

Results: Left VA was dominant in 65% of patients. RI values increased and flow decreased with age. Blood flow velocity and volume were higher, and RI was lower in the left than in the right VA. In VBI patients peak systolic velocity and RI were significant higher in V1 segment, and lower in the V2 and V3 segment: VpsV1=62,7±16,4cm/s; VpsV2=46,5±15,1cm/s; VpsV3=45,6±17,7cm/s; RIV1=72,2±10,1; RIV2=68,7±12,9; RIV3=64,6±14,4.

Conclusion: The doppler sonographic assessment of extra cranial VA may be useful for the study of hemodynamic changes in patients with vertebrobasilar insufficiency.

28**The Contralateral Carotid Disease In Patients with Internal Carotid Artery Occlusion**

Lovrencic-Huzjan A., Vukovic V., Strineka M., Azman D., Bene R., Demarin V.

Department of Neurology, University Hospital «Sestre milosrdnice», Reference Center for Neurovascular Disorders of Republic of Croatia, Zagreb, Croatia

Aim of the study was to investigate management and natural history of the contralateral internal carotid artery disease in patients with internal carotid artery occlusion (ICAO).

Patients and methods: During one year 296 patients with ICAO were investigated. Retrospective analysis of follow-up examinations was performed, and patients were divided into groups according to contralateral carotid disease. Data are presented as numbers and percentages.

Results: Out of 296 patients, in 90 patients with carotid occlusion only one investigation was performed. Thirty three patients were followed up due to postoperative ICAO. In 14 patients ICAO developed during ultrasonographic follow-up. Contralaterally in this group of patients, 9 had unchanged findings, while in 5 (35,7%) disease progression was observed: in 2 patients from mild stenosis to occlusion, in 1 from mild to subtotal stenosis, in 1 from moderate stenosis to occlusion and in 1 from subtotal stenosis to occlusion. Out of 44 patients with ICAO and contralateral subtotal stenosis at initial investigation, 42 underwent carotid surgery. Postoperatively 32 had normal finding, 6 developed mild carotid stenosis, 2 moderate, and 2 had postoperative carotid occlusion. Two patients were followed up without intervention. Nine patients with bilateral ICAO were followed up during years. Hundred and six patients with ICAO and contralateral mild to moderate changes, were followed-up. The finding was unchanged in 68 patients. In 21 (30%) patients disease progressed to subtotal stenosis, 18 underwent carotid surgery.

Conclusion: In one third of patients with carotid occlusion contralateral carotid disease progression was observed. Further investigations should be conducted.

29**Galen Vein Involvement in a Case of Transient Global Amnesia**

Malferrari G.¹, Zedde M.¹, Sanguigni S.², Marcello N.¹

¹ *Neurology Department, Stroke Unit, Arcispedale Santa Maria Nuova, Reggio Emilia, Italy*

² *Neurology Department, Stroke Unit, Ospedale Madonna del Soccorso, San Benedetto del Tronto, Italy*

The pathophysiology of Transient Global Amnesia (TGA) has been a matter of discussion since years; an attractive hypothesis postulates a cerebral venous drainage impairment, e.g. by identifying a jugular venous valve incompetence, because of the absence of valvular leaflets in the intracranial vessels. We studied a 68 years old previously health patient who came to our attention for the onset of anterograde amnesia since 4 hours and a spontaneously improving course. The urgent brain CT was normal and the ultrasound examination of epiaortic vessels and TCCS was unsignificant on the arterial side, but on the venous side it has been found a left jugular valve incompetence on Valsalva maneuver, a markedly angled course of the proximal segment of the Galen vein and a dynamic stenosis of its middle segment during Valsalva maneuver. This finding was highly reproducible in the follow-up at 7 and 40 days and the patient underwent to a neurosonological examination for a right to left shunt, that was positive for a mild shunt. The subsequent diagnostic workup is made by a CTA examination and a MRI – MRA, both negative but not easily performable and valuable in dynamic conditions (like a Valsalva maneuver). This is the second episode of TGA for our patient, being the first ten years before. An amnestic syndrome was described in the Galen vein thrombosis but this is the first report, at our knowledge, of a vein stenosis as responsible of TGA, and neurosonological techniques was demonstrated useful and reliable in dynamic evaluation.

