

Case Lessons nr.18

Endovascular treatment in Intracranial stenosis in young adult stroke

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Introduction:

In adults <45 years old, the incidence of ischemic stroke worldwide ranges from 8 to 100/100,000 people per year. Rare cases of focal cerebral arteriopathy have been reported¹ and large-artery atherosclerosis was responsible for only 4% of ischemic strokes occurring between aged 15 and 44 years².

Conservative treatment for intracranial artery stenosis with antiplatelet or anticoagulation therapy is the choices in SUMMPRIIS trial³. The role of bypass surgery in intracranial atherosclerotic steno-occlusive diseases (ICADs) remains controversial⁵. Although efforts to modulate stroke risk, alternatives like percutaneous transluminal angioplasty and intracranial stenting are recommended when the expertise exist. Careful patient selection and newer generation balloon-mounted drug-eluting stents (BM-DES) is imperative to minimize perioperative complications in cases of intracranial stenosis^{4,6}.

Case presentation:

35 year old female. Oral contraceptives user 3 month before.

She referred three episodes of left brachio -facial paresthesia and 1 episode of dysarthria that regressed for 5-10 minutes in January-February 2024. She was not under medical attention for these episodes.

In May 2024, she was in Zurich and had two episodes of left hemiparesis that also lasted for few minutes. For this reason he was hospitalized there, hemodynamic ischemic stroke on the territory of right MCA (fig 1a,b) from intracranial stenosis of right MCA was detected on brain MRA (fig 2). Laboratory test for vasculitis and cardiac evaluation were normal. Regarding to AHA/ASA protocol and SAMMPRIIS trial, aggressive conservative treatment was recommended, DAPT(ASA 100 mg +Plavix 75 mg).

Six months later, she was presented to Prof. Emmanuel Houdart.

Neurological examination was normal.

A new MRI/MRA revealed that the Left MCA stenosis had progressed despite being under aggressive medical treatment(fig 3). In such condition endovascular treatment with intracranial stent was proposed and done without complication.

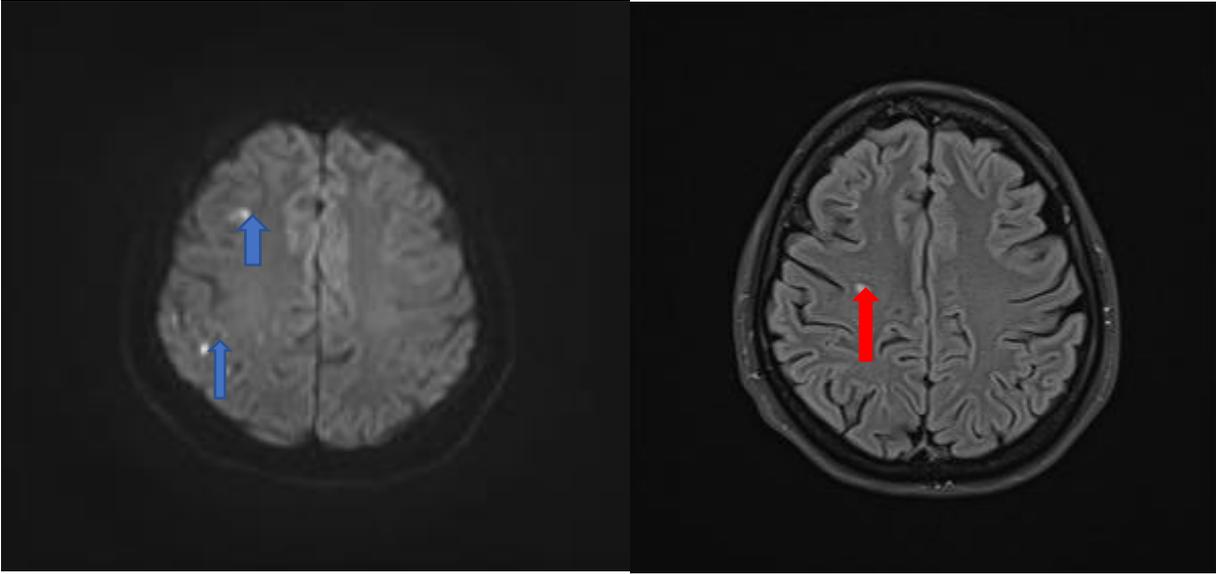


Fig.1 (Zurich)A: MRI DWI Acute: Ischemic stroke on right MCA territory (Blue arrow)
B: MRI Flair: ischemic stroke on right MCA territory (red arrow)



Fig 2(Zurich) Brain MRA May 2023: Right MCA stenosis (blue arrow)



Fig 3;Recent MRA revealed tightened Right MCA stenosis (green arrow), more advanced after six month, despite aggressive medical treatment .

The decision of Prof. Emmanuel Houdart was to treat with endovascular stenting.

