



MAGNETIC RESONANCE INNOVATIONS, INC.

"YOUR PARTNER IN BRAIN IMAGE ANALYSIS"

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SUMMARY REPORT OF FULL TECHNICAL FINDINGS

ID: SAMPLE TECHNICAL REPORT

Overall Impression

Aberrant signal in the right frontal region in conventional MR imaging, SWI, DTI, DWI, and SWI. Cerebral microbleed in the WM in the right, superior region in SWI and SWIM. Low FA in DTI FA and Inverse FA maps. Perfusion differentials observed in affected lesion areas. Right VA appears very thin in 3D TOF MRA. Low CSF flow compared to 18 normals.

Conventional Images:

FLAIR:

- Hyper intense signal is seen in right frontal region.

T2WI:

- Hyper intense signal is seen in right frontal region.

T1WI:

- Hypo intense signal is seen in right frontal region.

Diffusion Weighted Imaging / ADC Map:

Hyper intense signal is seen in right frontal region.

SWI Analysis:

Hypo intense signal is seen in right frontal region. Cerebral microbleed in SWI phase; also observed in SWIM with dipole effect.

MR Angiography:

Right VA shows thin appearance. The anterior, middle, and posterior cerebral arteries are well visualized.

PWI:

L1 and L2 shows lower CBF compared to N1 and N2 respectively.



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Anatomical and Vascular Abnormalities:

3D Contrast Enhanced (CE) MRAV:

- The RIJV and LIJV show weak enhancement through the length of the vessel.

2D Time of Flight (TOF) MRV: The RIJV and LIJV show clear and consistent caliber.

Flow:

Total Arterial Flow (ml/sec):

- C2 level = 13.35
- C6 level = 14.04
- T1 level = 13.09

Total Venous Flow (ml/sec):

- C2 level = -12.72
- C6 level = -13.94
- T1 level = -13.05

C7-T1 level: Right internal jugular (RIJV) is dominant to the right internal jugular (LIJV) with a flow rate ratio of 1.1:1. RIJV, LIJV, REJV and LEJV shows circulatory flow.

C5-C6 level: Left internal jugular (LIJV) is dominant to the right internal jugular (RIJV) with a flow rate ratio of 1.3:1. RIJV, LIJV, REJV, LEJV and RDCV shows circulatory flow.

C2-C3 level: Left internal jugular (RIJV) is dominant to the right internal jugular (RIJV) with a flow rate ratio of 1.4:1. RIJV, LIJV, RDCV and LDCV shows circulatory flow.

Dural Sinus Flow Distribution: (ml/sec)

- Superior sagittal sinus = 2.8
- Straight sinus = 1.7
- Right transverse sinus = -3.3
- Left transverse sinus = -2.9

The right and left transverse sinus shows circulatory flow.

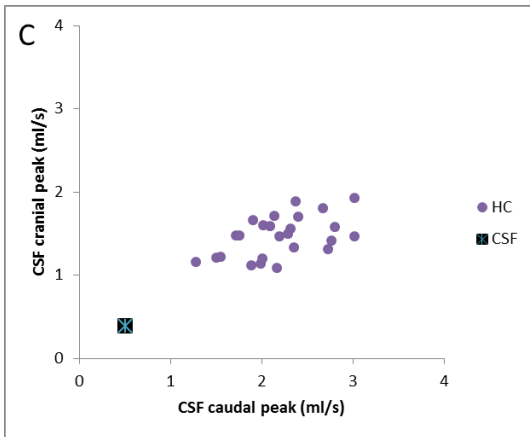


Figure C: The subject's caudal and cranial CSF flow peaks are plotted against 25 healthy controls.

Peak CSF cranial flow is 0.38 ml/s and peak CSF caudal flow is -0.5 ml/s.

Conventional Images:

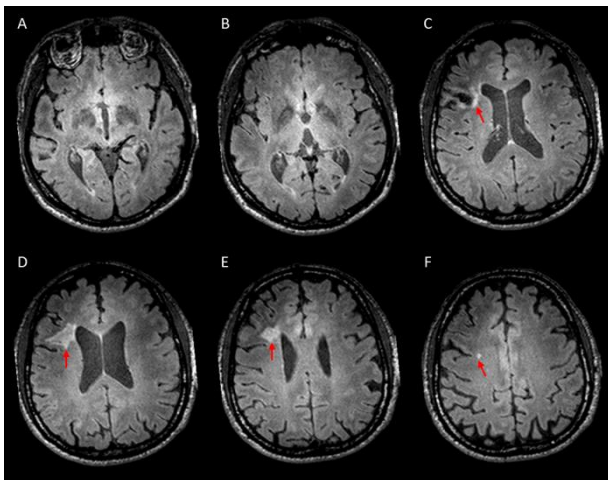


Figure 1a

A-F: FLAIR

Hyper intense signal is seen in right frontal region: Red arrows.

