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Case Report

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Postpartum vasculopathy as a rare cause of stroke – what every neurologist should remember

Abstract

Stroke in pregnancy and the puerperium is a rare condition. The treatment of ischaemic stroke (IS) in pregnancy and the puerperium is difficult and requires the attending physicians to take quick decisions. Postpartum vasculopathy (PV) may be one of the causes of postpartum stroke. The aetiology of PV is not fully understood. It most often occurs in the first week after delivery. The trigger factors include vasoconstrictive substances that are present in the blood of women in the postpartum period. Most frequently, this condition occurs in a subsequent pregnancy, and the primary symptom is a very severe headache. The characteristic feature of PV is the angiographic image of the cerebral vessels, where segmental vasoconstriction and tortuous course of the vessels are visible, which resembles beads impaled on a string. This disease is a monophasic condition and, once the disease has progressed, there are no contraindications for a subsequent pregnancy. No standard management has been established, but most authors agree that acute phase treatment includes cessation of vasoconstrictors using calcium channel antagonists, magnesium intravenously, corticosteroids, and treatment of associated conditions like headache, high blood pressure, cerebral oedema, seizure. It also applies ASA, heparin when it's needed, we present a women with an IS in the course of PV treated successfully.

Keywords: postpartum vasculopathy, puerperium, stroke, headache

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Małgorzata Wiszniewska[1,2]

[1]Emergency Medical Services, University of Applied Sciences, Poland

[2]Neurological Department with Stroke Unit, Specialist Hospital, Poland

Correspondence: Małgorzata Wiszniewska, Emergency Medical Services, University of Applied Sciences, Piła, Poland, Email mpwis@gmail.com

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Introduction

Stroke in pregnancy and the puerperium is a rare condition. However, if it occurs during pregnancy, it can have serious consequences for both mother and her child. The treatment of ischaemic stroke in pregnancy and the puerperium is difficult and requires the attending physicians to take quick decisions.[1–3] Currently, the available studies do not allow specific recommendations for the treatment of ischaemic stroke in pregnancy and puerperium with intravenous thrombolysis and mechanical thrombectomy.[4–7] According to the experts of the ESO Guidelines Committee, pregnant woman and women in the postpartum period, 10 days after delivery, can receive intravenous thrombolytic treatment; additionally, thrombectomy can be performed on them after an individual assessment of the benefit-risk balance.[4] Thrombectomy is the preferred method, provided the patient meets the criteria and it is possible to perform this treatment.[4,7] However, intravenous thrombolysis in ischaemic stroke cannot be given within the first 10 days after delivery.[4] Regarding the use of thrombolysis in puerperal ischaemic stroke, few cases treated with this method have been described so far.[4–7] Postpartum vasculopathy may be one of the causes of postpartum stroke. The aetiology of postpartum vasculopathy is not fully understood. It most often occurs in the first week after delivery. The trigger factors include vasoconstrictive substances that are present in the blood of women in the postpartum period. Most frequently, this condition occurs in a subsequent pregnancy, and the primary symptom is a very severe headache, which the woman has not experienced before.[1,3,8] The characteristic feature of postpartum vasculopathy is the angiographic image of the cerebral vessels, where segmental vasoconstriction and tortuous course of the vessels are visible, which resembles beads impaled on a string.[8] This disease is a monophasic condition and, once the disease has progressed, there are no contraindications for a subsequent pregnancy. There are two types of puerperal vasculopathy – reversible cerebral vasoconstriction syndrome (RCVS), where the vascular lesions are generalised, and posterior reversible cerebral vasoconstriction syndrome (PRES), where the lesions are localised in the posterior cerebrum.[1,3,8]

Case study

The patient, aged 33, was admitted to the Neurology Department with Stroke Treatment Unit as an emergency (Stanislaw Staszic Specialist Hospital in Piła) due to right-sided hemiparesis with aphasia. Prior to the onset of the illness, the patient was fully functional. The paresis suddenly occurred together with a headache and a rise in blood pressure to 220/120 mmHg two days before admission to the Neurology Department on the 7th day after the natural birth of her 4th child. Due to the headache, the patient fainted at home and fell suffering a head injury. For this reason, the Ambulance Service was called and, due to a head injury, the patient was taken to the nearest hospital where she was admitted to surgery. There, hypotensive treatment was implemented, the patient was observed for 24 hours and, due to lack of improvement after one day, the patient was transferred to the Neurology Department. Once on the Neurology Department, it was established that the course of the pregnancy and the birth were normal. Previous pregnancies and the postpartum period also went well. All births were natural. The patient had no previous headaches. A few days before the illness, the patient developed a catarrhal infection. On admission, the patient's condition was severe: she was lying down, could not turn around, consciousness was disturbed; the patient was drowsy, right-sided hemiparesis with mixed aphasia and right-sided hemiparesis were found, she was not swallowing, NIHSS score was 19, mRs score was 5. The patient did not presented fever. A CT scan and angio-CT of the head were performed, which showed ischaemic foci from the left posterior cerebral artery vascularisation and segmental bead-like arterial narrowing (Figure 1). There were no inflammatory exponents or abnormalities in routine blood test, liver and kidney function, electrolyte, myocardial enzymes, and coagulation.

