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Abstracts

Current implications of cerebral revascularisation: 8 years of experience in Lausanne and Geneva
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During the past 10 years there has been a revival of interest in cerebral revascularisation (CR). To determine the current indications for CR, we retrospectively evaluated 20 consecutive patients operated between June 1997 to June 2005 at our centres. There were 11 males and 9 females. The preoperative work-up included CT angiography, intraarterial angiography and brain perfusion studies. The mean age was 45. Two patients underwent two separate CR procedures. The indications were complex intracranial aneurysms (14 cases), Moya Moya syndrome (4 surgeries in 3 cases) and arterial occlusive diseases (4 surgeries in 3 cases). The techniques included 19 extracranial to intracranial bypasses (STA-MCA anastomosis in 13 cases, ECA-ICA in 6 cases) and 3 intracranial to intracranial bypasses (side-to-side anastomosis in 2 and end-to-end in one case). The immediate patency rate was 95.4%. Two patients experienced cerebral infarction and one exhibited hyperperfusion haemorrhage. Eighteen out of 20 patients had improved or stable postoperative status. Two patients died during follow-up. One due to the severity of primary haemorrhage and the other as a result of other medical problems. The indications of CR should be carefully assessed by cerebral blood-flow studies. Bypass surgery appears to be an appropriate treatment in selective cases of complex aneurysms or arterial occlusive disease when medical and endovascular treatment has no option to offer.

Vertebral artery dissection: presenting findings and predictors of outcome in 189 consecutive patients

Background: Few data exist about clinical outcome and its predictors in patients with spontaneous vertebral artery dissection (sVAD).

Patients and methods: Clinical, imaging and outcome data and its predictors were investigated.

Results: A total of 189 patients, 103 men and 86 women with 215 sVAD were identified. Brain ischaemia occurred in 149 patients (80%; ischaemic stroke, n = 131, 70%; TIA, n = 18, 10%). Three patients with ischaemic stroke showed also SAH on brain imaging. Additional 3 patients (2%) had subarachnoid haemorrhage without ischaemia. Ischaemic or haemorrhagic symptoms were associated with pain in 135 (89%) and pulsatile tinnitus in 7 (5%) patients. Remaining 37 patients had isolated head and/or neck pain in 22 cases (11%), asymptomatic sVAD in 14 cases (7%) and cervical radiculopathy in one case.

Location of VAD was more often in the V2 (33%) or V3 (33%) than in the V1 (20%) or V4 segment (14%), (p < 0.001). Most infarcts were located in the territory of the posterior inferior cerebellar artery (n = 96, 73%). Outcome was favourable (modified Rankin Scale score 0 or 1) in 100 (81%) of 123 ischaemic stroke patients with follow-up, and two (2%) patients died. Low NIHSS score on admission was an independent predictor of a favourable clinical outcome (p < 0.001).

Conclusions: SVAD is predominantly located in the V2 or V3 segment and causes mainly posterior circulation stroke. Favourable outcome is observed in most ischaemic strokes and independently predicted by low NIHSS score.
Isolated hand palsy due to ischaemic stroke


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Results: Four cohort studies (n = 1021 patients) were included. Compared to younger patients, older patients had a 3.96 times (95% CI 2.44–6.42) higher mortality rate. No significant differences were shown for “favourable outcome” (OR = 0.69; 95% CI 0.45–1.07), “favourable outcome among survivors” (OR = 0.95; 95% CI 0.59–1.53) and for “sICH” (OR = 1.25; 95% CI 0.64–2.42).

Conclusion: This systematic review showed that (1) stroke patients ≥ 80 years receiving rtPA have a higher mortality risk than younger patients, (2) the likelihood of favourable outcome among survivors as well as the risk for sICH is similar in both age groups.

Epidemiology of aphasia due to first ischaemic stroke


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Objective: In a geographically defined population we assessed incidence and determinants of aphasia due to first-ever ischaemic stroke (FEIS).

Methods: A one-year prospective, population-based study among the permanent residents of the canton Basle-City, Switzerland, was performed using multiple overlapping sources of information.

Results: Among 188,015 inhabitants, 269 patients had FEIS, of which 80 (30%, 95% CI 24–36) had aphasia. The overall incidence rate of aphasia due to FEIS amounted to 43 per 100,000 inhabitants (95% CI 33–52). Aphasic stroke patients were older than non-aphasics. The risk of aphasia increased by 4% (95% CI 1–7) per each year of age of stroke patients. An association between gender and risk for aphasia could not be confirmed. Neither gender nor age had an effect on severity or fluency of aphasia. Cardioembolism was more frequent in aphasic stroke patients than in non-aphasic ones (OR 1.85; 95% CI 1.07–3.20). Aphasic patients were more likely to receive thrombolysis than non-aphasics (OR 4.7; 95% CI 1.5–15.4).

Conclusion: This systematic review showed...
with CEA developed an ipsilateral major stroke 16 days after the procedure. Time between procedure and discharge was 3.5 + 1.8 days regarding CAS and 7.3 + 3.3 days regarding CEA. Mean follow-up period was 48.1 ± 21.3 months with CAS and 43.5 ± 19.5 months with CEA. Two patients treated with CEA showed recurrence of stenosis up to a degree of 70%, one patient after CAS treatment showed a restenosis of 40%.

Conclusion: CAS is at least equivalent compared to CEA regarding perioperative safety as well as patency and stroke prevention in the long-term follow-up with reduced hospitalisation.

Circadian and seasonal variation of ischaemic stroke onset – an 8-year survey from the Basel stroke registry

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Background: In 1995, the Basel Stroke registry was established in order to systematically assess admission of acute stroke patients in the Basel Stroke Unit.

