

ficant positive correlation between IMT and AS ($r = 0,931$, $p < 0,01$ right and $r = 0,77$, $p < 0,01$ left).

Conclusion: These results show that decline in BHI as parameter for microvessel dysfunction is in good correlation with increase of AS as functional parameter of extracranial vascular aging and IMT as morphological parameter for subclinical atherosclerotic changes.

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Differences between Flow Velocities in the Posterior Cerebral Artery in Patients with Combined Occlusion of the Vertebral and Internal Carotid Artery and Carotid Artery Alone**
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Purpose: was to evaluate if addition of occlusion or stenosis $> 50\%$ of vertebral artery (VA) in patients with unilateral occlusion of the internal carotid artery (ICA) influences mean velocities (MV) of posterior cerebral artery (PCA) during follow-up at repeated examinations with acetazolamide test of vasomotor reactivity (VMR), compared to the group of only unilateral occlusion of the ICA without VA occlusion (group C).

Method: 27 patients, aged 63 ± 15 years, with occlusion of the ICA confirmed by duplex scanning were followed for mean of 4.5 ± 1.8 years by repeated clinical and 3-D transcranial Doppler examinations with acetazolamide test (1 g.i.v.) of VMR. 6 patients had minor stroke without functional disability at the start of the study. 4 patients had occlusion of the VA (group A) and 4 stenosis $> 50\%$ (group B) in addition.

Results: The slowest MV of 26 cm/s in the PCA on the occluded side were registered in group A and differed significantly ($p < 0,05$) from group C with MV of 45.09 ± 13.76 cm/s and normals (39.05 ± 7.7 cm/s). MV of 39.75 ± 8.88 in group B did not differ significantly from group C and normals. No significant difference between groups was found on the contralateral side. VMR in the PCA either on the ipsilateral or contralateral side to the ICA occlusion was impaired in 6 of 8 (75%) patients in group A+B and in 7 of 17 (41%) patients in group C during follow-up (ns, Fisher exact test). 4 patients in group A+B (50%) suffered from ischaemic stroke during follow-up in contrast to 3 ischaemic strokes in 19 patients (16%) in group C.

Conclusion: Combined unilateral occlusion of ICA and VA caused a significant haemodynamic impairment in posterior circulation and was not prone to development of posterior collateral on the occluded side.

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Pulsatility Index Compared to Pulsatile Apparent Resistance in Healthy Subjects during Hyperventilation and CO₂-Retention**

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Aim: Comparison of pulsatility index (PI) with pulsatile apparent resistance (PaR)

Background: Cerebral autoregulation can be studied from changes in middle cerebral artery blood flow velocity (MCA_FV) during CO₂-provocations. Beat-to-beat averages obscure possible changes in pulse morphology. Pulsatility index (PI) is used to express these changes. $PI = (sMCA_FV - dMCA_FV) / mMCA_FV$. With: s as systolic, d as diastolic, m as mean. To quantify the pulse morphology we calculated Pulsatile apparent Resistance (PaR) by correcting PI for arterial blood pressure (ABP).

$PaR = (((dABP/dMCA_FV) - (sABP/sMCA_FV)) / (mABP/mMCA_FV))$.

Materials and Methods: Left and right MCA_FV were measured with TCD. ABP was measured non-invasively from a finger cuff. End-tidal CO₂-concentration (ETCO₂) was monitored. Measurements were performed during: normoventilation (NV), hyperventilation (HV), and CO₂-retention (CO₂ret). PI and PaR values were calculated.

Results: During hyperventilation, normoventilation, and CO₂-retention the ETCO₂ values were, 2.7, 4.5, and 6.4 % respectively. The response of the cerebral autoregulation was observed as 84, 67, and 66 BPM for heart rate; 28, 47, and 76 cm/s for mean MCA_FV; 0.43, 0.52 and 0.47 for PI; 0.17, 0.13 and 0.07 for PaR, respectively.

Discussion: Changes in MCA_FV pulse morphology readily visible during a CO₂-challenge are not well expressed by the PI. The PaR performs better since it is a blood pressure corrected PI and depends less on changes in HR (heart rate). For healthy subjects (aged 14 to 76 years) performing normoventilation the mean (SEM) of the PaR values measured was 0.13 ± 0.015 (95% within a range of -0.05 - 0.22).

Conclusion: In healthy subjects PaR reflects the adaptation of the cerebral vascular bed to the changed CO₂-exchange needed.

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Transcranial Color-Coded Duplex Sonography (TCCD) Screening for Stroke Prevention in Children with Sickle Cell Disease**

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Objective: Ischemic stroke is a complication in sickle cell disease (SCD) children. The STOP trial showed the effectiveness of TCD to identify high risk SCD children to prevent stroke with chronic transfusions. Patients and methods: TCCD was performed in 26 (12 males, 14 females; median age 6.5) consecutive children with SCD (14Hb-SS, 5Hb-SC, 5Hb-Sβ+), 2Hb-CC. A control