E-021 PATHOPHYSIOLOGY, STROKE TYPES, COLLATERAL FORMATION AND ANEURYSMS IN MOYAMOYA DISEASE/MOYA MOYA SYNDROME

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Objective Moyamoya disease (MMD) is a rare condition where the supraclinoid part of internal carotid artery is slowly and progressively becoming stenotic. The moyamoya syndrome (MMS) is similar to MMD but might be associated with Down's syndrome, neurofibromatosis type 1 (NF-1), prior irradiation, and sickle-cell disease. Phenotypic differences between moyamoya disease (MMD) and moyamoya syndrome (MMS) remain unclear. The prevalence of aneurysm formation in moyamoya disease (MMD) is approximately 14% in adults and rare in children, and it represents a major potential hemorrhagic risk. In this study, we will explore clinical and angiographic features of MMD/MMS, presentation, classification, association with aneurysms.

Methods This was a retrospective cross-sectional study. Imaging studies and clinical records of 13 patients who were admitted to our hospital between January 2019 and December 2020 and were diagnosed with MMD/MMS were reviewed. Angiographic findings and clinical features of MMD and associated aneurysms were reviewed. Collateral vessels were classified into three subgroups.

Results The study consisted of 13 patients, 38.5% female, 61.5% males with a bimodal age distribution. 8 cases had bilateral involvement while unilateral MMD cases were only 5. All 38.5% patients with aneurysms presented with rupture, and have unilateral MMD with only single case of bilateral MMD and aneurysm. The commonest location of aneurysm was distal basilar artery i-e 3 cases, rest of 2 cases had AcomA aneurysm. In one case of MMS, there was a basilar tip aneurysm with underlying vasculitis. Posterior circulation was involved in 46.1% cases. In 76.9% cases extensive collateral formation in lenticulostriate, choroidal and thalamic territories were evident.

Conclusions MMD is presented most commonly with ischemic stroke in the pediatric age group and with hemorrhagic stroke

Abstract E-021 Table 1

	Initial Clinical Manifestation	Type Of Stroke	Angiographic Characteristics	Association with Aneurysms	Type of Collaterals (lenticulostriates/Thalamic/ Choroidal
Age/Sex					
20y/M	Headache followed by sudden loss of consciousness	Hemorrhagic stroke/ICH	B/L MMD -Bilateral ICA stenosis at supraclinoid segment involving both ACAs & MCAs Posterior circulation was involved Incidental finding of intradural duplication of VA	No	Only thalamic collateral anastomosis evident supplying bilateral cortex
38y/F	Presented with ictus	Hemorrhagic stroke/ICH	B/L MMD-Bilateral ICA stenosis at supraclinoid region,bilateral ACAs & MCAs involved Transdural angiogenesis, posterior circulation not involved	No	Choroidal anastomosis and lenticulostriate anastomosis evident
30y/M	Presented with headache and weakness of left lower limb	Ischemic stroke/Right ACA territory	B/L MMD- Bilateral ICA stenosis at supraclinoid region involving both ACAs and MCAs Transdural angiogenesis,posterior circulation involved	No	Thalamic perforator collaterals anastomosis supplying the whole cortex
45y/M	Presented with headache followed by loss of consciousness	Hemorrhagic stroke/SAH	Unilateral MMD- Left ICA stenosis at supraclinoid region, both sided ACA& MCA involved transdural angiogenesis, Right ICA stenosis proximal part	Basilar tip aneurysm, left PCA hypoplastic, right PCA dilated and supplying the whole cortex	No lenticulostriates or choroidal collaterals,only thalamic collaterals showed anastomosis supplying the whole cerebral hemisphere
49y/M	Presented with sudden headache and loss of consciousness	Hemorrhagic stroke/SAH	Unilateral MMD-Right ICA stenosis at supraclinoid region,Right ECA supplying the cortex through transdural angiogenesis,Left ICA supplying the right ACA and MCA through AComA,posterior circulation not involved	Large AcomA aneurysm filling from left ACA	No collaterals evident
17y/M	Presented with right sided hemiplegia/old left CVA	Ischemic stroke/ Bilateral CVA	Bilateral MMD-Bilateral ICA stenosis at supraclinoid region,both ACAs and MCAs involved Transdural angiogenesis, posterior circulation involved	No	Only thalamic collateral anastomosis evident

