Cerebral hyperperfusion syndrome after intracranial stenting of the middle cerebral artery

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Abstract

Cerebral hyperperfusion syndrome (CHS) is a rare complication following cerebral revascularization. It presents with ipsilateral headache, seizures, and intracerebral hemorrhage. It has mostly been described following extracranial carotid endarterectomy and stenting and it is very unusual after intracranial stenting. A 71-year-old man with a stuttering stroke was taken up for a cerebral angiogram (digital subtraction angiography), which showed a dissection of the distal left middle cerebral artery. This was recanalized with a solitaire AB stent. After 12 h, the patient developed a right hemiplegia and aphasia. Computed tomography brain showed two discrete intracerebral hematomas in the left hemisphere. This is the first reported case of CHS following intracranial stenting from India. 

Keywords: Cerebral hyperperfusion syndrome, cerebral revascularization complication, intracranial stenting and cerebral hyperperfusion

Introduction

Although cerebral hyperperfusion syndrome (CHS) is well documented after carotid endarterectomy and carotid artery stenting, only a few cases have been described after intracranial stenting.[1-5] After the Stenting versus Aggressive Medical Therapy for Intracranial Arterial Stenosis and Vitesse Stent Ischemic Therapy trials demonstrated the inferiority of intracranial stenting compared to aggressive medical treatment, this procedure has been largely abandoned.[6,7] However, intracranial stenting is still used in carefully selected patients with good results.[8]

Cerebral hyperperfusion is defined as a >100% increase in cerebral blood flow (CBF) compared to the baseline and it is generally associated with post procedural hypertension. CHS has an estimated incidence of 0.4%-2.7% after CE and usually presents with ipsilateral headache or migrainous phenomena, seizures, or intracerebral hemorrhage (ICH). I would like to report an unusual case of CHS following middle cerebral artery (MCA) stenting.

Case Report

A 71-year-old man presented to us with fluctuating motor aphasia of 3 h duration. Magnetic resonance imaging of the brain showed multiple acute infarcts in the left MCA territory and he was started on antiplatelets and statins. By the next day morning, he had developed global aphasia and transient right-sided weakness. His blood pressure (BP) was 150/90 mm Hg and he was taken up for a four-vessel digital subtraction angiography which showed a possible dissection with a thrombus in the distal left MCA [Figure 1]. After obtaining consent, a 4 mm × 15 mm solitaire AB neurovascular modeling device (ev3, Irvine, USA) was placed across the lesion into the superior MCA and the lesion was recanalized with a 6 mm Solitaire AB Neurovascular Modeling device (ev3, Irvine, USA). The patient made a good recovery and was discharged after 7 days without any sequelae.

Keywords: Cerebral hyperperfusion syndrome, cerebral revascularization complication, intracranial stenting and cerebral hyperperfusion

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After cerebral revascularization, the advent of severe headache, seizures, or focal neurological deficits after cerebral revascularization should be presumed to signify CHS unless proved otherwise. TCD studies are helpful in monitoring elevated peak systolic velocities in the intracranial arteries as a marker of impending CHS.[10] In about 15% of patients, TCD signals may be hampered by poor bone windows. In such patients, near-infrared spectroscopy may be a useful option to monitor CBF.[11,12] All critical care physicians should be aware of this entity for better monitoring and prevention of this postprocedural complication in the ICU.

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Conflicts of interest
There are no conflicts of interest.

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