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Case Report

Reversible vasoconstriction without thunderclap headache: a case report

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Abstract: Reversible cerebral vasoconstriction syndrome is a kind of clinicoradiological syndrome reported recently. It is characterized as thunderclap headache and reversible vasoconstriction. However, headache is sometimes absent when reversible vasoconstriction happens. We report a case here admitted because of watershed infarction caused by reversible vasoconstriction without headache when happened in a coal house with poor ventilation in a cold season.

Keywords: Reversible cerebral vasoconstriction syndrome, reversible vasoconstriction, headache, infarction

Introduction

Reversible cerebral vasoconstriction syndrome (RCVS) is a kind of clinicoradiological syndrome. It is seen more and more in the clinical practice. The pathophysiology is still unclear. A disturbance in the cerebral vascular tone related with vasoactive substances may be a possible reason [1] and the diagnostic criteria is proposed in 2007 [11].

As in the disease, thunderclap headache and reversible vasoconstriction are described as the main characters. Thunderclap headache is the most characteristic feature and maybe the only symptom. It is a kind of acute severe pain peaking in one minute [3] similar to ruptured aneurysm and lasts for minutes or days [2]. Reversible vasoconstriction acts as diffuse segmental constriction of cerebral arteries that resolve spontaneously within 3 months with or without neurological symptoms [3]. However, there are still some cases that the typical headache is unclear or absent.

Case reports

A 62 year-old male was admitted to the hospital in Jan 9th, 2015 because of speak difficulties and weakness. Six hours prior to admission, he noted persistent speak trouble and weakness on the left when awake from sleep. He did not feel faint or headache. Then he was sent to local hospital and underwent CT scan immediately which showed a large area cerebral infarction in the right temporal lobe and occipital lobe. Without any medicine, he reached our hospital. We were told his home was a coal house with poor ventilation and no other special history was found. On admission, his blood pressure was 160/100 mmHg, pulse rate 86/min and respiratory rate 20/min. The patient was alert but partial cooperative. He was oriented to person, place, time and situation, but had difficulties in calculation and memory especially recent memory. The visual field is unclear. His speech was not fluent and strength was 4/5 in the left muscle groups. He had clumsiness in his left arm and leg when performing finger tapping and on heel-to-skin testing. Babinski was positive in the left. He was given oxygen inhalation immediately after arterial blood was taken. Routine medicine of aspirin, statins and others were performed. Regular blood tests had no special finds. Arterial blood gas analysis showed carboxyhemoglobin 6.5% (higher than the regular 1.5-2.5%). A 3.0T magnetic resonance imaging (MRI) study of the brain was taken in Jan 12th, 2015 and disclosed a watershed infarction on the field of

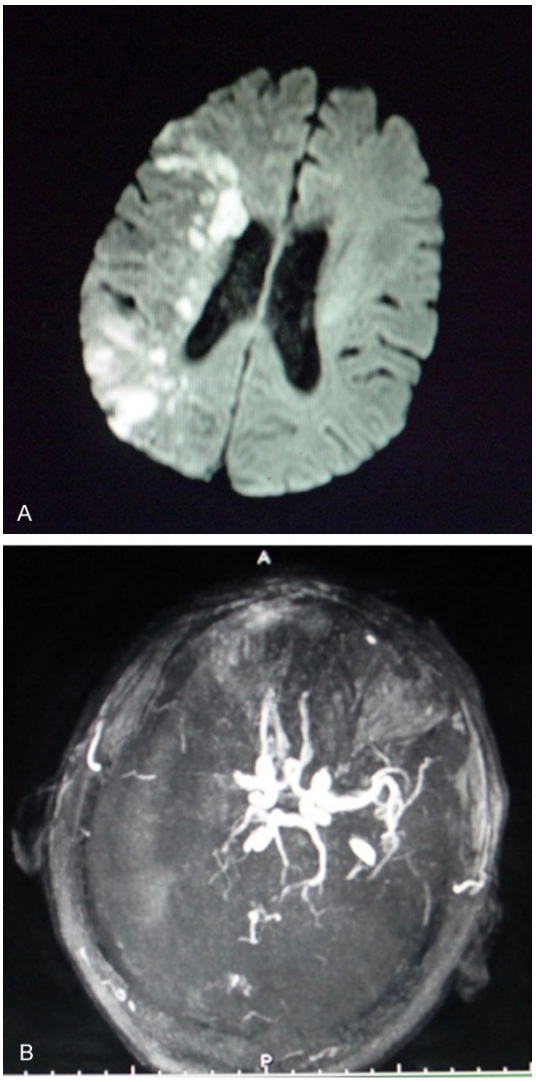

Figure 1. MRI performed at Jan 12th, 2015. A. DWI showed infarction on the field of right middle cerebral artery. B. MRA showed multiple cerebral artery stenosis and right MCA and internal carotid artery (ICA) disappeared.

right middle cerebral artery (MCA). MRA showed cerebral artery stenosis and disappeared right MCA and internal carotid artery (ICA) (**Figure 1A** and **1B**). In order to better evaluate the vessel, a CT scan with contrast was done in Jan 22th when the symptoms of the patient were almost disappeared. Surprisingly, the right MCA and ICA appeared again and arteries looked better than days before (**Figure 2**).

Discussion

We report a case with diffuse cerebral artery stenosis detected on MRA whose repatency

Figure 2. CTA performed at Jan 22th, 2015. The right MCA and ICA appeared again and arteries seemed better than four days before.

happened several days later on CTA. This cannot be explained by arteriosclerosis or vasculitis. So we define it as reversible vasoconstriction. This patient is admitted to hospital with focal nervous system lesion. Headache is absent. There are lots of reports about reversible vasoconstriction with severe headache which is consistent with RCVS. Little is done when reversible vasoconstriction occurs without any headache [4-6]. Wolff et al. perform a prospective study including 48 consecutive young patients younger than 45 years [4]. In their research, people with RCVS who have little headache are cannabis users. Our case is older than 45 years and has no history of drugs.

The consequence of reversible vasoconstriction in this case is infarction which is most frequently seen. Besides, focal cerebral convex non aneurismal subarachnoid hemorrhage, cerebral hemorrhage and reversible posterior white matter encephalopathy [7] are also complications of the disease. It has been reported that IS locates more in vertebrobasilar territory which may suggest susceptibility of posterior circulation [4]. Differently, infarction locates in the MCA territory in this case.

TCD, MRA, CTA and DSA are usually used to detect this disease. Cervical ultrasonography is usually normal [2]. There are little studies of the specificity and sensitivity of these detecting

measures. We have advised to perform MRA or CTA once again, but the patient refused because of some personal reason.

RCVS reported more in females [2, 8-10] associated with pregnancy and delivery. However, this male has no other reason besides carbon monoxide from coal in a cold season. Whether the low temperature or the carbon monoxide is another risk factor is still unknown. More researches are expected.

Conclusions

Reversible vasoconstriction without thunderclap seems to take place during more persons of a broader span of age and have more inducing factor. It is a variation of RCVS or a similar manifestation of different disease still unknown.

Disclosure of conflict of interest

None.

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