negative linear correlation with the number of new or cumulative COVID-19 cases in Hungary.

Conclusions Collateral damages of the COVID-19 outbreak on the Hungarian IS care system were demonstrated. The disproportionately greater decline of IS admission numbers could partially be explained by the effect of health emergency operative measures. Further studies are needed to evaluate the causes of our observations.

REFERENCES

1. Bersano A, Kraemer M, Touzé E, Weber R, Alamowitch S, Sibon I, et al. Stroke care during the COVID-19 pandemic: experience from three large European countries. *Eur J Neurol* 2020;27(9):1794–800. <https://doi.org/10.1111/ene.14375>
2. Böjti PP, Stang R, Gunda B, Sipos I, Bereczki D. A járulékos egészségügyi veszteségek retrospektív, egycentrumos felmérése. [Effects of COVID-19 pandemic on acute ischemic stroke care. A single-centre retrospective analysis of medical collateral damage]. *Orv Hetil* 2020;161(34):1395–9. <https://doi.org/10.1556/650.2020.31936>. Hungarian.
3. Slowik A, Nowak R, Popiela T. Significant fall in stroke admissions in the Malopolska Voivodeship of Poland during the COVID-19 pandemic. *Neurol Neurochir Pol* 2020;54(5):471–2. <https://doi.org/10.5603/PJNNS.a2020.0056>

Disclosure Nothing to disclose

EP40

TELEPROCTORING IN NEUROINTERVENTIONISM

B Pabon, V Torres, M Patiño, N Serna, O Vargas, C Estrada, J Pelaez, J Mejia. *Angioteam, Medellín, Colombia*

10.1136/neurintsurg-2021-ESMINT.39

6 cases of neurovascular treatment with remote assistance are presented. various techniques (zoom, smart glasses and hospital internal system) 2 aneurysm treatments with flow diversion are presented. 1 case with web device. and 3 cases of stroke.

All cases occurred during the covid 19 pandemic.

Multiple tests were carried out during the simulation courses. Evaluating communication in real time. mastery of the images and mastery of the software.

REFERENCE

1. Bechstein M, et al. Interhospital teleproctoring of endovascular intracranial aneurysm treatment using a dedicated live-streaming technology: first experiences during the COVID-19 pandemic. *BMJ Case Rep* 2020. PMID: 33012707.

Disclosure Boris Pabon: proctorship con MEDTRONIC, Microvention Consultant MIVI

Imaging

EP41*

WHICH TRANSFER PATIENTS WITH STROKE DUE TO A LARGE-VESSEL OCCLUSION BENEFIT FROM CT SCAN REEVALUATION PRIOR TO MECHANICAL THROMBECTOMY?

¹JA Sousa, ¹R Machado, ¹L Cruz, ²J Paiva-Simões, ³L Santos-Martins, ¹L Almendra, ¹CC Nunes, ¹C Machado, ¹B Rodrigues, ¹O Galego, ¹C Nunes, ¹R Veiga, ¹E Machado, ¹F Silva, ¹G Santo, ¹⁻³J Sargento-Freitas. ¹Centro Hospitalar e Universitário de Coimbra, Coimbra; ²Centro Hospitalar e Universitário Lisboa Norte, Lisboa; ³Faculdade de Medicina da Universidade de Coimbra, Coimbra, Portugal

10.1136/neurintsurg-2021-ESMINT.40

Background In patients transferred from a primary stroke center (PSC) to a comprehensive stroke center (CSC) with a large

vessel occlusion (LVO-AIS) it is unclear who should undergo CT scan before mechanical thrombectomy (MT). We aimed to identify which patients benefited from such reevaluation.

Methods We conducted a retrospective study, including consecutive patients admitted to our CSC from 1/1/2016 to 31/12/2019, transferred from a PSC with anterior circulation LVO-AIS. We compared two groups. Group A (= beneficial CT scan) including patients either excluded from MT due to large infarction on CT reevaluation or patients headed directly to angio-suite and 90 day mRS >2. Group B (= futile CT scan) including patients submitted to MT and 90 day mRS ≤2 with or without prior CT reevaluation. We analyzed clinical and imaging variables collected in PSC. Collateral circulation was scored using modified Tan score.

Results We included 230 patients in group A and 225 in group B. Age (OR:1.04 95% CI 1.02–1.07, p<0.001), NIHSS (OR: 1.11 95%CI 1.06–1.15, p<0.001), ASPECTS score in PSC (OR:0.74 95%CI 0.60–0.91, p=0.006) and collateral score (OR:0.14 95%CI 0.083–0.222, p<0.001) were independent predictors of usefulness in CT scan reevaluation. Optimal cut-off points to identify best candidates for CT reevaluation were age ≥80, NIHSS ≥18 and ASPECTS ≤8.

