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ESOC 2022 – Oral Presentations
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Scientific Communications I - Service Organisation / Quality Improvement

EMERGENCY MEDICAL SERVICES ACTIVATION FOLLOWING FACE, ARM, SPEECH, TIME (FAST) PUBLIC AWARENESS CAMPAIGNS IN QUEBEC, CANADA

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Background and aims: Face, Arm, Speech, Time (FAST) public awareness campaigns improve stroke recognition in the general population. Whether this translates into improved emergency medical services (EMS) activation remains unclear. We assessed the effect of five consecutive FAST campaigns on EMS calls for suspected strokes in Quebec, Canada.
Methods: We retrospectively assessed data collected between June 2015 and December 2019 by the EMS corporation covering the greater Montreal area in Quebec, Canada. Five FAST campaigns were held over this period (median duration: 53 days). We compared daily EMS call volumes variations before and after FAST campaigns with t-tests. We used single-group, univariate interrupted time-series to measure changes in EMS daily call volumes for suspected strokes following each FAST campaign (all, <5 hours of symptom onset, 3/3 Cincinnati Prehospital Stroke Scale [CPSS]). Calls for acute headaches served as controls.
Results: After five FAST campaigns, mean daily calls increased by 28% ($p<0.001$) for suspected strokes, compared to 10% for acute headaches ($p=0.012$; Figure 1). Significant increases in daily stroke call volumes were only observed after three campaigns (highest OR=1.26, 95% CI: 1.11, 1.43; $p<0.001$). There were no significant changes in calls after individual campaigns for strokes <5 hours of symptom onset or 3/3 CPSS strokes.
Conclusions: Although stroke calls to EMS increased overall following five FAST campaigns, the individual effect of each FAST campaign was inconsistent. A pre-existing easier recognition of severe symptoms may explain the unchanged 3/3 CPSS stroke calls volume. Further refinement of FAST campaigns could improve prompt EMS activation.

Disclosure: No

O002 / 1002

Scientific Communications I - Service Organisation / Quality Improvement

IMPLEMENTATION OF 'F.A.S.T. HEROES' ON A GLOBAL LEVEL: A SCHOOL-BASED STROKE EDUCATIONAL PROGRAM FOR THE WHOLE FAMILY

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Background and aims: Transferring knowledge to the general public about stroke symptomatology and the urgency of seeking for help when a stroke occurs is challenging. This work introduces the global implementation of FAST Heroes, a school-based stroke educational campaign for 5-9-year-old children and their extended family. The study aims to evaluate the outcomes hitherto achieved by assessing the transfer of stroke-related knowledge to parents of the enrolled children and to evaluate parents and teachers' acceptability towards the program.
Methods: The implementation of a 5-week program included face-to-face educational sessions using workbooks, cartoons, digital learning, and other activities. Outcomes were measured before implementation (t1), after implementation (t2), and at six-month follow-up (t3). Parents were divided into 2 groups, as starting dates of differed in each country.
Results: Results of 5 countries, 4,202 parents who joined the program with their children answered surveys at t1 and t2 (group 1). Increase knowledge of three stroke symptoms from 48% to 83% ($p<0.001$) was observed. All three surveys were completed by 86 parents (group 2), who improved their knowledge on stroke symptomatology, 55% (t1), 79% (t2), and 94% (t3) ($p<0.001$). Altogether, the educational messages were successfully passed onward.
Conclusions: Outcome evaluations confirm that knowledge about stroke pass on well from children to their families through the FAST Heroes program. Parents and teachers worldwide believe that the program is feasible and worthwhile. Future large-scale studies across more countries can enhance our understanding and continue to raise awareness for educating young children about stroke symptoms.

Disclosure: No

Conclusions: Tenecteplase prior to thrombectomy is effective and achieves a high rate of recanalization in clinical practice in acute ischemic stroke patients with large-vessel occlusion. Our findings are in line with other published results.
Disclosure: No

P0138 / 541

AN IMMUNOTHERAPY PREVENTING THE DELETERIOUS EFFECTS OF BOTH ENDOGENOUS AND RECOMBINANT TPA REDUCES DAMAGES AFTER ISCHEMIC STROKE: GLUNOMAB, A NEW HOPE FOR PATIENTS?