Results: 785 patients entered the hospital within 3 hours (45.8%). Stroke onset was not equally distributed over the week and the year, respectively. More strokes than expected occurred on Tuesdays and from March (+21.3%) to May (+10.7%). Stroke syndromes were classified according to the Oxfordshire Community Stroke Project and correlated with time and day of emergency admission. Chi-square statistics were applied.

Conclusions: Most strokes occur on Tuesdays and within the months March to May. Almost half of the patients arrive at the emergency room within 3 hours of onset, if symptoms were noticed. In one third of the patients with confirmed ischaemic stroke, the occurrence time is unknown. There was no daytime, weekday or seasonal variation of stroke syndromes.

Perfusion CT shows hypoperfusion during reversible posterior leukoencephalopathy syndrome

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Background: Reversible posterior leukoencephalopathy syndrome (RPLS) is characterised by altered mental function, seizures, cortical visual symptoms and headaches. We correlate clinical, perfusion CT (PCT) and MRI findings in three patients with RPLS and symptoms lasting from 12 hours to 4 days.

Patients and methods: Patient 1: A 61-year-old female patient without known risk factors presented sudden cortical blindness and confusion, very high blood pressure (BP) and six hours later had two generalised seizures. Acute PCT showed bilateral occipital hypoperfusion. Diffusion-weighted (DWI) MRI on day 4 was normal, T₁-weighted (T₁W) imaging showed bioccipital white matter changes. Patient 2: A 61-year-old male patient with hypertension and colon adenocarcinoma had a generalised seizure followed by cortical blindness at the end of a SFU infusion. Acute PCT showed widespread bilaterally decreased parieto-occipital flow. DWI and T₁W on day 2 were normal. Patient 3: An 87-year-old hypertensive female patient, anti-coagulated for chronic atrial fibrillation, was found with confusion, bilateral incomplete hemianopia and very high blood pressure. Acute PCT showed bilateral occipital hypoperfusion. DWI on day 4 was normal, CT and T₁W showed diffuse leukoaraiosis.

Conclusion: Perfusion CT in acute RPLS shows bilateral posterior hypoperfusion. This hypoperfusion seems to be different from ischaemic stroke, as it does not result in DWI lesions nor does it respect vascular territories.

Knowledge and prevalence of TIA in the Swiss population above 55 years

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Results: From 228 patients with surgical (n = 107) or percutaneous (n = 121) PFO closure, follow-up data were available for 190 for a mean of 6.3 years. During follow-up 4 patients (2.1%) with inappropriate PFO closure were identified: a 35-year-old man with a mild hemiparesis was found to have multiple sclerosis; a 43-year-old woman with vertigo and gait ataxia was diagnosed with right peripheral vestibulopathy; a 41-year-old man with lacunar strokes was found to have CADASIL; and a 30-year-old man with a carotid territory stroke had severe genetic hyperhomocysteinemia. Respectively, three of the four patients had neuroimaging findings before closure that were not compatible with embolic stroke.

Conclusions: We identified inappropriate closure of PFO in 2.1% of patients. A thorough initial work-up may avoid unnecessary interventions. Symptom recurrences after closure should prompt a search for rare causes of stroke and stroke mimics.

Age-related morphological alterations of brain vessels and parenchyma in normal and hypertensive rats

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Hypertension is a main risk factor for cerebrovascular disease in humans. To determine the factors that may participate in the development of vascular dementia (VD), we investigated the changes related to hypertension in the brain of spontaneously hypertensive rats (SHR). For this, immunohistochemistry at 2, 4 and 6 months of age was done and...
compared to age-matched normotensive rats. Specific markers for brain vessels (smooth muscle actin and dysferlin), activated astrocytes (GFAP) and IgG deposits were used to identify alterations. The mean arterial blood pressure (MAP), glycaemia and body weight were measured. From the age of 2 months, SHR showed an elevated MAP compared to normotensive rats. The weight of SHR was 20% below that of normotensive rats, and their glycaemia at age 6 months was elevated. Histological results showed a thickening of the vascular walls together with depositions of IgG around them in SHR. Dysferlin-positive blood vessels, astroglisosis and enlarged ventricles were observed in this strain. We showed that physiological and morphological changes in the brain of SHR, such as blood vessel alterations, astroglisosis and atrophy, are already observed at a young age, long before any brain lesion can be seen. These modifications are similar to those observed in VD. Molecular studies are needed to understand the development of VD related to hypertension.

What factors affect early admission of acute stroke patients? Preliminary results

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Background: Despite the evidence that early admission to hospital followed by a rapid assessment of interatrial right-to-left shunt (RLS) and the presence of concomitant atrial septum aneurysm (ASA) possibly increases the risk of cerebral embolism associated with PFO and ASA. To date, no study has compared cerebral diffusion-weighted imaging (DWI) findings between stroke patients with PFO plus ASA and those with PFO alone.

Methods: DWI and transoesophageal echocardiography findings were assessed in 48 consecutive patients with cryptogenic ischaemic stroke associated with PFO. Number and size of hyperintense lesions on DWI were correlated with PFO size, degree of interatrial right-to-left shunt (RLS) and presence of ASA.

Results: Patients with PFO plus ASA more often had multiple hyperintense DWI lesions (16/30, 53%) than those with PFO alone (3/18, 17%; p = 0.01). This association remained significant after correction for PFO size, degree of RLS and vascular risk factors in a logistic regression analysis (p = 0.04). No significant associations between DWI lesion characteristics and PFO size or degree of RLS were found.

Conclusions: The presence of concomitant ASA is independently associated with multiple cerebral ischaemic lesions in stroke due to PFO, suggesting an increased embolic risk.