Postpartum vasculopathy was diagnosed. The following treatment was implemented: acetylsalicylic acid (ASA) 300mg/d, Endoxaparin 40mg subcutaneously/day, Simvastatin 40 mg/day, vasodilatory drugs: 0.9% NaCl + MgS04 iv, steroid therapy (Methylprednisolone

iv), analgesics. Rehabilitation was carried out. The patient's condition was improving very slowly. She was discharged home after 2 months of treatment. She was able to walk with support (mRs 3 points); NIHSS score 9 points for further rehabilitation and treatment. The patient was prescribed ASA and a hypertension medication from the calcium channel antagonist group to take at home. Blood pressure control was recommended. Six months after the stroke, the GP doctor discontinued the anti-aggregation medication and the hypertension medication. In a follow-up MR angio study performed after 12 months, the cerebral vasculature was normal, with no apparent constriction (Figure 2). Three years after the stroke, the patient had only a discrete right-sided hemiparesis that did not interfere with her daily activities (mRs score 2). The stroke did not recur, and her blood pressure remained normal.

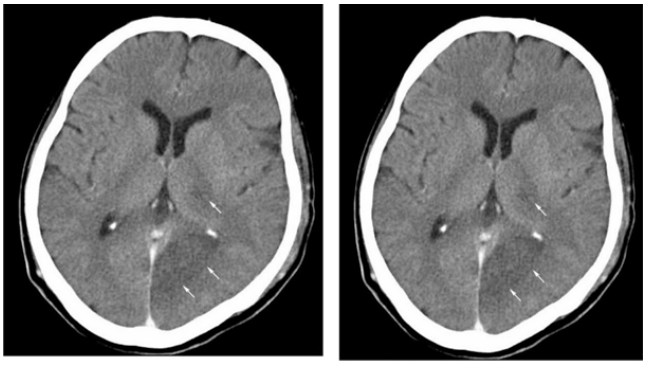

Figure 1A

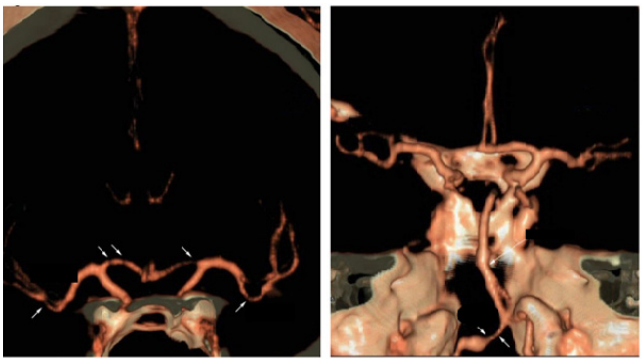

Figure 1B

Figure 1 A – CT without contrast – visible hypodense foci from the extent of left posterior cerebral artery vascularisation (white arrows).

B – CT angio, visible segmental arterial narrowing (white arrows).

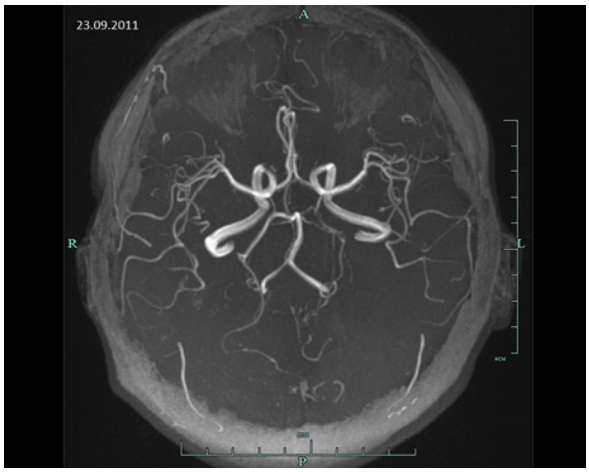

Figure 2 Blood vessels on MR angio 12 months after stroke, without segmental constrictions.

Discussion

Postpartum vasculopathy is a reversible cerebral arterial vasoconstriction syndrome of uncertain cause that affects large and medium-sized cerebral arteries. Presentation includes recurrent severe headaches, altered consciousness, and focal neurologic deficits.[1,3,8] Postpartum angiopathy can complicated by ischemic stroke. Haemorrhagic strokes can also occur.[1,2,8] Definitive diagnosis requires conducting an angiography and excluding alternative diagnosis, such as vasculitis.[1,3,8] The patient in question had an angio CT scan, which showed typical segmental beaded arterial narrowing, and blood tests did not show features typical of inflammation. In addition, a follow-up MR angio scan performed twelve months later no longer showed arterial stenosis.[8] The patient in question was given steroid therapy with magnesium infusions, an anti-aggregation drug, and a medication for hypertension. It is worth noting that the headache can be so severe that one can pass out from the pain and suffer a head injury, which is what happened in the patient in question. Therefore, a thorough history is very important so that it is not overlooked that the first symptom was a severe headache and an increase in blood pressure.[8] Proper treatment and rehabilitation can bring significant improvements. As a final note, it is worth noting that if an ischaemic stroke occurs during postpartum vasculopathy, intravenous thrombolytic treatment is contraindicated until the 10th day after delivery.[4] After the 10th day after delivery, both thrombolytic treatment and thrombectomy can be used after individual assessment of the patient. However, thrombectomy is then the preferred treatment.[4,7]

Conclusion

Postpartum vasculopathy is a rare cause of postpartum stroke. It most often occurs in the first week after delivery. Definitive diagnosis requires conducting an angiography and excluding alternative diagnosis, such as vasculitis. No standard management has been established, but it is believed to be applicable calcium channel antagonists, magnesium intravenously as well as corticosteroids, and treatment of associated conditions. After the 10th day after delivery, both thrombolytic treatment and thrombectomy can be used after individual assessment of the patient.

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Conflicts of interest

All authors declare any financial interest with respect to this manuscript.

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