15y/F	Presented with acute ictus	Hemorrhagic stroke/ SAH	Unilateral MMD -Left ICA stenosis at supracaloid region, left ACA involved, posterior circulation not involved, Right ICA supplying the left MCA through AcomA	AComA aneurysm filling from right ACA	No collaterals evident
35y/M	Headache followed by loss of consciousness	Hemorrhagic stroke/IVH	Bilateral MMD-Bilateral ICA stenosis at supracaloid region, ACA, MCA intact	No	Lenticulostriate, choroidal and thalamic collateral formation with anastomosis seen
8y/F	Presented with sudden bilateral lower limb	Ischemic stroke/B/L ACA territory infarcts	posterior circulation involved Bilateral MMD-Bilateral ICA stenosis at supracaloid region, posterior circulation	No	Lenticulostriates, choroidal and thalamic collateral anastomosis evident
43y/M	weakness, fits, headache Presented with headache followed by loss of consciousness	Hemorrhagic stroke/ SAH	involved Bilateral MMD- Bilateral ICA stenosis at supracaloid region, posterior circulation involved	Basilar tip aneurysm	Thalamic collaterals anastomosis supplying the whole cortex
18y/F	Presented with headache followed by loss of consciousness	Hemorrhagic stroke/ICH	Unilateral MMD- Left ICA stenosis at supracaloid region, posterior circulation not involved, posterior choroidal artery and anterior choroidal artery showed anastomosis	No	Lenticulostriate collateral anastomosis seen
3y/F	Presented with left sided weakness	Ischemic stroke/Right sided infarct	Bilateral MMD- Bilateral ICA stenosis at supracaloid region, ACA & MCA not involved	No	Extensive lenticulostriate and choroidal collateral formation and anastomosis seen
12 y/M	Presented with fever, neck rigidity, left sided weakness	Hemorrhagic stroke/ SAH Vsculitis	posterior circulation not involved Unilateral MMD - Left ICA stenosis at supracaloid region, posterior circulation not involved	Distal basilar tip aneurysm	No collaterals evident

Abstract E-021 Figure 1

in the adult age group. MMD-associated intracranial aneurysms frequently occur in patients presenting with hemorrhagic

unilateral MMD and are associated with an extremely high rate of rupture. Long-standing hemodynamic stress might contribute to the formation of an aneurysm.

Disclosures S. Ahmad: None.

E-022 VIZ RECRUIT ICH VOLUME INCREASED THE SCREENING RATE AND ENROLLMENT IN ENRICH

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Introduction Early Minimally Invasive Removal of Intracerebral Hemorrhage (ENRICH) is a RCT evaluating the efficacy of minimally invasive surgery (MIS) for ICH. AI ENRICH is a prospective trial operating within and in parallel to the ENRICH trial that utilizes an AI application, Viz RECRUIT ICH Volume, to identify and segment ICH to quickly identify potentially eligible subjects.

Methods Non-contrast CT scans performed at 3 participating US hospitals were evaluated specifically for a parenchymal hemorrhage by Viz RECRUIT ICH Volume. Participating health care professionals downloaded a phone application that allowed users to be notified for any hemorrhage ≥ 5 mL. Screening and enrollment rates are based on participating hospitals reports.

Results Over a combined period of 374 days, 20,128 CT scans were evaluated by the application, yielding a total of 110 patients that met ENRICH inclusion criteria for hematoma volume (30-80 mL). Of these, 9 patients were enrolled. The