

Introduction: Vessel wall imaging employs specialized MRI techniques to evaluate arterial walls for various pathologies, extending beyond the luminal irregularities depicted by angiographic imaging. Its utility spans various anatomical regions, but its importance emerges intracranially where it plays a crucial role in distinguishing between different causes of luminal stenosis, including intracranial atherosclerotic disease and vasculitis, while also depicting various other pathologies.

Aim: To explore the clinical applications and potential pitfalls of intracranial vessel wall imaging, with a specific focus on depicting pathologies such as focal cerebral arteriopathy, dissection, vasculitis, and atherosclerotic disease. Additionally, to depict patient selection criteria for interventions based on vessel wall imaging findings.

Material and methods: A retrospective analysis of vessel wall imaging studies conducted over the past three years at our institution was performed. Imaging was carried out using a Philips Ingenia Elition 3T MR Machine with a dedicated protocol comprising DWI, SWI, Axial FLAIR, 3D T1W Black Blood, 3D T2W Black Blood, 3D Proton Density Black Blood, Post-contrast - 3D T1W black blood

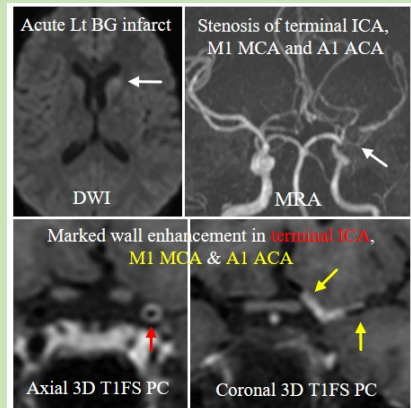


FIG 1 - FOCAL CEREBRAL ARTERIOPATHY

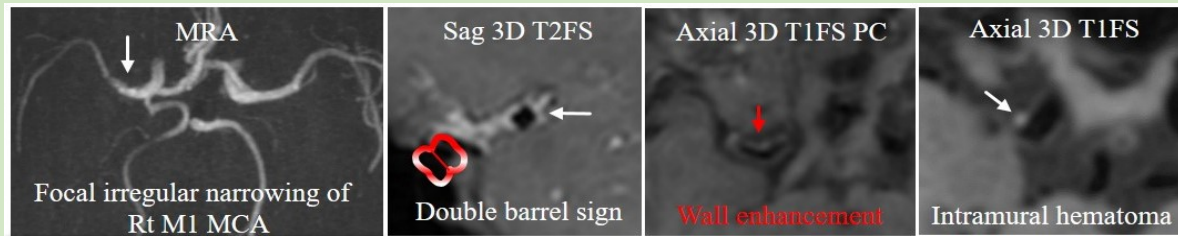


FIG 2A - DISSECTION - "DOUBLE BARREL SIGN"