Conventional Images:

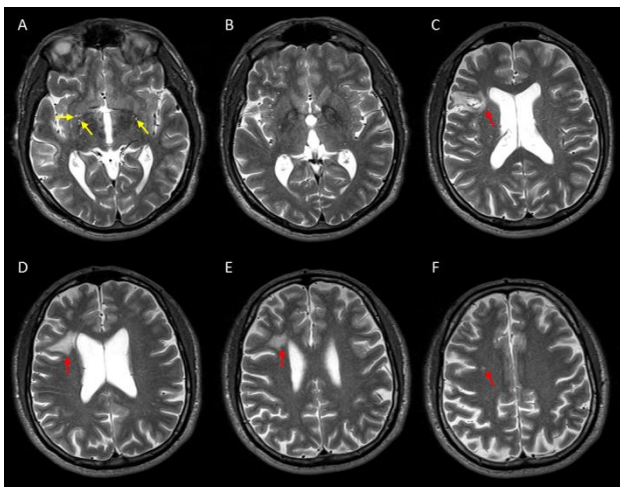


Figure 1b

A-F: T2WI images.

Hyper intense signal is seen in right frontal region: Red arrows.

Dilated Virchow-Robin (VR) spaces in the basal ganglia: Yellow arrows in A.

Conventional Images:

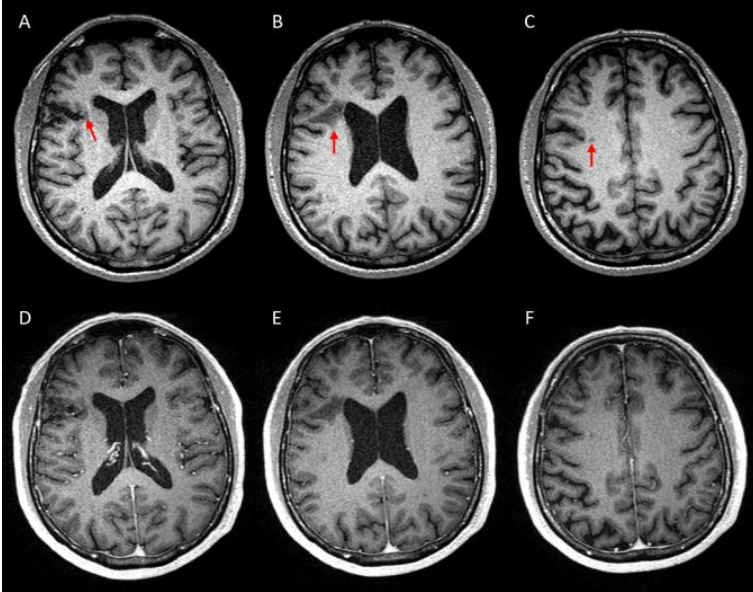


Figure 1c

A-C: T1WI pre-contrast images.

D-F: T1WI post-contrast images.

Hypo intense signal is seen in right frontal region: Red arrows.

SWI Analysis

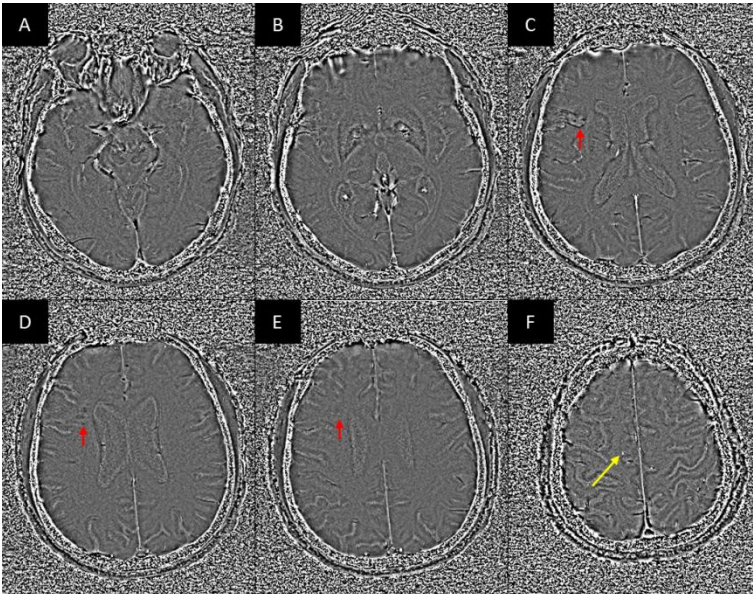


Figure 2

A-F: SWI phase images.

