

Acute-Onset Hemiparkinsonism Secondary to Subacute-Chronic Subdural Hematoma

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ABSTRACT

Subdural hematomas constitute rare causes of secondary Parkinsonism in elderly. Subacute or chronic subdural hematomas occur in the elderly following minor head trauma or even without a remarkable history of trauma. A 69-year-old woman admitted with a rapidly progressive acute-onset hemiparkinsonism on the left side of her body. She denied any precipitating event before the onset of her symptoms, and her medical history was unremarkable. The anti-Parkinsonian therapy showed no benefit, but gradually worsening of the symptoms was observed. Her brain magnetic resonance imaging revealed a large subacute-chronic subdural hematoma on the right side with a mass effect on the basal ganglia structures, contralateral to her symptomatology. On thorough questioning, she confessed to having fallen out of the bed at night almost four weeks ago, three-weeks before the onset of her symptomatology. She had no complications associated with this fall and merely remembered this event. She denied any history of rapid eye movements (REM) sleep behavior disorder. The anti-Parkinsonian treatment was discontinued; the subdural hematoma was evacuated via burr hole drainage surgery. Her symptoms disappeared instantly after the surgery, with a normal neurologic examination one week after the surgery.

KEYWORDS: Secondary Parkinsonism, subdural hematoma, head trauma

INTRODUCTION

Parkinsonism is characterized by several extrapyramidal symptoms including resting tremor, bradykinesia, rigidity, and postural instability due to degeneration of dopaminergic neurons in basal ganglia. Though most of the patients have idiopathic Parkinson's disease (IPD), secondary Parkinsonism (SP, in which a specific cause is associated with the clinical symptomatology) constitutes approximately 15% of all adult cases (5,6). Intracerebral and subdural hematomas have rarely been reported in the literature associated with parkinsonian syndromes (1,3,4,6,7). Subacute or chronic subdural hematomas occur in the elderly following minor head trauma or even without a remarkable history of trauma. Although they usually present with focal neurologic deficits,

acute- or subacute-onset Parkinsonism may manifest solely in the minority of the patients (1,3,4,6,7). This case report pertains to a patient presenting with acute-onset hemiparkinsonism secondary to a large contralateral subdural hematoma, in whom clinical symptoms were resolved completely upon the evacuation of the hematoma.

CASE REPORT

A 69-year-old, right-handed woman was admitted to the neurology outpatient clinic when she complained of slowness on the left side of her body with a tendency to fall to the left while arising from the chair and during walking. She needed help with her daily routine activities. Her symptoms appeared within a few days with a sudden onset, with gradually

worsening conditions. She denied any precipitating event before the onset of her symptoms, and her medical history was otherwise unremarkable. She was on anti-aggregant treatment (acetyl salicylic acid, 100 mg/day) for the protection against the cardiovascular events. Her family history was also unremarkable.

She has been admitted to another center one week ago, and diagnosed as having IPD. A dopaminergic therapy (levodopa, 450 mg/day) was initiated, which showed no benefit with progressively worsening of the symptoms, causing difficulty in standing up from a chair or walk without assistance. Neurological examination of the patient revealed mild hypomimia on the left side of her face, severe bradykinesia and rigidity on the left side of her body. She had a stooped posture with marked postural instability. The total score of the Unified Parkinson's Disease Rating Scale was 46 points (Part I:2 points, Part II:20 points, and Part III:24 points).

Her brain magnetic resonance imaging (MRI) revealed a large subacute-chronic subdural hematoma on the right side, contralateral to her symptomatology, displacing the midline structures to the left with a mass effect on the basal ganglia structures (Figure 1A, B). Figure 1A shows a small epidural hematoma that was noticed on the left side.

On thorough questioning, she confessed to having fallen out of the bed at night almost four weeks ago, three weeks before the onset of her symptomatology. She presented no complications associated with this fall and merely remembered this event. She denied any history of rapid eye movements (REM) sleep behavior disorder.

