EP31*

VESSEL WALL MRI FINDINGS IMPROVE SPECIFICITY FOR DETECTION OF DELAYED IN-STENT STENOSIS FOLLOWING FLOW DIVERSION OF UNRUPTURED ANEURYSMS

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Introduction Delayed stenosis can occur following flow diverter (FD) treatment of cerebral aneurysms. Vessel wall MRI (vwMRI) using black blood (BB) sequences can improve evaluation of intracranial vascular pathologies.

Aim vwMRI studies after FD treatment of unruptured intracranial aneurysms were assessed for findings associated with stenosis on digital subtraction angiography (DSA).

Methods According to an IRB-approved protocol, patients with unruptured aneurysms treated with FD were identified in a prospectively-maintained database. FDs with stenosis on six-month DSA were identified, and control cases were then selected, matching for age, gender, vessel segment, and morphology. Three-month vwMRI studies were then evaluated. Stenosis was measured on 3D time of flight (3DTOF) and post-contrast MRA, as well as post-contrast black blood (BB) images. Downstream flow limitation (DFL), intra-FD tissue on BB, or intra-FD intimal enhancement were noted. Fisher's exact tests were performed to compare study groups and identify vwMRI features associated with stenosis on subsequent DSA. Multivariable exact logistic regression analysis was performed using variables with $p \leq 0.200$.

Results 15 patients were analyzed, with no difference in matched variables between patients with and without confirmed stenosis ($p=0.267-0.706$). Stenosis on BB ($p=0.035$), DFL on 3DTOF ($p=0.004$) and postcontrast ($p=0.001$) MRA, and intimal enhancement ($p=0.001$) were associated with stenosis on subsequent DSA. Stenosis on 3DTOF ($p=0.264$) or postcontrast ($p=0.210$) MRA and intra-FD tissue on BB ($p=0.231$) were not. Multivariable analysis found retained significance for stenosis and intimal enhancement on BB ($p=0.001$).

Conclusions Stenosis and intimal enhancement within the FD on BB are associated with stenosis on subsequent DSA.

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Disclosure Nothing to disclose

EP32

FIRST 100 CASES OF TRANS-RADIAL ACCESS IN NEURO-INTERVENTION – A SINGLE CENTRE EXPERIENCE

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Introduction Cardiology literature strongly supports Trans-radial access (TRA) in favour of Trans-femoral access (TFA). Initial neuro-intervention data is also promising.

Objectives To compare our initial experience with TRA with TFA.

Methods Electronic patient records of the first 100 neurovascular procedures performed via TRA in our centre and 100 consecutive procedures performed via TFA at the same time reviewed with regards to:

1. Procedure success rate, 2. complication rate, 3. Screening time 4. Patient feedback

Results TRA cohort included (59 cerebral angiograms, 27 aneurysm treatments, 11 mechanical thrombectomy, 3 other).

TFA cohort included (31 cerebral angiograms, 25 aneurysm treatments, 38 mechanical thrombectomy, 6 other).

- Conversion rate from trans-radial to trans-femoral approach was 3/100 (3%).
- Access site complications TRA group (1%), TFA group (2%).
- Mean screening time for cerebral angiogram was slightly longer in TRA group, however, in the aneurysm treatment and thrombectomy cases, it was slightly longer in TFA group.
- Patient feedback was very positive in favour of TRA. Especially, the patients who had previous TFA showed a preference towards TRA.
- We felt TRA did not pose any significant limitation to the procedures but in some cases (especially for the posterior circulation cases) the procedure was easier to perform via TRA.

Conclusion Trans-radial access is a safe and effective way to perform simple and complex neurovascular procedures as evidenced by low complication, low conversion rate even in the initial cases. Screening times should reduce even more with operator experience.

