P126/295 TRANSFORMATIVE PROGRESS: THE DEVELOPMENT OF NEURO-INTERVENTION IN PAKISTAN AND ITS TRAILBLAZERS

Saima Ahmad*. *Pakistan Institute of NeurSciences , Diagnostic and Interventional Neuroradiology, Lahore, Pakistan*

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Introduction International healthcare professionals, neuro-interventional organisation, mentoring programmes, and social media platforms have all contributed to the development of neuro-intervention in Pakistan.
Aim of Study International healthcare professionals are instrumental in developing neuro intervention as a specialty in Pakistan.
Methods College of Physicians and Surgeons Pakistan (CPSP), leading government healthcare centre responsible for medical development in Pakistan, does not have a fellowship programme for neuro-intervention. Pakistani foreign healthcare specialists and neuro-interventional societies have played a critical role in developing foundational initiatives. MENA-SINO Society has created a neuroendovascular diploma for LMICs, workshops and online webinars to assist local physicians in gaining the skills required for complex neuro-interventional procedures. ESMINT has introduced the EXMINT Stroke diploma, with seven Pakistani participants this year.

Social media has become an important tool for neuro-intervention in Pakistan, with platforms such as WhatsApp, Facebook, and Twitter playing a major role.
Results International healthcare specialists have pledged to support the expansion of neuro-intervention in Pakistan, offering mentorship, remote consulting, and support. Examples include Prof Adnan Siddiqui of Toshiba Health Care Centre, Prof Ashfaq Shuaib of Alberta Stroke School, and Prof Adnan Qureshi of Missouri University. This has enabled Pakistani interventionists to participate in direct observership programmes in the US.

Collaboration projects with foreign societies, such as MT2020 – Mission Thrombectomy, have been critical in boosting neuro-intervention in Pakistan, leading to the construction of stroke facilities and the propagation of MT awareness.
Conclusion International healthcare specialists have improved patient outcomes and established Pakistan as a regional hub for neuro-intervention.
Disclosure of Interest No Conflict of Interest

P127/305 IMPACT OF AN AI SOFTWARE ON THE DIAGNOSTIC PERFORMANCE OF RADIOLOGISTS FOR THE DETECTION OF CEREBRAL ANEURYSMS ON TIME OF FLIGHT MR-ANGIOGRAPHY

Nils Christian Lehnen*, Arndt-Hendrik Schievelkamp, Christian Gronemann, Robert Haase, Inga Krause, Max Gansen, Tobias Fleckenstein, Franziska Dorn, Alexander Radbruch, Daniel Paech. *University Hospital Bonn, Department of Neuroradiology, Bonn, Germany*

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Introduction AI is increasingly used in clinical practice to support radiologists when reading imaging studies.
Aim of Study To evaluate the impact of an, AI based software trained to detect cerebral aneurysms on TOF-MRA on the diagnostic performance of multiple readers with different amounts of experience in diagnostic neuroimaging.
Methods 186 MRI studies were evaluated by six readers (three medical students, one radiology resident, one radiologist and one neuroradiologist) for the presence of cerebral aneurysms. First, the reading was done with the support of the software. After six weeks, the reading was repeated without the support of the software. The results were compared to the consensus reading of two neuroradiological specialists. Sensitivity (patient level and aneurysm level), specificity (patient level), and false positives/case were calculated.
Results Sensitivities (aneurysm level) ranged from 66.7%-87.0% with and 57.7%-87.0% without AI, sensitivities (patient level) were 63.4%-81.8% with and 52.3%-75.0% without AI. Specificities ranged from 93.7%-97.2% with and 89.4%-98.6% without AI. False positive findings/case ranged from 0.03–0.12 with and 0.02–0.17 without AI (differences not statistically significant, p-values 0.05–1). Four readers showed a significant decrease of reading times with the software, the remaining two readers showed a significant increase of reading times.
Conclusion We found equivocal results for the diagnostic performance of six different readers for the detection of cerebral aneurysms with and without the use of an AI software. Although we found a tendency towards better diagnostic performances, these differences were not statistically significant. The majority of readers showed a significant decrease of reading times.
Disclosure of Interest Nothing to disclose

P128/314 A NOVEL METHOD FOR COMPUTED FLUID DYNAMICS ANALYSIS BASED ON MICRO-CT RECONSTRUCTION TO EVALUATE FLOW DIVERSION AFTER STENT IMPLANTATION IN BRAIN ANEURYSMS

Philippe Reymond*, Oliver Brina, Gianmarco Bernava, Andrea Rosi, Jeremy Hofmeister, Michel Muster, Karl-Olof Lövblad, Paolo Machi. *Geneva University Hospitals, Diagnostic and Interventional Neuroradiology, Genève, Switzerland*; **Live Presentation*

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Introduction Computed fluid dynamic studies aim to identify hemodynamic factors related to brain aneurysms to evaluate the potential risk of rupture or the flow reduction after the placement of a flow diverter stent.

At present, numerical simulations are based on virtual deployment of the stent. However, these latter follow specific biomechanical rules and are different from real deployment, which is related to operator's maneuvers.
Aim of Study We aimed to evaluate a novel method in which computed fluid dynamic was based on real flow diverter deployment using micro-CT reconstruction after device implantation using a vascular phantom reproducing a carotid artery harbouring an aneurysm.
Methods We assessed the flow diversion effect of braided stents (16 to 64 wires) to evaluate the performance of the method. We compared the velocity reduction obtained with a stent made of 48 wires to evaluate its sensibility in identifying deployment variations due to different operator maneuvers. Moreover, the method was compared to a standard virtual deployment.
Results Simulation showed a reduction in flow within the aneurysm ranging from 14% to 40% depending on the number of stent wires. The method was able in detecting a variation of the velocity inside the aneurysm due to different

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

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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*

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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 DGPT7 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*

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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).