Conclusion Patients with age ≥80, NIHSS ≥18, ASPECTS ≤8 or reduced collateral score (modified Tan <2) might benefit from CT scan reevaluation after transfer and prior to MT.

REFERENCES

1. Psychogios MN, et al. One-stop management of acute stroke patients minimizing door-to-reperfusion times. *Stroke* 2017.
2. Jadhav AP, et al. Interfacility transfer directly to the neuroangiography suite in acute ischemic stroke patients undergoing thrombectomy. *Stroke* 2017.
3. Mendez B, et al. Direct transfer to Angio-suite to reduce workflow times and increase favorable clinical outcome a case-control study. *Stroke* 2018.
4. Requena M, et al. Time matters: adjusted analysis of the influence of direct transfer to angiography-suite protocol in functional outcome. *Stroke* 2020.

Disclosure Nothing to disclose

EP42*

USE OF THE NEW PHILIPS' ADVANCED 3D NEURO-IMAGING FOR LVO TRIAGING AND DOOR TO PUNCTURE TIMES REDUCTION

¹F Massari, ¹J Singh, ¹AL Kuhn, ¹V Naragum, ¹MJ Gounis, ²B Hallacoglu, ¹A Puri. ¹University of Massachusetts Medical School, Worcester, MA, USA; ²Image Guided Therapy, Phillips Healthcare, Best, The Netherlands

10.1136/neurintsurg-2021-ESMINT.41

Introduction First clinical utilization of Philips' advanced 3D neuro-imaging prototype technology during stroke treatment.

Objectives and Aims Use of the new Philips' advanced 3D neuro-imaging prototype technology and cone beam angio-suite CTA versus standard multi-detector CT for triaging of acute LVO.

Methods We utilized the Philips' advanced 3D neuro-imaging prototype technology for within AngioLab non-contrast CT and CTA acquisition during direct to angio-suite LVO cases transfer. Pre-procedural ASPECT score and post-procedural evaluation of IPH or SAH components has been performed with the Philips' advanced 3D neuro-imaging prototype technology. The door-to-puncture timing in these patients has also been recorded and compared with that associated to standard patients necessitating of an additional stop in the ED for further/repetitive imaging acquisition.

Results Philips' advanced 3D neuro-imaging prototype technology offers an advantage over traditional stroke pathways in decreasing time to puncture for LVO patients without significant decrease in image quality. Additionally, the new prototype offers dose significant reduction as compared with multi-detector CT. Furthermore the posterior fossa assessment is markedly improved with this new technology.

Conclusions 3D neuro-imaging prototype technology has provided an almost multi-detector CT level of anatomical structures spatial and contrast resolution, during pre-procedural ASPECT assessment, clot localization, collaterals and post-procedural evaluation of IPH or SAH components, in patients transferred directly to our AngioLab from outside institutions for mechanical thrombectomy, significantly reducing the door-to-puncture timing in this series of cases. This new technology significantly improves the triaging of these LVO patients for direct to angio-suite pathway.

REFERENCE

1. Patrick Nicholson, Nicole M Cancelliere, John Bracken, Erik Hummel, Fred van Nijntzen, Paul Withagen, Peter van de Haar, Bertan Hallacoglu, Marijke van Vlimmeren, Ronit Agid, Timo Krings, Vitor Mendes Pereira. Novel flat-panel cone-beam CT compared to multi-detector CT for assessment of acute ischemic stroke: A prospective study. *Eur J Radiol* 2021 May; **138**:109645. Epub 2021 Mar 10.

Disclosure Nothing to disclose

EP43* UNBIASED MTICI SCORING AFTER ACUTE ISCHEMIC STROKE: AN IMAGE-PROCESSING BASED SEMI-AUTOMATIC GRADING METHOD

¹M Thormann, ¹M Sabieleish, ²A Boese, ¹J Metzler, ¹H Paukisch, ¹M Ergawy, ¹E Diamandis, ¹A Mpotsaris, ¹D Behme. ¹University Clinic for Neuroradiology, Magdeburg University Hospital; ²INKA HealthTec Innovation Laboratory, Otto-von-Guericke-University, Magdeburg, Germany

10.1136/neurintsurg-2021-ESMINT.42

Background The mTICI score used to assess the degree of reperfusion after mechanical thrombectomy is an independent predictor of patient outcome after acute ischemic stroke. Its inter-rater reliability, however, is low and interventionalists often overrate their own performance.¹

Objectives We devised an image-processing based semi-automated grading for unbiased mTICI scoring.

