Case lesson *25*

Spontaneus intracranial dissection of Left MCA in a young age girl,case report

Leka Vojsava, Dodaj Stela, Grada Mirel,Rroji Arben, Enesi Eugen, Houdart Emmanuel, Petrela Mentor

Introduction:.Spontaneous intracranial arterial dissections (SIADs) are a less known and less understood phenomena typically associated with the vertebrobasilar system. Anterior circulation IADs are far less represented in current literature[1,2,7]. Dissecting aneurysms of the distal segments of the MCA have only 61 reported cases, and most of them are idiopathic[1,2,3]. They result from tear in the intimal wall and travel of blood between the tunica intima and tunica media creating an intramural hematoma[1]. The condition may manifest as an ischemic stroke, transient ischemic attack (TIA), SAH, or isolated headache. SIAD remains a diagnostic and therapeutic challenge due to its heterogeneous presentation and variable clinical course[1,8].

Case report: An 18-year-old female experienced an acute onset of severe left-sided headache in October 2024, described as intense and unprecedented, throbbing, with a pain intensity rating of 10 out of 10. The pain was alleviated for 15 minutes by the administration of anti-inflammatory drugs (AIJS) and benzodiazepines (BDZ). In January 2025, the patient presented with a similar clinical picture; however, this episode lasted 24 hours before subsiding. Initially, she was referred to Elbasan Regional Hospital, where a head CT scan suggested the possibility of an aneurysm(fig1), and than she was hospitalised to Mother Teresa Hospital. In February 2025, she was transferred to our center.

Upon arrival, the patient reported no complaints, had a normal neurological examination, and is right-handed. NIHSS 0 GCS 15 HH 0

A Brain MRI is done (fig 2) and revealed Bisacular aneurism in the left Sylvian fissure with dimensions of 8mm and 7mm.

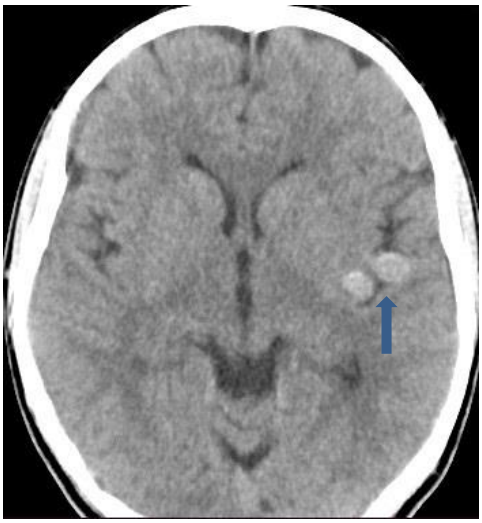

Fig 1.Left MCA aneurism was suspected (blue arrow)

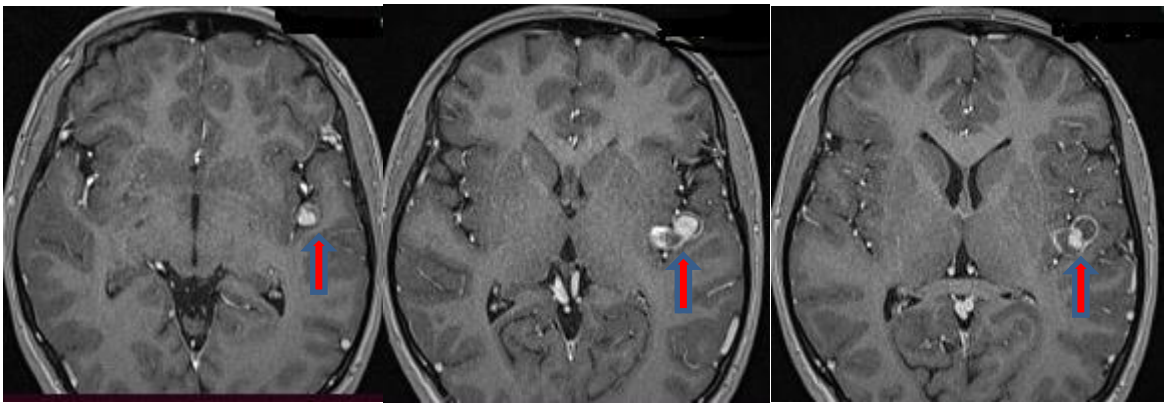

Fig2.Bisacular aneurism in the Left Sylvian fissure with dimensions of 8mm and 7mm(red arrow)