The anti-parkinsonian treatment was discontinued; the subdural hematoma was evacuated via burr hole drainage surgery. Her symptoms disappeared instantly after the surgery, with a normal neurologic examination one week after the surgery.

An informed consent form was signed by the patient.

DISCUSSION

The incidence of operatively treated chronic subdural hematomas in the elderly population varies between 36.6 and 91/100,000/year (9). Secondary Parkinsonism, rarely associated with the subdural hematoma, was reported in four out of 1,289 patients with chronic subdural hematoma (0.003%) in one series (6). The interval between the event and the onset of symptoms may vary from few days to months. Few patients with Parkinsonism may also show pyramidal findings on neurologic examination. Although levodopa therapy is reported to be beneficial in the literature (4), most of the patients show resistance to anti-Parkinsonian therapy, contrary to IPD; surgical treatment is almost always curative (2,3,6,7).

The patient presented here developed rapidly progressive severe Parkinsonian symptoms of acute onset, which were prominently unilateral; the motor features were disproportionately more severe than the non-motor symptoms. All of these characteristics are alarming for an underlying etiology and secondary Parkinsonism (4). Moreover, the unresponsiveness to the initial levodopa therapy is also unexpected in idiopathic cases. Although the patient revealed no history of any precipitating event on admission, a large subacute-chronic subdural hematoma with a mass effect on the basal ganglia structures was observed. On specific questioning, she admitted of a fall from the bed at night, which was a minor event to recall, about three weeks earlier than the symptom onset. Subdural hematomas may also occur without any history of head trauma or from a minor trauma (9), for which subacute-chronic subdural hematomas should be kept in mind in elderly patients, especially if they are on anti-aggregant or anti-coagulant therapy, as in our patient. The Parkinsonian symptoms of our patient disappeared completely post removal of subdural hematoma, as in almost all cases reported in the medical literature (3,6,7).

Parkinsonism in the patients with subdural hematoma was suggested to result directly from the mechanical pressure

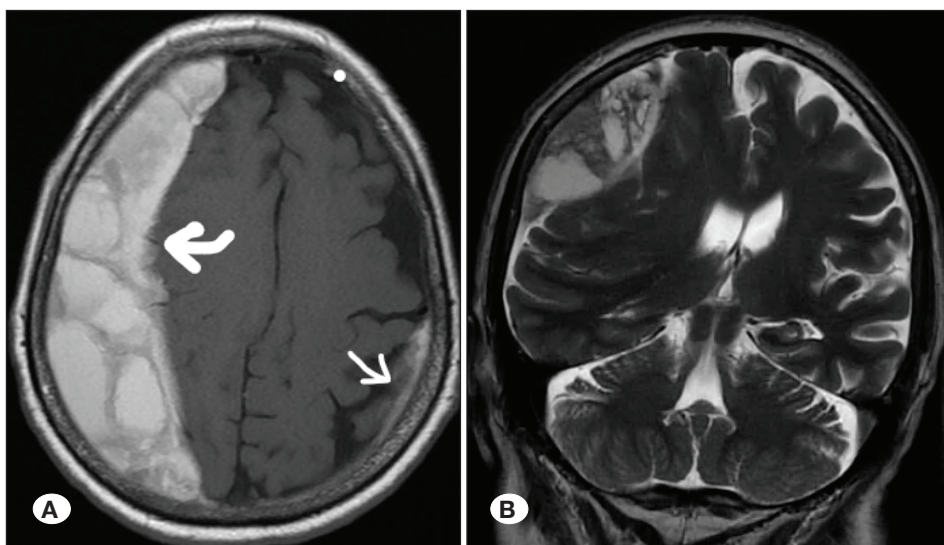


Figure 1: Axial (A) and coronal (B) brain magnetic resonance imaging (MRI) shows a large subdural hematoma on the right side causing a major shift in the midline structures as well as basal ganglia (large arrow), with a small epidural hematoma on the left side (small arrow).

