Brain Infarction in the Artery of Percheron Supply Area due to Reversible Cerebral Vasoconstriction Syndrome

Meštrović, Andrija; Raifi, Zurap; Sruk, Ana; Budišić, Mislav; Kalousek, Vladimir; Roje Bedeković, Marina; Budinčević, Hrvoje

Source / Izvornik: **Archives of Psychiatry Research : An International Journal of Psychiatry and Related Sciences, 2023, 59, 115 - 118**

Journal article, Published version
Rad u časopisu, Objavljena verzija rada (izdavačev PDF)

https://doi.org/10.20471/may.2023.59.01.15

Permanent link / Trajna poveznica: https://urn.nsk.hr/urn:nbn:hr:220:743613

Case report

Archives of Psychiatry Research 2023;59:115-118
DOI:10.20471/may.2023.59.01.15

Brain Infarction in the Artery of Percheron Supply Area due to Reversible Cerebral Vasoconstriction Syndrome

Andrija Meštrović[1], Zurap Raifi[1], Ana Sruk[1], Mislav Budišić[2], Vladimir Kalousek[3], Marina Roje Bedeković[2], Hrvoje Budinčević[1,4]

[1]Department of Neurology, University Hospital Sveti Duh, Zagreb, Croatia, [2]Department of Neurology, University Hospital Centre Sestre milosrdnice, Zagreb, Croatia, [3]Department of Diagnostic and Interventional Radiology, University Hospital Centre Sestre milosrdnice, Zagreb, Croatia, [4]School of Medicine, Josip Juraj Strossmayer University, Osijek, Croatia

Abstract - An ischemic stroke caused by the occlusion of the artery of Percheron encompasses both posterior thalami, and the resulting clinical presentation can mask the clinical presentation of a stroke. We present the case report of a 62-year-old female patient who was admitted to our emergency department in a soporous state after initial headache and dizziness. A neurological exam found left-sided spasticity and a flexor response to pain. Systemic thrombolysis was administered after an urgent computerized tomography (CT) of the brain with angiography. The interventional radiologist proposed a digital subtraction angiography which found a vasospasm in the right medial cerebral artery from the M2 segment reaching distally, and a balloon dilation was done. Following the endovascular procedure, a CT scan showed ischemia in both posterior thalami. Additionally, the patient's neurological impairment improved at that moment showing Parinaud syndrome, drowsiness, and left-sided palsy. The patient experienced a possible reversible cerebral vasoconstriction syndrome, the cause of which is still unknown, which resulted in an ischemic stroke. The typical clinical presentation of that syndrome was lacking, probably due to the presence of the artery of Percheron ipsilateral to the vasospasm. Our goal in presenting this case study is to draw attention to the artery of Percheron syndrome as a potential clinical sign of an acute ischemic stroke that can easily lead us to be misled.

Key words: posterior cerebral artery; brain infarction; vasospasm, intracranial; stroke

e-mail: apr.kbcsm@gmail.com • www.http://apr.kbcsm.hr

Introduction

The clinical presentation of an ischemic stroke that involves both posterior thalami and is caused by the occlusion of the artery of Percheron can mask the clinical presentation of a typical stroke [1]. In this case report, we describe the case of a 62-year old female patient who was admitted to our emergency department in a soporous state after initial headache and dizziness. It was later determined that she had suffered a stroke in the Percheron artery supply area due to ipsilateral reversible cerebral vasoconstriction syndrome (RCVS).