DSA was recommended and is done. "Technique: With a 6F introducer, from the right femoral artery under sedation and local anesthesia: With a 5F vertebral diagnostic catheter, selective injections are performed into the bilateral internal carotid arteries (ICA) and vertebral arteries (VA).A fusiform aneurysm is evident with dimensions of 22x8mm in the Sylvian segment of the left basal temporal artery(Fig3A). Vessels distal to the aneurysm are visible. Superselective catheterization of the middle cerebral artery was performed, and a balloon test occlusion was conducted(fig3B) . During the test, the patient was examined by a neurologist, and no neurological deficits were observed. Selective injection of the left internal carotid artery at this moment did not reveal perfusion defects in the territory supplied by this artery (fig 3C). The dural sinuses are normally filled. No complications occurred during the procedure.

The absence of neurological deficits and perfusion defects suggests a favorable outcome.

The case was consulted with Prof. Emmanuel Houdart from Paris, who confirmed a fusiform aneurysm in the context of intracranial dissection. He recommends endovascular treatment, specifying the technique of the procedure, which is performed perfectly by our interventional radiology team.

Treatmant:Procedure, Under General Anesthesia.Right Femoral Puncture and 6 French Introducer Placement. Insertion of 6 French Chaperon Catheter and Positioning at the Origin of the Right Internal Carotid Artery (ICA). Insertion of 0.016-inch Headway Duo Microcatheter and 0.14-inch Traxess Guidewire, Positioning at the Distal Portion of the Aneurysm.Insertion of Three Coils, followed by Withdrawal of the Microcatheter. Insertion of Detachable Catheter and 0.07-inch Hybrid Microguidewire, Injection of 1 ml of Phil Solution over approximately 10 minutes until Complete Filling and Exclusion of the Aneurysm.(fig 4) Withdrawal of the Microcatheter. Final Control Showing Complete Exclusion of the Aneurysm (fig 5). No Filling of the Excluded Arterial Territory by Collaterals. Removal of the Introducer and Manual Compression.

She was Transferred to ICU and woke up Without Neurological deficit

NIHSS 0 GCS 15

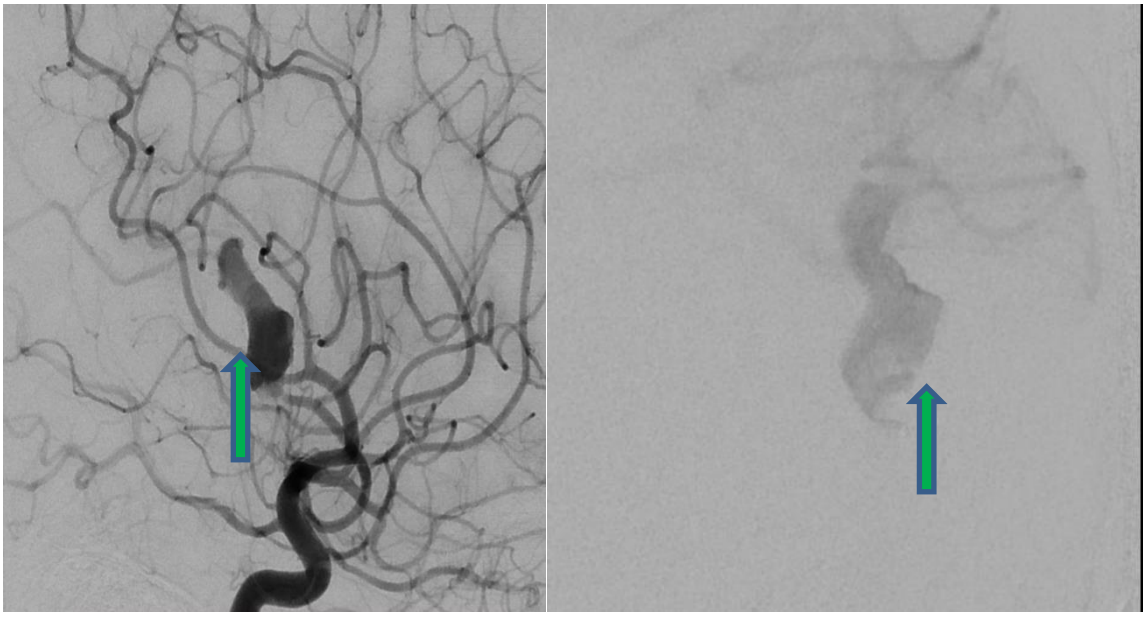

Fig 3A A fusiform aneurysm is evident with dimensions of 22x8mm in the Sylvian segment of the left basal temporal artery gren arrow