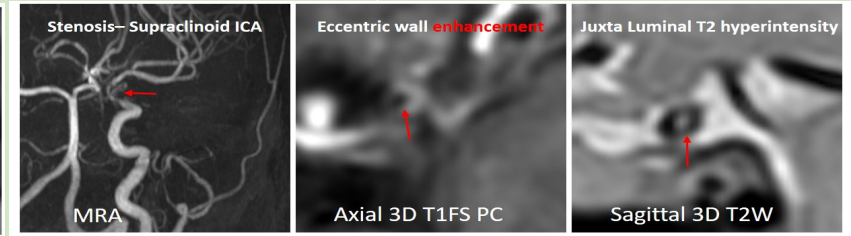


FIG 3 - ATHEROSCLEROSIS

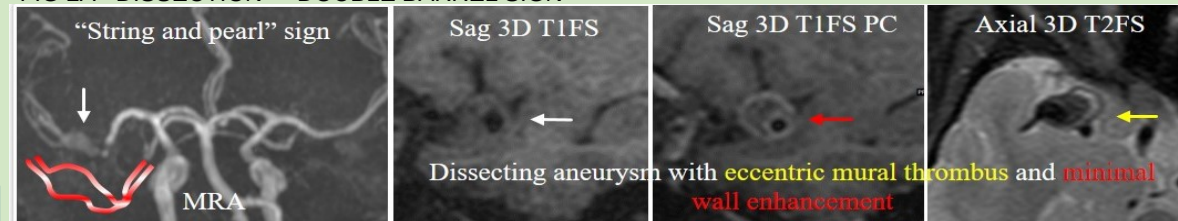


FIG 2B - DISSECTING ANEURYSM - STRING AND PEARL SIGN

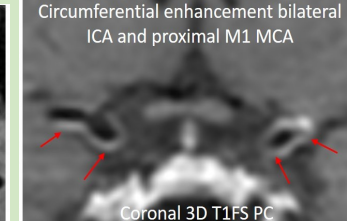


FIG 4 - VASCULITIS

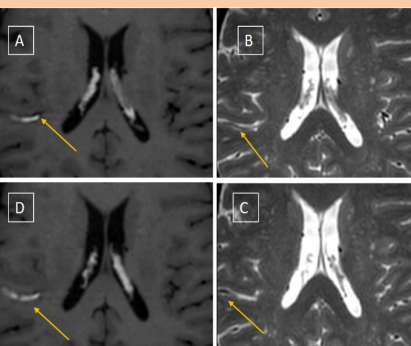


FIG 5 - CORD LIKE ENHANCEMENT ON IMAGES A AND D - MIMICKING A PATHOLOGY.

CORRESPONDING IMAGES B AND C SHOW MAINTAINED FLOW-VOID- SUGGESTIVE OF SLOW FLOW RELATED SPURIOUS ENHANCEMENT

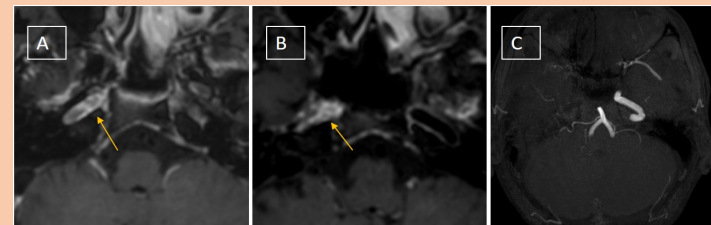


FIG 6 - CIRCUMFERENTIAL ENHANCEMENT OF THE RIGHT ICA MIMICKING A PATHOLOGY, SECONDARY TO ICA STENOSIS

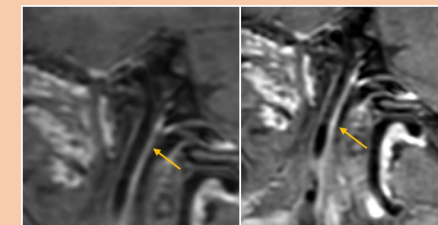


FIG 7- ENHANCING VASA VASORUM MIMICKING VASCULITIS.

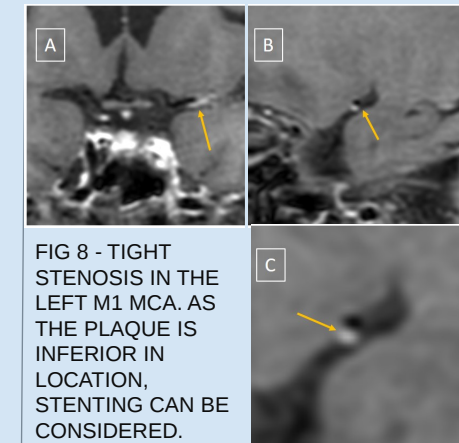


FIG 8 - TIGHT STENOSIS IN THE LEFT M1 MCA. AS THE PLAQUE IS INFERIOR IN LOCATION, STENTING CAN BE CONSIDERED.

Conclusion - Intracranial vessel wall imaging has a critical role in diagnosing various pathologies, including focal cerebral arteriopathy, dissection, vasculitis, and atherosclerotic disease thereby improving diagnostic accuracy. Potential pitfalls such as - enhancement of the vasa vasorum in the extracranial vessels, slow flow related spurious enhancement should be considered during interpretation. Additional information such as location of plaque in relation to arteries (anterior, inferior, superior, posterior) is crucial. This information is vital as superiorly located perforators could be at risk of occlusion, which needs consideration before stenting.