Hypo intense signal is seen in right frontal region: Red arrows.

Cerebral microbleed in the WM: yellow arrow in F.

SWI Analysis

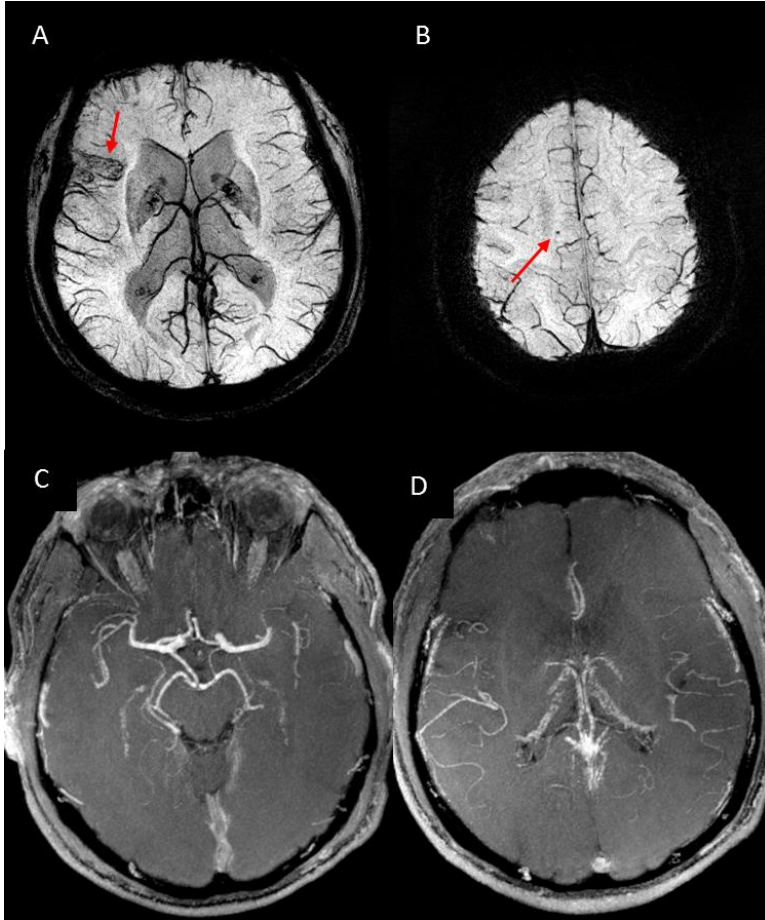


Figure 3

A-B: SWI mIPS.

Midbrain veins (A) and the thalamostriate drainage system (B).

C-D: SWI CE MRA

Arterial vessels in the midbrain (A) and the thalamostriate drainage area (B).

Decreased signal in the right frontal region: red arrow in A.

Cerebral microbleed in the right, superior region: red arrow in B.

SWIM Analysis

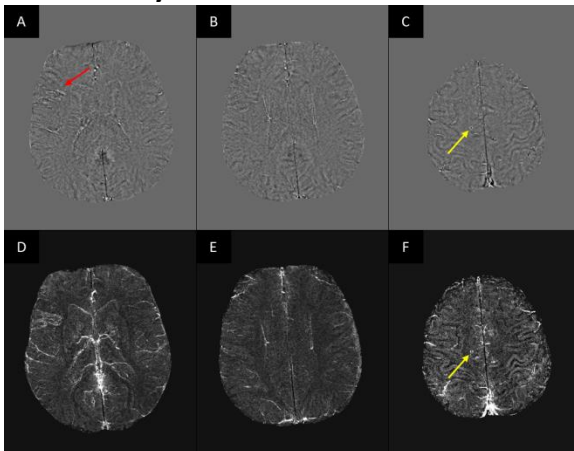


Figure 4

A-C: SWIM phase images.