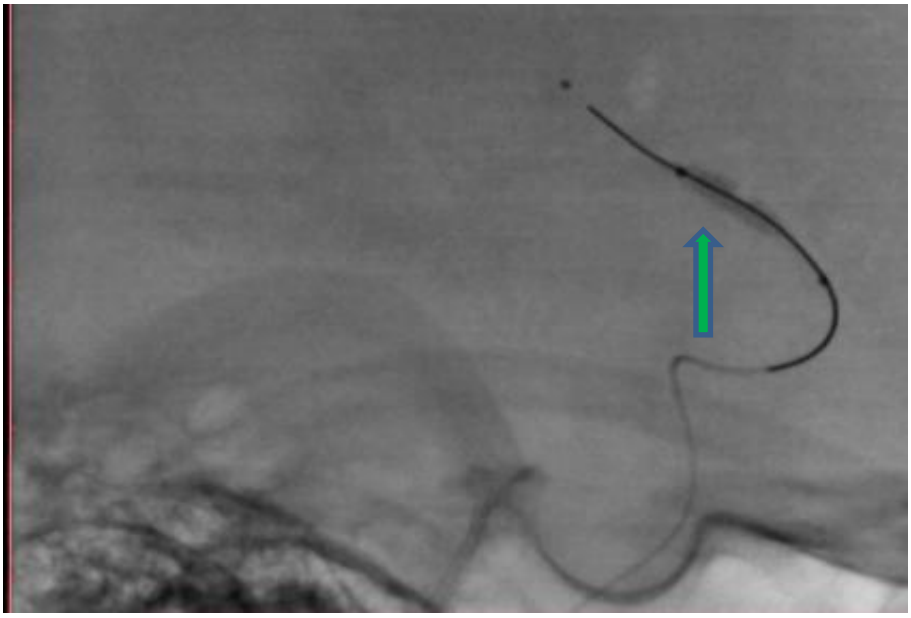

Fig 3B.DSA Superselective catheterization of the middle cerebral artery was performed, and a balloon test occlusion was conducted(green arrow), no neurological deficits were observed

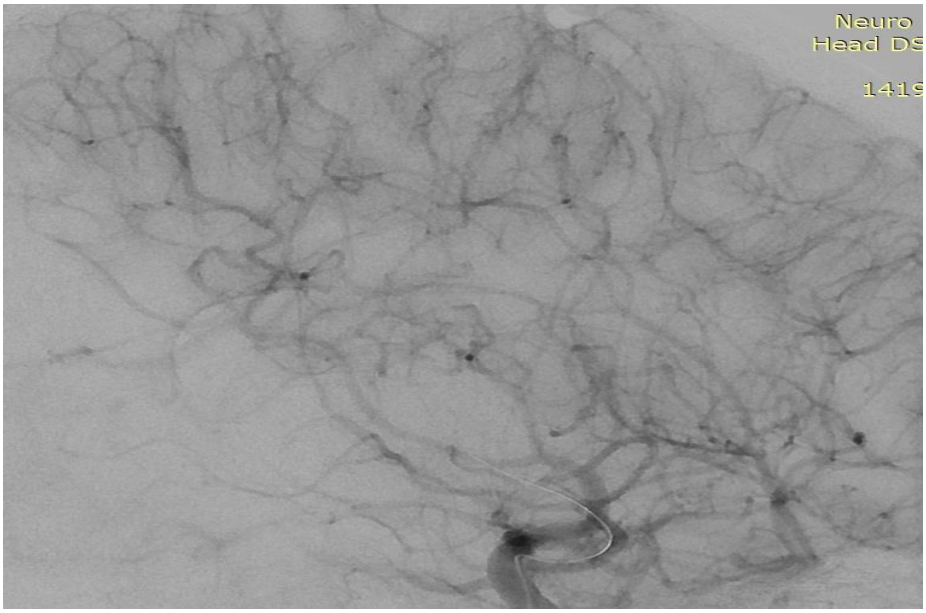

Fig 3C: Selective injection of the left internal carotid artery at this moment did not reveal perfusion defects in the territory supplied by this artery

