

operator maneuvers of $\pm 4\%$. Compared to the virtual deployment, the velocity variations are up to 10%.

Conclusion We developed a method that applies to a real deployment of high wire density stent and shows high sensitivity. These findings could be applied to real cases and used to develop new neurovascular devices.

Disclosure of Interest Paolo Machi, Congress President, Consultant for Medtronic, Stryker and Microvention

P129/327 UNIFIED CEREBRAL ARTERY SEGMENTATION ON CT, MRI AND 3DRA USING ENSEMBLE DEEP LEARNING

^{1,2}Jeremy Hofmeister*, ¹Gianmarco Bernava, ¹Andrea Rosi, ^{1,2}Oliver Brina, ^{1,2}Philippe Reymond, ^{1,2}Karl-Olof Lövblad, ^{2,3}Dimitri Van De Ville, ^{1,2}Paolo Machi. ¹Diagnostic and Interventional Neuroradiology Unit, Department of Diagnostics, Geneva University Hospitals, Geneva, Switzerland; ²Radiology and Medical Informatics, University of Geneva, Geneva, Switzerland; ³Institute of Bio-engineering and Center for Neuroprosthetics, École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland; *Live Presentation

10.1136/jnis-2023-ESMINT.157

Introduction 3D visualization of cerebral arteries allows better detection and analysis of neurovascular diseases. While deep learning (DL) models enable automatic segmentation of cerebral arteries on CT, MRI and 3DRA independently, they have mostly been developed to process one imaging modality. This may limit the reproducibility and comparability of arteries segmented on different imaging modalities that a patient may undergo during follow-up.

Aim of Study To evaluate whether a unified ensemble DL model, trained on CT, MRI, and 3DRA, improves (i) the segmentation reproducibility between imaging modalities and (ii) the segmentation quality for each modality.

Methods We developed an ensemble of DL models to segment cerebral arteries on CT, MRI, and 3DRA independent of imaging modality. We trained this model on a large dataset of CT, MRI, and 3DRA whose arteries had been manually segmented by a neuroradiologist. The model was prospectively evaluated on a dataset of 50 patients with matched CT, MRI and 3DRA. We compared the segmentation quality of this unified ensemble model with models trained to segment only one image modality (CT, MRI or 3DRA).

Results The unified ensemble DL model improved segmentation reproducibility between the different imaging modalities compared to models trained for on a single image type. It also offers finer segmentation of cerebral arteries on CT compared to a simpler model trained only on that modality.

Conclusion A unified ensemble DL model allows for better quality and reproducibility of cerebral arteries segmentation on different imaging modalities, which may improve comparability in follow-up imaging.

Disclosure of Interest Nothing to disclose

P130/184 IMPROVING DOOR TO GROIN PUNCTURE TIME USING AI IN A HUB-AND-SPOKE NETWORK

Michele Antonio Rizzuti*, Fabio Tortora, Andrea Elefante, Giuseppe Buono, Mariano Marseglia, Margherita Tarantino, Amedeo Guida, Francesco Briganti. University "Federico II", Department of Advanced Biomedical Sciences, Naples, Italy

10.1136/jnis-2023-ESMINT.158

Introduction The outcome of stroke patients is time dependent 1, and stroke networks aim to minimize treatment times, especially the Door to Groin Puncture time (DGPT)². AI-assisted care coordination for Large Vessel Occlusion (LVO) stroke may be one approach to improving patient workflow ³, but there is a limited evaluation of its impact in Italy.

Aim of Study To assess the effect of AI implementation on the median DGPT in a hub-and-spoke network.^{4 5}

Methods We implemented an AI-based system (Viz LVO/CTP, Viz.ai, Inc.)⁶ in the hub⁷ of a hub-and-spoke network in Southern Italy (A.O.U. Federico II, Naples)⁷. This AI-based system provides a stroke team pre-alert and alert for suspected LVO detection, automatic CT perfusion processing, and in-app communication. We collected DGPT^{7 4 5} and performed a retrospective analysis of two cohorts: pre-AI from February 18, 2021 to June 7, 2022, and post-AI from June 12, 2022 to December 27, 2022. Suspected stroke patients arrive directly to the CT room for neurological evaluation with subsequent transfer to the almost adjacent angiography suite if necessary.