D-F: SWIM MIP images.

Decreased signal in the right frontal region: red arrow in A.

Cerebral microbleed in the right, superior region: yellow arrows in C, F.

DWI analysis

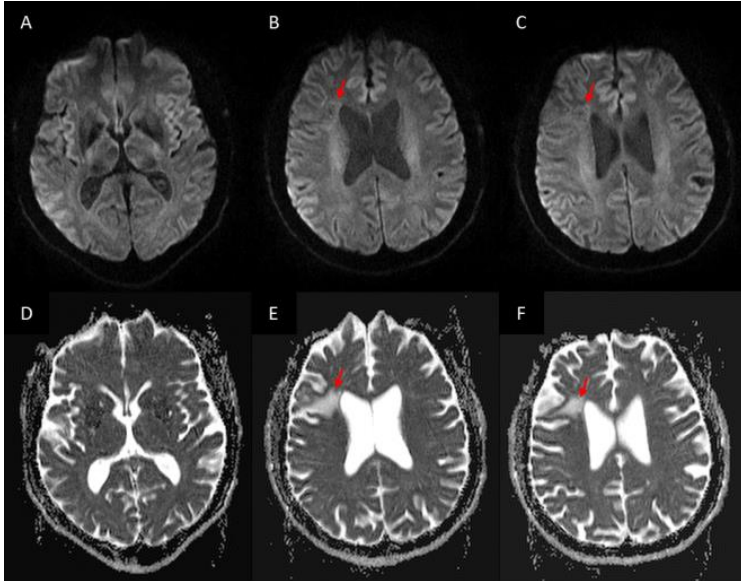


Figure 5

A-C: Diffusion weighted imaging (DWI) images.

D-F: Apparent diffusion coefficient (ADC) maps.

Hyper intense signal is seen in right frontal region: Red arrows.

DTI analysis

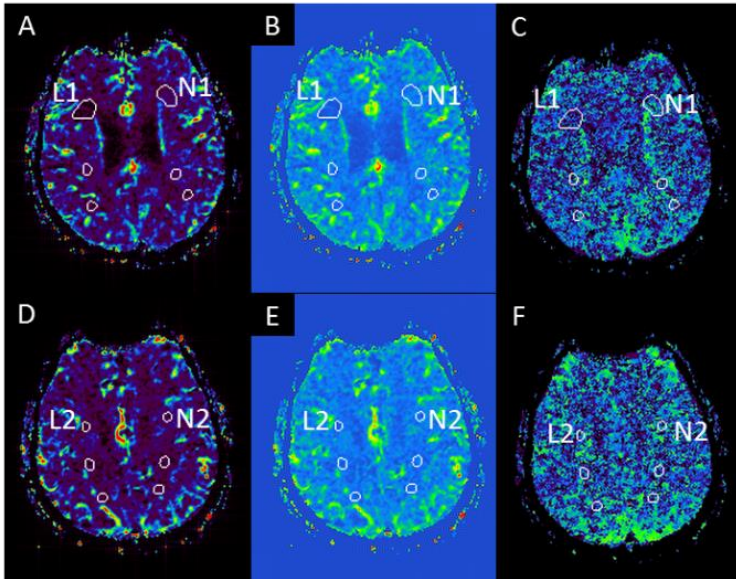


Figure 6

A&D: CBV

B&E: CBF.

C&F: MTT.

L1 and L2 shows lower CBF compared to N1 and N2 respectively.

Figure 7:

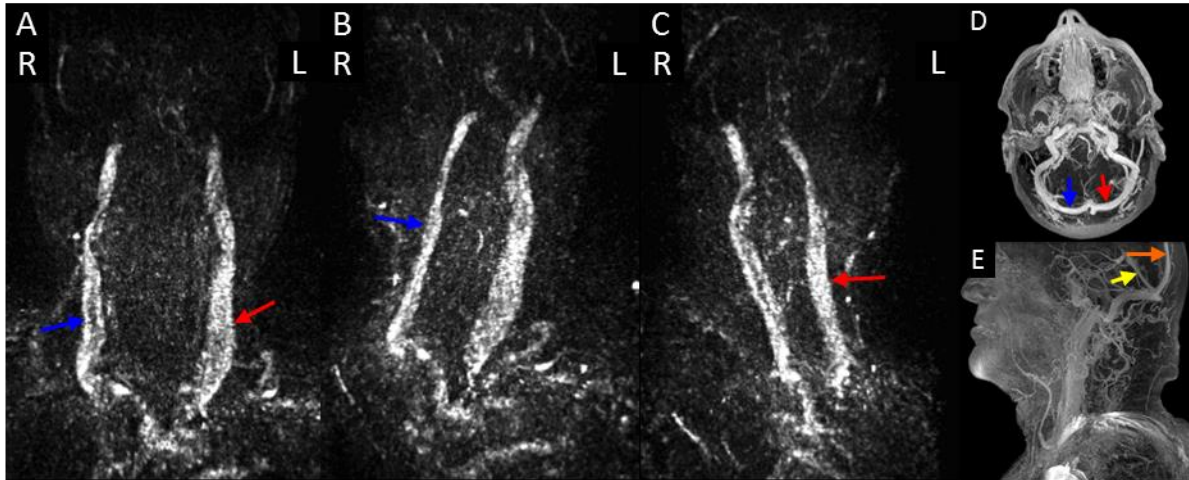


Figure 6, A-C: 3D CE MRV. The RIJV (deep blue arrows) LIJV (red arrows) shows weak enhancement through the length of the vessel. **D and E:** VIBE Neck. The right (deep blue) and left (red) transverse sinus are shown. The superior sagittal sinus (orange) and straight sinus (yellow) are shown. The LTSV shows weak signal (red) arrow in D.

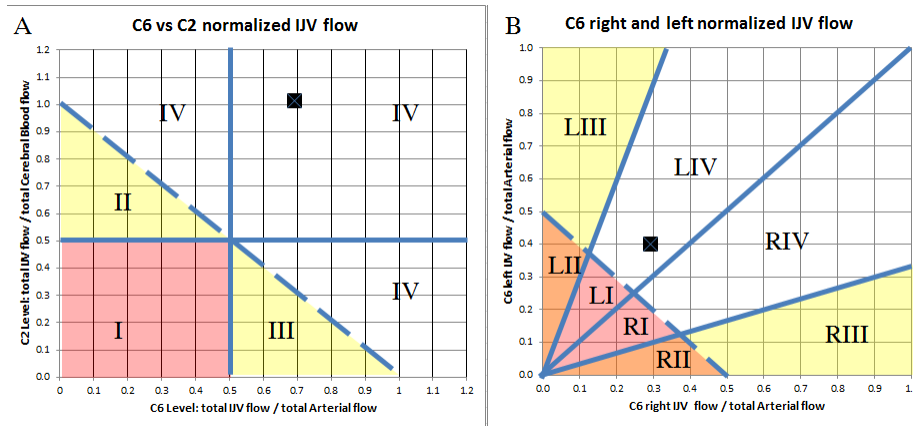


Figure 7A and B: The subject’s flow lies within III of Figure 7A. The IJVs carry 69% of total arterial flow at the C6 level and 100% of total ACBF at the C2 level. The subject’s flow lies within region RI in Figure 7B; at the C5-6 level the left IJV is dominant to the right IJV with a ratio of 1.3:1.

Figure 7A Region Legend: **Region I** – IJVs drain less than 50% of total arterial flow at both the C2-3 and C5-6 neck levels; **Region II** - IJVs drain less than 50% of total arterial flow at the C5-6 neck level and greater than 50% of total arterial flow at the C2-3 neck level; **Region III** – IJVs drain less than 50% of total arterial flow at the C2-3 neck level and greater than 50% of total arterial flow at the C6 neck level; **Region IV** – IJVs drain greater than 50% of total arterial flow at both C2-3 and C5-6. There is some evidence that most normal control subjects have flow at both C2-3 and C5-6 greater than 50%.

Figure 7B Region Legend: “R” regions have right IJV dominance. “L” regions have left IJV dominance. **Region I** – IJVs carry less than 50% of total arterial flow at the C6 neck level and the ratio of right to left IJV flow is less than 3:1; **Region II** – IJVs drain less than 50% of total arterial flow and the ratio of right to left IJV flow is greater than 3:1; **Region III** – IJVs drain greater than 50% of total arterial flow and the ratio of the right to left IJV is greater than 3:1; **Region IV** – IJVs drain greater than 50% of total arterial flow and the ratio of the right to left IJV is less than 3:1. There is some evidence that most normal control subjects lie in Region IV in Figure 7A and Region LIV and RIV in Figure 7B.