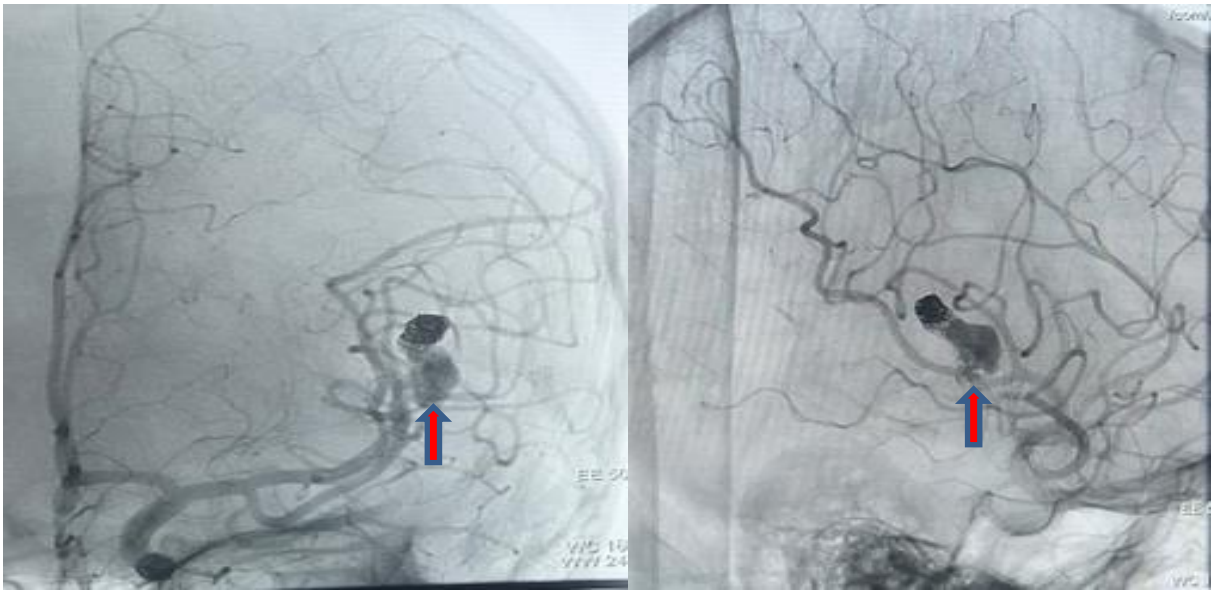

Fig 4:Endovascular treatment,exclusion of aneurism with coils (red arrow)