Correspondence to:
Ana Sruk, MD, PhD, Department of Neurology, Sveti Duh University Hospital, Sveti Duh 64, 10 000 Zagreb, Croatia,
Phone: +385 98 747 776, Fax: +385 1 3712 372
E-mail: srukana@gmail.com

Figure 1. Computerized tomography angiography of the patient showing a narrowing of the middle cerebral artery, firstly misdiagnosed as the M1 occlusion

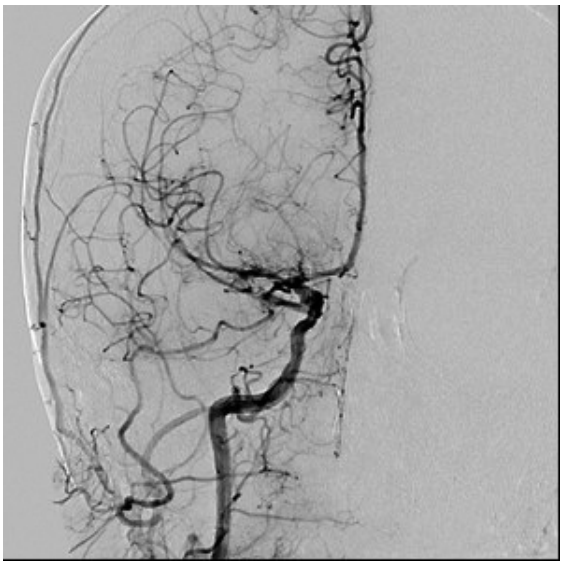

Figure 2. Digital subtraction angiography showing a spasm in the middle cerebral artery

Subjects and Methods

A 62-year-old female patient arrived at our emergency room in a soporous state. She complained of headache and dizziness 90 minutes ago. A neurological examination revealed left-sided stiffness, a flexion response to painful stimuli, and a bilaterally positive Babinski sign. Over time, her level of consciousness deteriorated until she fell into a coma. An immediate computerized tomography (CT) of the brain revealed no ischemia, tumour, bleeding, or swelling, and a CT angiography implied an M1 occlusion of the right middle cerebral artery (Figure 1). Because the clinical presentation indicated an acute ischemic stroke, systemic thrombolysis was performed. After reviewing the angiogram results, an interventional radiologist was consulted, who indicated a digital subtraction angiography (DSA). Following the DSA, it was discovered that vasospasm was present in the M2 segment reaching distally in the medial cerebral artery. Concerning the results, balloon dilation with intraarterial nimodipine administration was performed (Figure 2 and Figure 3). A suspected "blood blister" aneurysm of the right vertebral artery was discovered as an accidental finding during the DSA; this prompted a lumbar puncture, which ruled out any signs of haemoglobin degradation products. After the procedure, the patient experienced left-sided hemiparesis, ataxia, drowsiness, and Parinaud syndrome. Ischemia was found in the right putamen and both posterior thalami on subsequent magnetic resonance imaging (MRI) (Figure 4). Additionally, a transcranial doppler (TCD) follow-up test revealed no evidence of recurrent vasospasm. After a month of extensive physical rehabilitation at our department, the patient had persistent ataxia and Parinaud syndrome and was transferred to a specialized physical rehabilitation facility.

Discussion

The artery of Percheron is an important anatomical variation in the thalamic blood supply. Instead of each thalami having its perforating artery that comes from the ipsilateral posterior cerebral artery, the artery of Percheron supplies blood to both posterior thalami. Supranuclear gaze palsy, short-term memory issues, and altered level of consciousness are the triad of symptoms accompanying an ischemic stroke that affects both posterior thalami

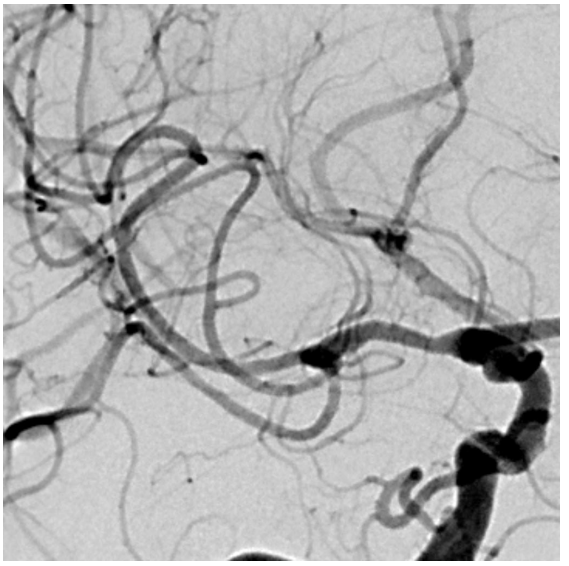

Figure 3. Digital subtraction angiography finding after balloon dilation of the right middle cerebral artery

