

Revascularization Treatment of Acute Cerebral Stenosis Supported by intra-arterial syngo Neuro PBV IR

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Patient history

A 47-year-old male patient with a 16-year history of hypertension and onset of diabetes mellitus 5 years ago presented with symptoms of paroxysmal numbness and weakness in his left extremities.

Diagnosis

Digital subtraction angiography (DSA) demonstrates a severe stenosis (80%) in M1 segment of the right middle cerebral artery (MCA). A 3D intra-arterial syngo Neuro PBV IR examination was performed to examine the viability of the right brain parenchyma.

Treatment

A 2.5 x 9 mm intracranial stent (Apollo, MicroPort, China) was implanted at the position of stenosis through balloon dilatation. The procedure was performed under general anesthesia. DSA examination showed the morphological improvement of the M1 segment of the right MCA. The stenosis was reduced to less than 10%. After stenting, a syngo Neuro PBV IR run was performed by using the same

acquisition and injection protocol as in diagnosis in order to quantitatively assess the quality of treatment. A significant improvement of the CBV value of the right brain hemisphere could be observed by the comparison pre- and post-stenting PBV imaging.

Comments

syngo Neuro PBV IR provides a mean to assess cerebral blood volume (CBV) in the catheter suite. It is a powerful and convenient tool to visualize the revascularization with cerebral ischemia directly before and after intervention. Different from the common syngo Neuro PBV IR examinations, in which an intra-venous injection protocol is used, in this case, a selective intra-arterial injection protocol was adopted. The pre- and post-treatment blood volume measurements were restricted to the right brain, the area that is supplied by the right common carotid artery. This way, the effect of revascularization on the right MCA could be best presented. More importantly, the usage of contrast agent in the intra-arterial injection was only 10% of the amount used in intra-venous

injection. Although this protocol has not been approved systematically, we believe that intra-arterial syngo Neuro PBV IR measurement could have a large application potential in conjunction with interventional treatment of cerebrovascular diseases. Ongoing studies are necessary to further approve the measurement with selective intra-arterial injection and to explore its clinical benefits.

Intra-arterial PBV Examination protocol

Imaging protocol	8s DSA
Contrast quantity	16 cc (350 mg/cc) diluted to 50%
Injection rate	1 cc/s
Injection duration	16 s
X-ray delay	8 s
Injection site	right common carotid artery
Reconstruction preset	Neuro PBV

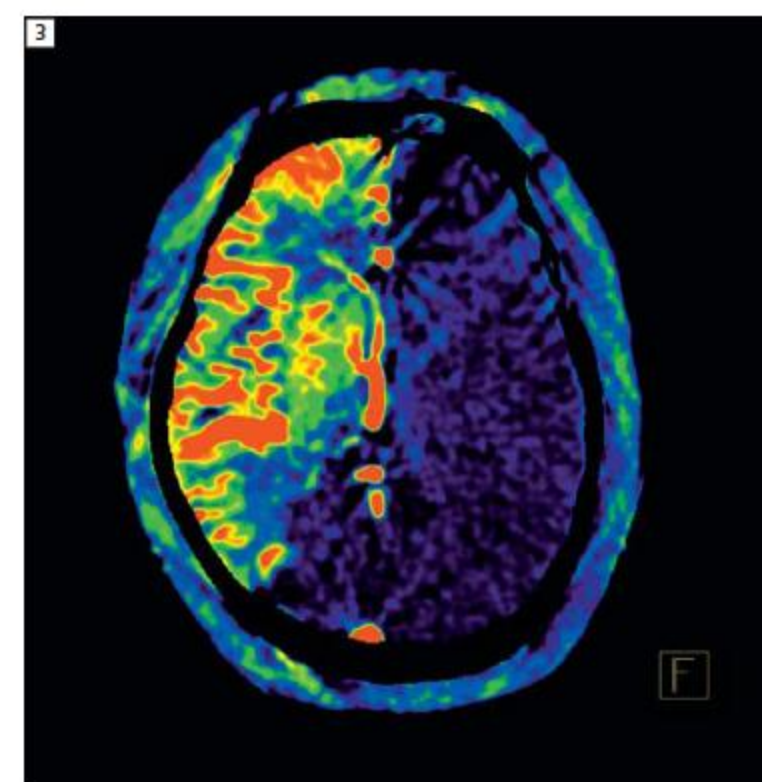
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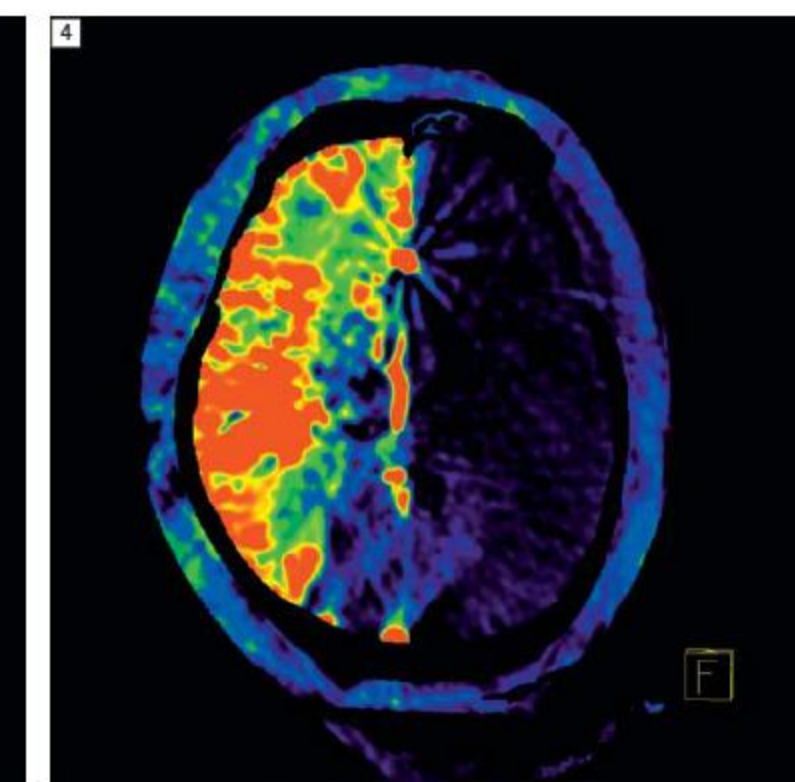
1 Pre-treatment: A severe stenosis in the M1 segment of the right MCA.



2 Post-treatment: Right intracranial vasculature was improved by stenting.



3 Pre-treatment syngo Neuro PBV imaging of the right brain hemisphere.



4 Post-treatment syngo Neuro PBV imaging of the right brain hemisphere.