30**A Case of successful Sonothrombolysis Performed on a Carotid T-Type Occlusion**

Malferrari G.¹, Zedde M.¹, Dallari A.¹, Nucera A.¹, Accorsi F.², Marcello N.¹

¹ *Neurology Department, Stroke Unit, Arcispedale Santa Maria Nuova, Reggio Emilia, Italy*

² *Internal Medicine Department, Ospedale Maggiore, Bologna, Italy*

A 66 years woman with a recent diagnosis of idiopathic hypertrophic cardiomyopathy was evaluated because of the onset of a right sided hemiparesis and aphasia since 2 hours (NIHSS 8). The unenhanced brain CT was normal and the neurosonological examination showed indirect signs of left M2

middle cerebral artery (MCA) involvement. The patient underwent to iv thrombolysis with rtPA with sudden and complete recovery. After five days there was the abrupt onset of left side hemiplegia, neglect and hemianopsia. A complete neurosonological evaluation was performed and a right carotid T occlusion was diagnosed. Then an ultrasound perfusional examination was made by TCCS with power modulation and contrast medium bolus injection and a wide hypoperfused area in the right MCA territory was showed. Because of the contraindication to the thrombolysis (recent stroke), a rescue sonothrombolysis was made by repeated boli of contrast medium and continuous TCCS monitoring of the proximal MCA. During the first five minutes of treatment a rapidly increasing MCA opening was found and followed by recanalization of the intracranial ICA. At the same time a disappearance of the stump flow signal in the right extracranial ICA was registered. A subsequent perfusional scanning showed a restored microcirculation in the right hemisphere and a MRI scan two weeks later confirmed some small scattered diffusion alteration in the same territory. TCCS is a simple, rapid and useful tool in the diagnosis and treatment of acute stroke, even in clinical situations where there is not time enough for conventional neuroradiological techniques.

31**US Perfusional Evaluation in Traumatic Brain Injury:
a Clinical Proposal**

Malferrari G.¹, Zedde M.¹, Dallari A.¹, Nucera A.¹, Servadei F.², Ghadirpour R.², Bottari W.³, De Berti G.⁴, Nicoli F.⁴, Marcello N.¹

¹ Neurology Department, Stroke Unit, Arcispedale Santa Maria Nuova, Reggio Emilia, Italy

² Neurosurgery and Neurotraumatology Department, Arcispedale Santa Maria Nuova, Reggio Emilia, Italy

³ Intensive Care Unit, Arcispedale Santa Maria Nuova, Reggio Emilia, Italy

⁴ Radiology Department, Arcispedale Santa Maria Nuova, Reggio Emilia, Italy

In order to improve the management of patients with moderate to severe TBI and contusive-hemorrhagic brain lesions could be useful to achieve perfusional data on the parenchyma around the lesions. This is because a penumbral finding is likely related to savable tissue and conversely a normal or luxury perfusion can be predictive of a better prognosis.

We studied four male patients with a TBI (mean age 33.5±22.8 years) and a severe neurological deficit (GCS 5-7) associated with a multiple contusive-hemorrhagic lesion in the supratentorial zone of a single hemisphere. None of the patient was eligible to surgery but two of them underwent in the first week to a decompressive hemicraniectomy. All patients underwent to a perfusional evaluation with TCCS and power

modulation technique at a mean of 2.3±1.8 days from the admission to the ICU. A parametric measurement of TP, CBV, CBF, MTT was performed off line on a short clip stored. Tridimensional parametric maps were also derived and the area of the perfusion deficit was compared with the correspondent lesion in the brain CT scan.

A good correspondence was found between the severely hypoperfused areas in the ultrasound examination and the contusive-hemorrhagic foci in the brain CT. Patients with normal perfusional evaluation at the visual and parametric examination showed a good functional prognosis (mRS 0-2 at three months).

Methods for perfusional evaluation in the intensive care patients should be bedside, handle, ease to perform and accurate. Therefore we propose that the ideal method could be a neurosonological technique.

32**US Perfusion in Space Occupying Brain Lesions**

Malferrari G.¹, Zedde M.¹, Pisannello A.², Borasi G.³, Nicoli F.⁴, Marcello N.²

¹ Neurology Department, Stroke Unit, Arcispedale Santa Maria Nuova, Reggio Emilia, Italy

² Neurology Department, Arcispedale Santa Maria Nuova, Reggio Emilia, Italy

³ Biophysics Department, Arcispedale Santa Maria Nuova, Reggio Emilia, Italy

⁴ Radiology Department, Arcispedale Santa Maria Nuova, Reggio Emilia, Italy

In patients with supratentorial space occupying brain lesions and an adequate temporal bone window, the evaluation of the cerebral perfusion with TCCS by second harmonic imaging and second generation contrast media administration, can help to define the extent and features of the intracranial processes.

Seven patients (two females and five males, mean age 64 ± 3.56 years) with a histologically confirmed diagnosis of glioblastoma multiforme (four patients, two with recurrence), secondary brain tumors (from lung cancer, two patients) and an atypical meningioma (one patient) underwent to a complete neurological and neuroradiological work-up and to a neurosonological evaluation with TCCS. The ultrasound examination was made with a power modulation technique and a Sonovue bolus injection. A short clip was recorded from the visual assessment of contrast medium arrival and it was evaluated off-line for time and echogenicity measurements. A handily designed ROI was traced by the guide of single frame examination and MRI appearance and extent of lesions. The comparison was made between such a ROI and a controlateral thalamic ROI (healthy brain tissue) for the echogenicity parameters and