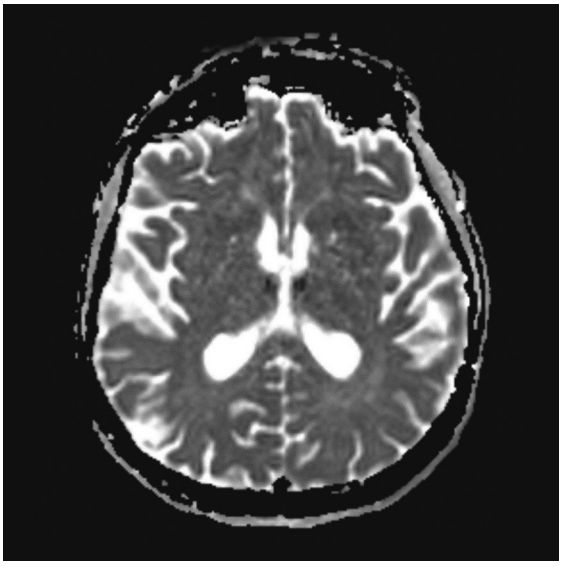

Figure 4. Magnetic resonance imaging showing the apparent diffusion coefficient (ADC) map with ischemic lesions in both thalami

[1]. Given the results of our patient's CT angiography and DSA, it is most likely that the vasospasm that was a component of RCVS, rather than occlusion, caused the stroke. RCVS is a syndrome where a reversible unilateral multifocal vasospasm of the cerebral arteries occurs. Most of the cases (95 %) are benign and present with thunderclap headaches. Women are more likely to have the syndrome (3 :1). However, ischemia (watershed infarct), convexity subarachnoid haemorrhage, lobar haemorrhage, and vasogenic oedema can all be brought on by vasospasm and the subsequent reperfusion [2]. Corticosteroids are not recommended as a form of treatment; instead, blood pressure management and analgesia are used. Furthermore, because the risk of relapse is relatively low, except for cerebral angiopathy and angiitis, it is crucial to identify and prevent the inciting factor, which is present in 50 % of cases (drugs, medications, hormone changes, environmental variables, tumours, etc.) [2]. An RCVS2 score, a questionnaire that measures the likelihood that a person has RCVS and the need for more testing, is a helpful tool that uses clinical presentation and radiological data [3].

Since our patient's RCVS occurred on the same side of the artery of Percheron, this likely caused her stroke. The typical clinical signs of stroke and RCVS were concealed by sopor and coma brought on by the stroke that occurred in the supply area of the artery of Percheron. In this report, we aimed to emphasize that consciousness alteration in the artery of Percheron syndrome could conceal the typical stroke presentation.

Acknowledgements

None.

Conflict of interest

None to declare.

Funding Sources

None.

References

1. Musa J, Rahman M, Guy A, Kola E, Guy A, Hyseni F, et al. Artery of Percheron infarction: a case report and literature review. Radiol Case Reports. 2021;16:1271-75.
2. Cappelen-Smith C, Calic Z, Cordato D. Reversible cerebral vasoconstriction syndrome: recognition and treatment. Curr Treat Options Neurol. 2017;19:21.
3. Rocha EA, Topcuoglu MA, Silva GS, Singhal AB. RCVS 2 score and diagnostic approach for reversible cerebral vasoconstriction syndrome. Neurology. 2019;92:e639-47.