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Background and purpose: Recombinant tissue-type plasminogen activator (rtPA, Alteplase/Actilyse®) is the only drug approved for the acute treatment of ischemic stroke, alone or combined with thrombectomy. Despite its beneficial fibrinolytic activity, tPA was also reported to display damaging effects on neurovascular units and brain parenchyma by increasing the activity of endothelial and neuronal N-methyl-D-aspartate receptors (NMDAR). To counteract this, we developed a novel strategy relying on a monoclonal antibody, Glunomab, targeting the deleterious effects of both endogenous and recombinant tPA.
Methods: Glunomab was designed to prevent tPA from interacting with the GluN1 subunit of NMDAR. We then evaluated its efficacy in different animal models of thromboembolic stroke (fibrin and platelets rich clots) alone or with early or late recombinant tPA-driven thrombolysis, including comorbidity studies. Magnetic Resonance Imaging (MRI), laser speckle flowmetry, behavioral tasks and/or immunohistochemistry were used to evaluate treatment efficacy.
Results: After a single i.v. administration either in standalone or combined with rtPA-induced thrombolysis, Glunomab reduced brain lesion volumes along with hemorrhagic transformations, translating in improved long-term neurological outcomes.
Conclusions: Glunomab drastically limits ischemic damages induced by both endogenous and recombinant tPA. A humanized form of Glunomab is currently under development as a potential game-changer treatment for stroke patients.
Disclosure: Yes

P0139 / 1137

CHARACTERISATION OF THE THROMBIN MODEL OF STROKE AND REPERFUSION IN RATS

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Background and aims: Animal models are an essential part of preclinical research. However, there is still an urgent need for animal models of stroke that are clinically relevant and therefore provide more translational research. The thrombin model of stroke, which is well described in mice, offers the possibility of thrombolysis and recanalization of the occluded vessel using recombinant tissue plasminogen activator (rt-PA). So far, there is little data from this model in rats. Our aim is to characterise and establish the thrombin model of stroke and rt-PA treatment in rats.
Methods: Induction of ischemia was achieved by injecting thrombin into the exposed left middle cerebral artery (MCA) of Sprague Dawley rats. After 30 minutes, saline was given intravenously, as a control, or thrombolysis was achieved through a bolus and subsequent infusion of rt-PA. Laser speckle imaging was used to monitor CBF changes during stroke and reperfusion. Furthermore, MRI was performed on days 1 and 7, post-stroke, to assess the stroke lesion evolution. On day 7, the rats were perfused, and their brains harvested for histological analysis.
Results/Conclusions: A reliable stroke was achieved when CBF dropped to around 20-25% of baseline values and remained under 50% for 30 minutes. First results show that CBF in rats treated with rt-PA recovered to around 70-80% of baseline, compared to only 50% when saline was given. A reduction of infarct size for the rats administered with rt-PA was observed on both days 1 and 7. Further experiments are currently being performed to investigate microvascular failure.

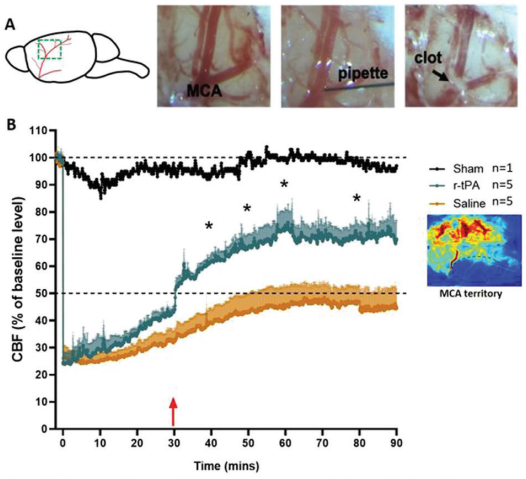

Figure 1: (A) A schematic drawing and representative images of the different steps of the thrombin stroke surgery in rats. (B) Average cerebral blood flow for the two treatment groups, rt-PA and saline, as well as for one sham operated rat during the course of the surgery, measured by laser speckle contrast imaging. Representative image showing ROI placement in the MCA territory.

Disclosure: No

P0140 / 558

HOW THE REGISTRY OF STROKE CARE QUALITY (RES-Q) HELPS TO sIDENTIFY BARRIERS TO SYSTEMIC THROMBOLYTIC THERAPY IN ACUTE ISCHEMIC STROKE

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Background: Thrombolytic therapy (TLT) is underused in routine clinical practice but reasons are frequently unclear.
Aim: Using the RES-Q registry, barriers to systemic TLT in acute stroke (AS) were identified.

