

follow-up brain CT scan was done within 72 hours after stroke.

Results and Discussion: Forty-four acute stroke patients were investigated within three hours between January and December 2005. Thirty-two patients (M/F: 1.9) had an adequate insonation condition for UPI analysis (72.7%). No adverse events related to the US investigation were observed. The pixel-by-pixel analysis converted the gray-scale loop in a colour map, and a 3D-visualization was possible. In the group of patients with a complete MCA infarct it was possible to identify the perfusion deficit on the parameter images. The area of hypoperfusion corresponded to the area of infarction in follow-up brain CT scan. TIC parameters calculated for each investigation were: Peak Intensity (PI), Time-To-Peak (TTP), and Area Under the Curve (AUC). In conclusion Ultrasound Perfusion Imaging might be of help in the early identification of ischemic areas in acute stroke patients within the therapeutic window, allowing to a more selective and safe identification of stroke patients eligible for thrombolysis.

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Improvement of Cerebrovascular Reserve (CVR) on middle cerebral artery (MCA) after carotid revascularization, evaluated by Transcranial Color-Coded Duplex sonography (TCCD)

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It is known that cerebral haemodynamic impairment is a risk factor for ipsilateral ischemic stroke and TIA in patients with carotid stenosis and occlusion. In these patients haemodynamic and embolic factor contribute to stroke risk, but it is not quite studied how cerebral hemodynamics changes after carotid surgery or stenting in both symptomatic and asymptomatic subgroup. The aim of this study is to identify the direction and the time of short term changes in CVR on MCA after carotid revascularization, either surgical or endovascular. For this purpose we have used TCCD with Diamox test (administration of acetazolamide 1 g i.v.). Twenty-one patients (2 female, 19 male, 14 symptomatic and 7 asymptomatic, mean age 69,48 years, standard deviation 7,93 years) with unilateral or bilateral carotid artery stenosis (>60% on NASCET criteria) underwent TCCD using a commercially available ultrasound machine (Toshiba Aplio). All the patients had at least 3 cerebrovascular risk factors. Vasomotor reactivity of the main cerebral vessels was determined using the Diamox test before surgery and at 10, 30, 60-80, 160-180 days and one year after. The data were compared using the Wilcoxon rank test for paired data and t test. In the subgroup with unilateral symptomatic carotid stenosis CVR on ipsilateral MCA shows a statistical significant improvement in the early days after revascularization (Wilcoxon rank test, p 0,0234) and at 6 months (t di Student, p 0,02). CVR on ipsilateral MCA shows a statistical significant improvement in the early days after revascularization (Wilcoxon rank test, p 0,0336) in the subgroup with

bilateral symptomatic carotid stenosis too. In asymptomatic patients with unilateral and bilateral carotid disease CVR on ipsilateral MCA does not significantly improve during follow-up. Instead in the subgroup with asymptomatic bilateral carotid disease there is a statistical significant improvement in CVR on contralateral MCA (Wilcoxon rank test, p 0,0339) in the early days after surgery. In patients with unilateral stenosis and subclavian-vertebral disease there is a statistical significant improvement in CVR on ipsilateral MCA both early (Wilcoxon rank test, p 0,0391) and late (Wilcoxon rank test, p 0,0232). Evaluation of cerebral haemodynamics using TCCD and Diamox test may help to select the asymptomatic patients for carotid surgical or endovascular procedure. In this higher risk subgroup there are at the moment patients with bilateral significant carotid disease and patients with unilateral carotid stenosis plus subclavian-vertebral disease, although we need larger sample of patients in order to confirm this view.

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A subclavian steal syndrome with bulbar TIAs on hemodynamic ground, investigated by Transcranial Color-Coded Duplex sonography (TCCD) and Diamox test

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C.S., female, 51 years old, came to our out-patients' department in November 2005 because of repeated occurrence of a sensory disturbance with sudden onset and spontaneous relief. Since at least 5 months she was having at a daily rate a right hemifacial loss of sensation and formicolar paresthesias with a spatial course from ear to mouth like an onion's bulb. These symptoms were triggered by standing up and sitting and relieved by lying down. Neurological exam was normal unless right hemifacial hypoesthesia on sitting position. Physical exam shown a clear asymmetry in humeral and radial pulses with right side hypospagyria. The past history was only notable for mild hypercholesterolemia, mild obesity and past smoking. Clinical suspect of bulbar TIAs on hemodynamic ground was made and then the patient underwent to MRI of brain with gadolinium, that was normal, and ultrasound examination of supraaortic trunks, that shown a tight right subclavian artery (SA) stenosis in the prevertebral segment with fully inverted flow direction in ipsilateral vertebral artery (VA). A TCCD was performed in order to investigate cerebral hemodynamics. The main results were the identification of a large anastomotic loop between left and right VA, the inverted flow direction on right VA proximal to this loop with normal flow direction in the segment distal to it in lying down position and the inverted flow direction in the precommunicant right posterior cerebral artery (PCA P1). Instead in sitting position flow direction was inverted in the full course of right VA and there was a partial steal on basilar artery too. Then Diamox test (administration of acetazolamide 1 g i.v.) was performed and it shown