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EP33

ABSTRACT WITHDRAWN

EP34

NONINVASIVE FOLLOW-UP OF ANEURYSMS TREATED WITH WEB® – A SYSTEMATIC COMPARISON OF MRI WITH DSA AS GOLD STANDARD

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Introduction Brain aneurysm treatment with the Woven Endo Bridge (WEB®) is widely accepted. For long term follow up non-invasive MRI is often used to avoid potential risks from repetitive catheter angiography and for patients' comfort. Previous publications raised doubts about reliability of this procedure, due to relevant metal artefacts caused by the WEB Device.¹

Aim of the Study To evaluate the accuracy of MRI for follow up after WEB implantation compared to gold standard DSA.

Methods A total of 42 aneurysms treated with WEB were included. Two experienced readers analysed the anonymised postprocedural MRI, with TOF sequences with and without gadolinium, and DSA images independently, using the WEB Occlusion Score (WOS).

Results From our data we found corresponding WOS results from MRI compared to DSA in 60.53% of the cases. With DSA as reference MRI revealed false positive results in 23.7%, and false negative results in 15.8% of the cases. Inter-rater agreement was 90.48%. The MRI sensitivity was 84.2%, the specificity 76.32%.

Conclusions From this data WEB follow up with MRI alone bears a high risk of false findings and cannot replace DSA for a precise WOS assessment.

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EP35

7 T MR IMAGING OF SMALL INCIDENTAL UNRUPTURED INTRACRANIAL ANEURYSMS: FIRST YEAR OF CLINICAL EXPERIENCE

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Introduction The majority of unruptured intracranial aneurysms (UIA) can be adequately characterized using 1.5 and 3 T MRI. However, findings in a relevant subgroup of patients can remain unclear due to difficulties in distinguishing aneurysms from vascular anatomical variants.^{1–4} 7 T MRI may provide definitive non-invasive diagnosis in this subgroup of patients due to a higher signal-to-noise ratio, higher spatial resolution and vessel contrast.^{5–7}

Aim of the Study Report on the integration of 7 T MR neurovascular imaging in the clinical routine to provide definitive, non-invasive discrimination of intracranial aneurysm versus normal vascular variants.

Methods We retrospectively analyzed clinical data from patients with suspected incidental UIAs on 3T MRI who underwent 7 T MRI. All patients were scanned within diagnostic work-up or follow-up on a clinically approved 7 T whole-body MR scanner with a 32-channel head coil and had a recent scan on a 3 T scanner with a 32-channel standard head coil.

Results We identified 39 patients who received 7 T MRI. All examinations were performed without interruption or side effects. All images fulfilled criteria of diagnostic quality within routine image reading. No ambiguous findings remained after UHF 7 T MRI and a definitive diagnosis was made according to the analyzed reports.

Conclusions Clinical implementation of 7 T MRI in patients with suspected small incidental UIAs has the potential to

reduce the number of ambiguous vascular findings, secure the diagnosis, reduce the invasive imaging work-up and has therefore an impact on patient management.

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EP36

OPTIMAL TECHNIQUE TO ENSURE PATENT HAEMOSTASIS IN TRANS-RADIAL ACCESS

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Introduction Radial artery occlusion is one of the significant (but thankfully rare) complications of Trans-radial access (TRA). Though it is usually asymptomatic, radial artery occlusion hinders it being used in the future for interventional procedures. Hence, attempts should be made to avoid this by ensuring patent haemostasis post procedure.

Objective To determine optimal way to ensure patent haemostasis.

Methods Patients divided into two groups: Cohort A: After every TRA intervention, patent haemostasis checked with ultrasound and with reverse Barbeau's test.

Cohort B: After every TRA Trans-radial band inflated only by 2 ml air extra beyond minimum air needed to stop bleeding from access site.

Radial artery patency was checked prior to patient discharge from hospital.

Results Each cohort had 30 patients in it.

- Reverse Barbeau's test and ultrasound assessment were equally accurate at checking for patent haemostasis, though ultrasound did take longer and would need an operator skilled in using ultrasound.
- An important observation on ultrasound was that when radial band was over-inflated, the distal radial artery was collapsed, hence showing importance of not over-inflating the band.
- No cases of radial artery occlusion seen in either cohort.

Conclusion All the above three techniques were equally effective in ensuring patent haemostasis post TRA, though the cohort B technique was felt to be the quickest and simplest to perform.

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