Methods: Data of all AS patients consecutively admitted to two hospitals in Vinnytsya region from 2017 to 2019 were collected using the RES-Q and compared. Both hospitals provided similar level of stroke care with one being the regional hospital (H1) and the other – a city hospital (H2).
Results: The study enrolled 3,124 patients (44.1% women, mean age 66.2 ± 0.63 years, 88.5% ischemic strokes), including 1,286 from H1 and 1,477 from H2. Mean onset to admission time at H1 was 11.54 hours compared with 15.01 hours at H2. Overall, 99% of patients at H1 and 96% patients at H2 underwent head CT. However, within 1 hour of admission head CT was performed in 96% patients at H1 and only in 33% patients at H2. At H1, prenotification was performed in all cases, whereas at H2 pre-notification was very rare. 262 AS patients (thrombolytic rate 22,3%) received TLT at H1 and just one AS patient at H2 (thrombolytic rate 0,08%,).
Conclusions: RES-Q data allowed to benchmark hospitals and identify several organizational barriers to TLT in AS, including late arrival (at both hospitals), lack of pre-notation and a much lower rate of neuroimaging within 60 minutes after admission at H2. These data allow to plan steps aimed at improving quality of AS care.
Disclosure: No

P0141 / 1136

LEPTOMENINGEAL COLLATERALS REGULATE BLOOD FLOW RECOVERY IN STROKE AND RESCUE THE BRAIN FROM REPERFUSION INJURY

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Background and aims: Leptomeningeal collaterals (LMC) are important determinants of ischemic stroke severity. However, the underlying mechanism of protection is still unknown. Here, we propose that LMCs lead to a controlled gradual reperfusion after thrombolytic treatment preventing reperfusion injury.
Methods: We compared three mouse strains with differences in their collateral network (Balb-C, C57BL/6, Rabep2-/-). Stroke was induced by injecting thrombin into the M2 bifurcation of the right middle cerebral artery (MCA). Thirty minutes later, thrombolysis was initiated through recombinant tissue plasminogen activator (rt-PA). CBV was monitored using laser speckle imaging and ultrafast ultrasound for 2 hours during stroke and reperfusion. In a subset of animals, functional deficits were assessed during the chronic phase and on day 7, infarct volumes were quantified using Triphenyl-tetrazolium chloride (TTC).
Results: In mice with no (Balb-C) and poor (Rabep2-/-) LMCs, rt-PA led to a significant reperfusion in the area supplied by the MCA-M4 segment. In mice with rich (C57BL/6) LMCs, irrespective of rt-PA administration, CBV did not recover in this area. However, regions more proximal (MCA-M3) showed considerable reperfusion in all three strains. While C57BL/6 displayed a gradual reperfusion reaching 100% of baseline, Balb-C and Rabep2-/- showed steep reperfusion resulting in an uncontrolled hyperemic response. In the chronic phase after stroke (7d), only mice with no and poor LMCs suffered hemorrhages and mortality. In addition, these animals had more extensive lesions than mice with rich LMCs.
Conclusions: Our findings suggests that LMC allow a controlled, gradual reperfusion after thrombolysis.
Disclosure: No

P0142 / 1191

FIBRINOGEN DEPLETION COAGULOPATHY AND SYMPTOMATIC INTRACEREBRAL HEMORRHAGE AFTER THROMBOLYSIS: A MULTICENTER PROSPECTIVE STUDY

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Background and aims: Fibrinogen depletion by recombinant tissue plasminogen activator can increase the risk of thrombolysis-related bleeding complications. In this multicenter prospective study we investigated the risk of symptomatic intracerebral hemorrhage (sICH) with fibrinogen depletion after thrombolysis.
Methods: We included consecutive stroke patients receiving thrombolysis for acute ischemic stroke, undergoing repeated assessment of fibrinogen levels before, 2 and 6 hours after thrombolysis. Symptomatic intracranial hemorrhages were adjudicated according to National Institute of Neurological Disorders and Stroke criteria.
Results: Overall, among 1678 patients, 115 (6.9%) had sICH. sICH was associated with older age, higher NIHSS at admission, lower platelet count, higher creatinine, higher blood glucose and fibrinogen depletion. Fibrinogen depletion carried, alone, a 5-fold increase in sICH risk.
Conclusions: Fibrinogen depletion significantly increases the risk of ICH after IVT for acute ischemic stroke. Routine fibrinogen assessment and studies on fibrinogen repletion are needed.

Logistic regression analysis

Factor	OR	p-value
Age	2.8 (2.7-2.8)	0.020
NIHSS ingresso	3 (2.9-3)	0.000
PLT (x10e 9/l)	2.7 (2.7-2.7)	0.012
Creatinina (mg/dl)	12.5 (4.8-57.9)	0.000
Fibrinogen<201 mg/dl or <49% (2h)	4.9 (2.9-10.8)	0.024

Disclosure: No

P0143 / 1552

INTRAVENOUS THROMBOLYSIS WITH RT-PA FOR ACUTE ISCHEMIC STROKE: CLINICAL EXPERIENCE ABOUT 120 PATIENTS

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Introduction: Thrombolytic therapy are the most important advance in the management of acute ischemic stroke (AIS) these last years and has