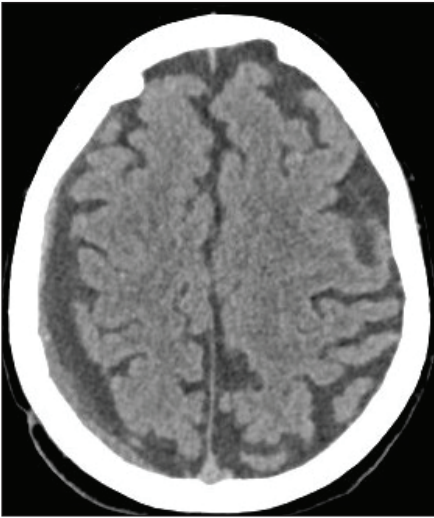


Figure 2: Brain computed tomography (CT) obtained following two months after the operation shows total resolution of the hematoma.

on the basal ganglia by the space-occupying lesion, which interferes with the nigrostriatal dopaminergic transmission (3,8). Although the associated neurologic features are not uncommon in these patients with Parkinsonism and subdural hematoma (3), our patient did not exhibit any other neurological signs besides hemiparkinsonism, despite the large size of the hematoma.

■ CONCLUSION

This case report introduces an elderly woman presenting with Parkinsonian symptoms. The involvement of only one side of the body, acute onset of symptomatology, and rapidly progressive course of the disease were all alarming characteristics for a secondary cause in patients with Parkinsonism. The fact that subdural hematomas rarely cause secondary Parkinsonism should be kept in mind in the elderly, especially in the presence of alarming symptoms and signs. Although the gold standard anti-Parkinsonian therapies may sometimes show a beneficial effect, our patient showed no improvement by these therapies. The surgical intervention of the subdural hematomas might result in dramatic resolution of the symptoms within a very short time.

■ AUTHORSHIP CONTRIBUTION

Study conception and design: SO, SE

Data collection: OOC

Analysis and interpretation of results: SO SE, SP

Draft manuscript preparation: OOC, GBS

Critical revision of the article: SO

Other (study supervision, fundings, materials, etc...): SO, GBS

All authors (SO, SE, OOC, GBS, SP) reviewed the results and approved the final version of the manuscript.

■ REFERENCES

1. Bartek J, Jr, Sjavik K, Stahl F, Kristiansson H, Solheim O, Gulati S, Sagberg LM, Förander P, Jakola AS: Surgery for chronic subdural hematoma in nonagenarians: A Scandinavian population-based multicenter study. *Acta Neurol Scand* 136: 516-520, 2017
2. Benbir G, Ozekmekci S: Parkinson hastalığı tedavisinin dünü ve bugünü. *Parkinson Hastalığı ve Hareket Bozuklukları Dergisi* 8:60-70, 2005
3. Bostantjopoulou S, Katsarou Z, Michael M, Petridis A: Reversible parkinsonism due to chronic bilateral subdural hematomas. *J Clin Neurosci* 16:458-460, 2009
4. Ellul MA, Cross J, Barker RA: L-dopa responsive parkinsonism secondary to a subdural haematoma. *J Clin Neurosci* 20: 1022-1024, 2013
5. Ertan S, Benbir G, Tanrıverdi T, Alver I, Uzan M: Parkinsonism caused by cavernoma located in bazal ganglion. *Parkinsonism Relat Disord* 11: 517-519, 2005
6. Gelabert-Gonzales M, Serramito-Garcia R, Aran-Echabe E: Parkinsonism secondary to subdural haematoma. *Neurosurg Rev* 35:457-460, 2012
7. Guppy KH, Khandhar SM, Ochi C: Reversible parkinson-like symptoms in patient with bilateral chronic subdural hematomas and cervical spinal stenosis. *World Neurosurg* 109:285-290, 2018
8. Park B, Song SK, Hong JY, Lee PH: Parkinsonism due to a Chronic Subdural Hematoma. *J Mov Disord* 2:43-44, 2009
9. Rauhala M, Helén P, Huhtala H, Heikkilä P, Iverson GL, Niskakangas T, Öhman J, Luoto TM: Chronic subdural hematoma-incidence, complications, and financial impact. *Acta Neurochir (Wien)* 162:2033-2043, 2020