Results A total of 98 consecutive patients (52 males and 46 females) were included: 46 in the pre-AI and 52 in the post-AI cohorts. The median DGPT was improved by 14 minutes after AI implementation (19 minutes post-AI vs 33 minutes pre-AI, $p < 0.0001$ by the Mann-Whitney U test).

Conclusion The introduction of an AI-based system improved patient workflow by lowering the DGPT in an Italian hub-and-spoke system.

Disclosure of Interest Nothing to disclose.

2.2 ISCHEMIC – Imaging

P131/196 COMPARISON OF ACCURACY OF CT PERFUSION SOFTWARE PACKAGES IN PATIENTS WITH ACUTE ISCHEMIC STROKE. CAN WE GET CLOSER TO THE CORE?

Maximilian Thormann*, Maria Faltass, Roland Schwab, Klebingat Stefan, Daniel Behme. University Hospital Magdeburg, Clinic for Neuroradiology, Magdeburg, Germany

10.1136/jnis-2023-ESMINT.159

Introduction CT Perfusion (CTP) can improve diagnostic accuracy and support decision making in patients with acute ischemic stroke (AIS). The usability of CTP software packages is still limited by unreliability of results.

Aim of Study To compare core volumes estimate by Cercare Stroke (CP) and syngo.via (SV) with the core volumes segmented on non-contrast CT-scans.

Methods We selected patients with AIS with M1 occlusion having undergone thrombectomy with TICI 3 result in our clinic. CTP datasets were post-processed by CP and SV. Default settings were used for CP and three different settings for SV: default setting (A), additional smoothing (B) and adjusted settings (C). The results were compared to the core volume semi-automatically segmented in follow-up non-contrast CT. Agreement with the core volume was assessed using the intraclass coefficient (ICC) and the Mann-Whitney-U-test (MWU).

Results Sixty-six patients were included. Median segmented core volume was 6.4 ml (range 0–264 ml). Median core volume was 10.7 ml with CP, 41.1 ml with SV method A, 19.9 ml with SV B, and 29.6 ml with SV C. Agreement based on ICC was good for CP and SV method B and poor for SV methods A and C. MWU was 0.764 for CP and 0.0 for all SV results. The bias was smallest for CP (-6.8 ml).

Conclusion Core volume estimations and accuracy vary significantly between CTP software packages and should be acknowledged. Best agreement with segmented infarct volumes was provided by CP. SV method B with smoothing showed the best results for syngo.via.

Disclosure of Interest nothing to disclose

P132/242 CT ANGIOGRAPHY AND CT PERFUSION IMAGING FOR DETECTING DISTAL MEDIUM VESSEL OCCLUSIONS: A SYSTEMATIC REVIEW AND META-ANALYSIS

¹João Sousa*, ²Anton Sondermann, ¹Sara Bernardo-Castro, ³Ricardo Varela, ¹Helena Donato, ¹João Sargento Freitas. ¹Centro Hospitalar e Universitário de Coimbra, Coimbra, Portugal; ²Christian-Albrechts-Universität zu Kiel, Kiel, Germany; ³Centro Hospitalar e Universitário de Santo António, Porto, Portugal

10.1136/jnis-2023-ESMINT.160

Introduction Distal medium vessel occlusions (DMVOs) are common and often disabling, and the optimal imaging method for its diagnosis is yet to be defined.

Aim of Study To perform a systematic review and meta-analysis of studies to compare the diagnostic performance of CT angiography (CTA) and CT perfusion (CTP) in detecting DMVOs.