Methods Based on pixel-intensity features, we developed a semi-automated reperfusion grading on digital subtraction angiography (DSA) series. The internal carotid artery (ICA) curve was detected automatically in the first contrast fill-image and set as a reference point. The region of interest (ROI) was defined as the target downstream territory (TDT) of the middle cerebral artery (MCA) and divided into check-zones ranked as 'perfused' or 'unperfused' based on a predefined grid. Our software was applied to 50 patients after thrombectomy for acute ischemic stroke. The percentage of reperfusion was translated into mTICI grading. The scoring by the software was compared to the consensus reading by two experienced neuroradiologists.

Results mTICI scores in our cohort ranged from 2a to 3, with mTICI $\geq$ 2a in 64.0% (28/50). The software scored 44/50 patients correctly (88.0%), with 25/27 (92.6%) mTICI 3 accurately graded. Accuracy in mTICI $>$ 2c was 87.5% (28/32). Correct division into mTICI 2a/2b/2c was achieved in 19/24 patients (79.2%). 5 out of 6 disagreements occurred in mTICI 2c/3 gradings.

Conclusion Semi-automated mTICI scoring based on image-processing is feasible and accurate. Our method is fast and easy to integrate into clinical routine. Application on larger cohorts will be needed to confirm our results.

REFERENCE

1. Zhang G, Treurniet KM, Jansen IGH, Emmer BJ, van den Berg R, Marquering HA, Uyttenboogaart M, Jenniskens SFM, Roos YBWEM, van Doormaal PJ, van Es ACGM, van der Lugt A, Vos JA, Lycklama A Nijeholt GJ, van Zwam WH, Shi H, Yoo AJ, Dippel DWJ, Majoie CBLM; MR CLEAN Registry Investigators. Operator versus core lab adjudication of reperfusion after endovascular treatment of acute ischemic stroke. *Stroke* 2018 Oct; **49**(10):2376–2382.

Disclosure Nothing to disclose

Treatment

EP44* NIMBUS GEOMETRIC CLOT EXTRACTOR FOR TOUGH CLOTS – REAL WORLD CLINICAL EXPERIENCE AND CLOT COMPOSITION

^{1,2}H Nordmeyer, ³K Doyle, ⁴J Gralla, ¹T Phung, ³S Molina Gil, ⁴NF Belachew, ⁵S Neuhaus, ³A Douglas, ⁴P Mordasini. ¹Department of Neuroradiology, Radprax Neurocenter Solingen, St. Lukas Hospital, Solingen; ²School of Medicine, University of Witten/Herdecke, Witten, Germany; ³Department of Physiology and CURAM, the SFI Research Centre for Medical Devices, National University of Ireland, Galway, Ireland; ⁴University Institute of Diagnostic and Interventional Neuroradiology, University Hospital – Inselspital – Bern, Bern, Switzerland; ⁵Department of Neuroradiology, Radprax Neurocenter St. Lukas Hospital, Solingen, Germany

10.1136/neurintsurg-2021-ESMINT.43

Introduction Nimbus was developed for difficult to remove white clots that account for a substantial percentage of technical failure in mechanical thrombectomy (MT). The device aims at engaging tough clots through unique architecture of a proximal spiral portion followed by a distal regular mesh.

Aim To evaluate the retrieval rate, and composition, of clot deemed challenging to remove, using Nimbus in a clinical setting.

Methods Consecutive Nimbus cases from 2 high volume stroke centers were retrospectively analyzed. Clots from 1 center were sent to a central lab for composition analysis including Martius Scarlet Blue staining.

Results Nimbus was used as 1st and 2nd line device in 5 and 30 patients, respectively. The main reason for using Nimbus (30/35) was failure of standard MT techniques with a mean 2.9 number of passes (maximum 6). In non-Nimbus passes, the rate of any clot retrieval was 35.5%, compared to 89.2% in Nimbus passes. With Nimbus, mTICI $\geq$ 2b was achieved in 68.6% (24/35) cases with a mean 1.8 passes (mean 4.7 total number passes with all devices). Final mTICI $\geq$ 2b with all devices was 77.1% (27/35). In successful cases (mTICI $\geq$ 2b), Nimbus was used in the last pass in 88.9% (24/27) cases.

Clot specimens from 16 cases underwent composition analysis. Fibrin and platelets represented 30.2% and 29.3% of clot components; 34.6% were red blood cells.

Conclusions Nimbus is effective in removing tough clots markedly rich in fibrin and platelets in challenging real world situations.

REFERENCE

1. Jens Fiehler. Failed thrombectomy in acute ischemic stroke: return of the stent? *Stroke* 2018; **49**:811–812. <https://doi.org/10.1161/STROKEAHA.118.020541>