PROCEDURE: INTRACRANIAL STENT

TECHNIQUE: Verbal and written consent was approved by the family after the risks and benefits of the procedure were explained in detail.

The patient was under general anesthesia, femoral access was performed and the 8F introducer was placed.

The right ICA was catheterized through the introducer and the Neuronmax 6F retention catheter was placed in the cervical portion of the right ICA. A-P, lateral and right ICA projections were performed. Stenosis is evident in the right M1.(fig 4) the micro-catheter/microguide system was placed in the rightM1. The procedure continues with the positioning of the CREDO stent in the right M1 The control at the end of the procedure shows good opening of the stent .The procedure is performed under protection with 3000 IU of heparin, and prior preparation with plavix/aspirin.

CONCLUSION: Successful uneventful intracranial stent placement in the right MCA(fig 5)

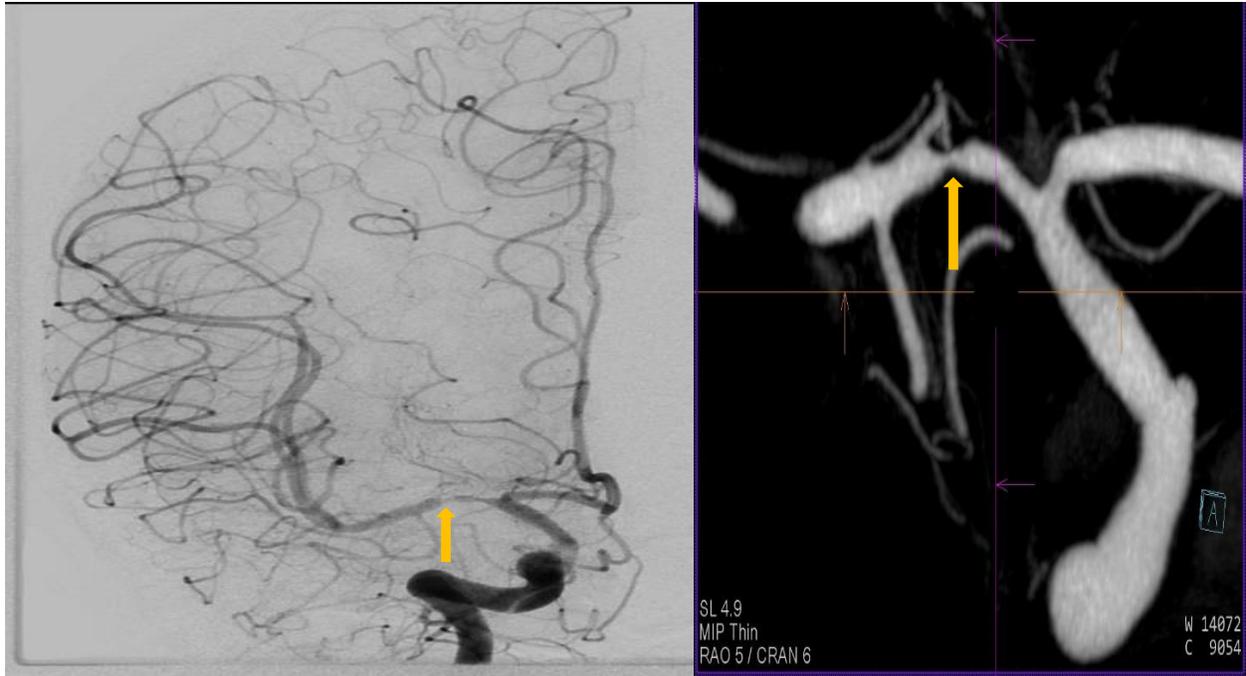


Fig 4:DSA Right MCA tight stenosis (yellow arrow)



Fig 5: DSA after endovascular treatment. Successful intracranial stent placement in the right MCA (red arrow)

Discussion: The effect of endovascular recanalization by stent angioplasty is suggested in atherosclerotic stenosis^{2,6}. Recanalization can improve hemodynamic hypoperfusion distal to the stenosis. Early treatment after an ischemic event is crucial to prevent recurrent ischemic events in patients with intracranial stenosis. Tailoring the choice of endovascular treatment to the individual patient's underlying pathophysiology and characteristics of ICAD is essential. It should be discussed in Stroke Teams case by case. Future advancements in interventional techniques and stent design are expected to enhance outcomes^{4,6}. In young stroke patients other causes should be considered, but we can not speculate, as in our case.

She had had one option of conservative treatment in Zurich, without any new neurological event in six months but with radiological progression of the stenosis.

The second option of endovascular stenting was strongly recommended because of the progression of the stenosis, despite the aggressive medical treatment.

Conclusion:

In selected cases with dynamic changes as in ours, especially in young adult stroke, the endovascular treatment of ICAD, is strongly recommended in expert hands⁶

Keyword: intracranial atherosclerotic steno-occlusive diseases (ICADs), endovascular, antiaggregation

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