Methods We screened PubMed, EMBASE, Web of Science, and Cochrane Central from inception up to March 31, 2023. We included articles reporting accuracy values of CTA and/or CTP and compared the pooled sensitivity and specificity of both imaging methods using a random-effect model. We performed a subgroup analysis on the technique used in CTA and on the subtype of DMVOs (M2-only vs M2+other DMVOs). PROSPERO registration: CRD42022344006

Results We identified 12 studies encompassing 2607 patients, 479 (18.3%) with DMVOs. CTA had significantly lower sensitivity than CTP for detecting DMVOs [0.74, 95%CI (0.63–0.82) vs. 0.89, 0.95%CI (0.83–0.93), $p < 0.01$]. When subgrouped into single-phase and multi-phase CTA, multi-phase CTA had significantly higher sensitivity for DMVO detection than single-phase CTA [0.91, 95%CI (0.85–0.94) vs. 0.64, 95%CI (0.56–0.71), $p < 0.01$], while reaching similar levels to CTP [0.91, 95%CI (0.85–0.94) vs. 0.89, 0.95%CI (0.83–0.93) $p = 0.68$]. The sensitivity of single-phase CTA greatly decreased when extending from M2 to other non-M2 DMVOs [0.74, 95%CI (0.63–0.83) vs. 0.61, 0.95%CI (0.53–0.68), $p = 0.02$] which did not occur in CTP nor in multi-phase CTA. Specificity was high (> 0.85) and comparable between all methods.

Conclusion CTP and multi-phase CTA are the preferred methods for DMVO screening due to their high accuracy.

Disclosure of Interest Nothing to disclose

P133/254 CLINICAL SIGNIFICANCE OF SUBARACHNOID HYPERDENSITIES ON FLAT PANEL CT AFTER MECHANICAL THROMBECTOMY – DOES IT MATTER?

¹Zidan Mousa, ²Franziska Dorn, ¹Felix Bode, ¹Gabor Petzold, ¹Johannes Weller, ²Daniel Paech*. ¹University Hospital of Bonn, Dept. of Neurology, Bonn, Germany; ²University Hospital of Bonn, Dept. of Neuroradiology, Bonn, Germany

10.1136/jnis-2023-ESMINT.161

Introduction Subarachnoid hyperdensities (SH) after mechanical thrombectomy (MT) has been discordant and are mostly considered insignificant.

Aim of Study: We aim to identify the prevalence of SH following MT, associated predictors and the following functional outcomes.

Methods 369 patients from our stroke registry were analyzed for the presence of SH on flat detector computer tomography (FDCT) directly after the MT, and on follow-up dual-energy CT (DECT), then classified according to a visual grading scale. 178 were included with anterior circulation occlusions were included. Regression analysis was performed to identify significant predictors and Kruskal-wallis analysis was performed to test the variables among the different groups. The primary outcome was the modified Rankin score (mRS) at 90 days and was analyzed with the Wilcoxon-Mann-Whitney rank-sum test.

Results Prevalence of SH on FDCT was 37.1% in patients experiencing a significant unfavorable outcome ($p = 0.035$). Significantly fewer patients with SH achieved a mRS ≤ 3 at 90 days (37.9% vs. 53.6%, $p = 0.043$). In addition, mortality was significantly higher in the SH group (34.8% vs. 19.6%, $p = 0.024$). Distal occlusions and a higher number of device passes were significantly associated with SH ($p = 0.035$) and ($p = 0.001$), respectively. Patients who received IV rt-PTA had significantly less SH ($p = 0.024$).

Conclusion Postinterventional SH are a frequent finding after MT and are associated with neurological decline and an unfavourable outcome. They are more common with distal occlusions and multiple device passes.

Disclosure of Interest FD serves as a consultant/proctor for Balt, Cerenovus, Microvention, received scientific grant from Cerenovus and received speaker honoraria from Acanadis, Asahi, Stryker.

2.1 ISCHEMIC – Logistics

P134/298 ENDOVASCULAR THERAPY DELAY FOR ACUTE LARGE VESSEL OCCLUSIONS IS ASSOCIATED WITH WORSE FUNCTIONAL OUTCOME AND INCREASED MORTALITY – QUANTIFIED

Julian Carrion-Penagos, Rami Z Morsi, Sachin Kothari, Harsh Desai, Ammar Tarabichi, Sonam Thind, Elisheva Coleman, James R Brorson, Scott J Mendelson, Shyam Prabhakaran, Ali Mansour, Tareq Kass Hout*. *University of Chicago, Neurology, Chicago, USA*

10.1136/jnis-2023-ESMINT.162

Introduction Early mechanical thrombectomy (MT) improves functional outcomes for patients with acute LVO. It has been