, cortical lesions, and subthalamus are affected (3). Hemiballismus results from the damage to the basal ganglia responsible for the inhibitory pathway. Hyperactivation develops in the corticospinal and corticobulbar pathways with decreased stimulus delivery of Gpi and decreased inhibition of the thalamus. As a consequence of this excessive activation, efferent innervation is transmitted to the muscles on the contralateral side of the body (1). In our case, the high amplitude movement disorder in the right upper and lower extremities was evaluated as hemiballismus. Contrary to the traditional knowledge, there was an effect on the thalamus, which is a non-STN area.

Hemorrhagic and ischemic strokes are the most frequently reported causes in the etiology of hemiballismus (4). However, hemiballismus is a rare presentation of stroke. Hemorrhagic strokes have been reported to cause a higher rate of movement disorders compared to ischemic strokes (5). The second most common cause was demonstrated as nonketotic hyperglycemia (6). Other causes of hemiballismus include opportunistic infections secondary to HIV, vasculitis of the central nervous system, encephalitis, demyelinating disorders, space-occupying lesions, and drugs (anticonvulsant drugs, levodopa, oral contraceptives) (4,6). Despite the different etiology, the clinical picture is

the same. Therefore, age, accompanying symptoms, initial form, laboratory results, and imaging methods should be taken into consideration when making the differential diagnosis (7). Movement disorder after stroke develops immediately after a stroke at a rate of 80%. Cases that develop after weeks and months have also been reported (8). In our patient, the blood glucose level was in the normal range. At the same time, there was a sudden onset of weakness in the right arm and leg. According to the cranial CT performed, hyperdense bleeding areas were observed in the left thalamus. In our case, acute hemiballismus secondary to hemorrhagic stroke was considered in the etiology. The movement disorder in our case developed as a result of the effect of the thalamus, which is a non-STN area. Cases of movement disorder developing after stroke tend to recover spontaneously. However, symptomatic treatment is recommended to protect these patients from injuries that will develop in the acute period. Typical and atypical neuroleptic agents and antidopaminergic drugs are medical treatment methods that can be options. Haloperidol, fluphenazine, and pimozide are typical neuroleptic drugs and are among the first choice agents (9). Drugs such as clozapine, olanzapine, and quetiapine, which are the atypical neuroleptic group, have a lower risk of developing secondary parkinsonism compared to typical neuroleptics and are among the drugs that can be preferred in the acute period. Tetrabenazine, which is another option that functions by blocking dopamine receptors, can be used in the treatment of hemiballismus (9). Surgical methods can be considered in patients who do not benefit from medical treatment. In our case, the patient had a severe injury in the elbow area due to hemiballismus. The patient stated that he was seriously uncomfortable in this situation. Therefore, haloperidol, which was a more potent D1-D2 receptor blocker, was initiated to have a more rapid effect in the acute period and as symptomatic treatment. During the follow-ups, a significant decrease was observed in the frequency and amplitude of these movements of the patient. No additional extrapyramidal findings were found. In the control examination, the patient continued the treatment by increasing the dose of haloperidol. The movement disorder of the patient improved almost completely within a month. After recovery, haloperidol treatment was reduced and

discontinued. For this reason, no change was made in the medical treatment and no combination treatments or surgery was planned.

As a result, a detailed differential diagnosis should be made in patients presenting with movement disorder at the onset. Clinical features, laboratory markers, and radiological imaging methods are helpful in diagnosis. In acute hemiballismus, the etiology often includes cerebrovascular diseases. Etiological and symptomatic treatments are important in the management of these diseases.

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Ethics

Informed Consent: The authors declared that informed consent form was signed by the patient.

Copyright Transfer Form: Copyright Transfer Form was signed by the authors.

Peer-review: Internally peer-reviewed.

Authorship Contributions: Surgical and Medical Practices: RB, ŞB, MG. Concept: RB, ŞB, MG. Design: RB, ŞB, MG. Data Collection or Processing: RB, ŞB, MG. Analysis or Interpretation: RB, ŞB, MG. Literature Search: RB, ŞB, MG. Writing: RB, ŞB, MG.

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