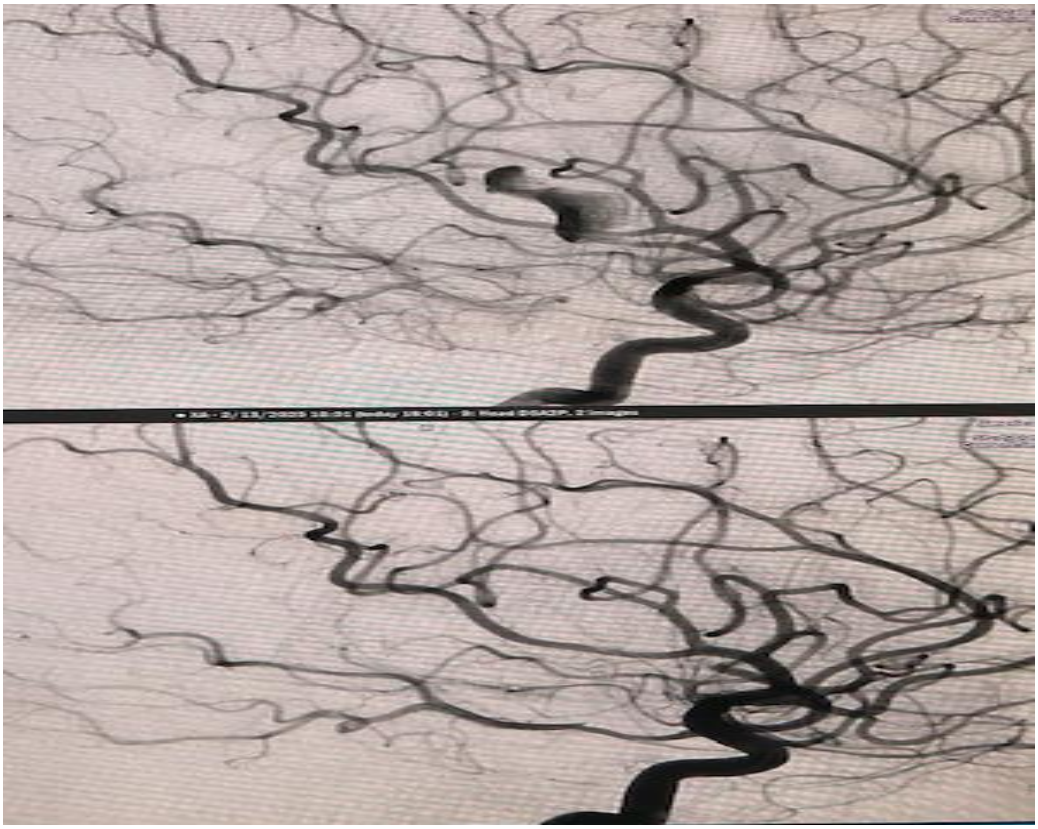

Fig5. Final Control Showing Complete Exclusion of the Aneurysm

Discussion: Intracranial vascular dissection is more common in the posterior circulation (80%) compared to the anterior circulation (20%)[3]. Dissecting aneurysms of the distal segments of the MCA have only 61 reported cases, and most of them are idiopathic[1,2,3], as our case. The most likely causes include medial cystic necrosis, fibromuscular dysplasia, Ehler-Danlos syndrome, moyamoya disease, atherosclerosis, homocystinuria, osteogenesis imperfecta, and cerebral aneurysms[1,6]. Less common causes include migraine, hypertension, infectious diseases, obesity, smoking, and the use of oral contraceptives[1,2,6]. Surgical or endovascular treatment for MCA aneurysms remains to be reviewed in randomized studies, but for dissecting aneurysms, like in our case, the treatment is endovascular[1,4,7].

Conclusions: Intracranial dissection of the MCA remains an underreported cause of strokes, affecting a younger population (20-50 years), compared to traditional etiologies[2]. In most cases, it causes ischemic strokes, but in complicated cases like ours, the treatment is endovascular[1,7]

Reference:

1. Stephanie Debette1,2 Mikael Mazighi [3,4,5,6,7], Philippe Bijlenga[8] , Alessandro Pezzini[9] , Masatoshi Koga[10,] Anna Bersano[11], Janika Kõrv[12,13] , Julien Haemmerli[8] , Isabella Canavero1[1], Piotr Tekiela[14], Kaori Miwa[10], David J Seiffge[15], Sabrina Schilling[16], Avtar Lal[16,] Marcel Arnold1[5], Hugh S Markus[17], Stefan T Engelter[18,19] and Jennifer J Majersik1 2021, Vol. 6(3) XXXIX–LXXXVIII
   ESO guideline for the management of extracranial and intracranial artery dissection
2. Ganesh Asaithambi[1] , Pradeepan Saravanapavan[1] , Vaibhav Rastogi[1] , Sheema Khan[1] , Sharatchandra Bidari[2] , Anna Y Khanna[1] , Latha Ganti[3] , Adnan I Qureshi[4] and Vishnumurthy Shushrutha Hedn
   Isolated middle cerebral artery dissection: a systematic review Int J Emerg Med. 2014; 7(1): 44.
3. Jong-Hoon Kim, Young-Jin Jung, Chul-Hoon Chang Simultaneous Onset of Ischemic and Hemorrhagic Stroke Due To Intracranial Artery Dissection
   J Cerebrovasc Endovasc Neurosurg. 2017 June;19(2):125-128
4. Ota N, Tanikawa R, Kamiyama H, Miyazaki T, Noda K, Katsuno M, et al Discrepancy between preoperative imaging and postoperative pathological finding of ruptured intracranial dissecting aneurysm, and its surgical treatment: case report. Neurol Med Chir (Tokyo). 2014;54(3):219-26.
5. Kato Y, Hayashi T, Uchino A, Kakehi Y, Yamane F, Ishihara S, et al. Fusiform dilatation of the outer contour of a dissected anterior cerebral artery revealed by magnetic resonance cisternography in a patient with simultaneous cerebral infarction and subarachnoid hemorrhage.
   J Stroke Cerebrovasc Dis. 2014 Jul;23(6):1717-20.
6. W Boisseau[1], T E Darsaut[2], R Fahed[3], J M Findlay[2], R Bourcier[4], G Charbonnier[5], S Smajda[6], J Ognard[7], D Roy[1], F Gariel[8], A P Carlson[9], E Shotar[10], G Ciccio[11], G Marnat[8], P B Sporns[12,13], T Gaberel[14], V Jecko[15], A Weill[1], A Biondi[5], G Boulouis[16], A L Bras[17], S Aldea[18], T Passeri[19], S Boissonneau[20,21], N Bougaci[22], J C Gentric[7], J D B Diestro[23], A T Omar[24], H M Al-Jehani[25], G El Hage[26], D Volders[27], Z Kaderali[28], I Tsogkas[12], E Magro[29], Q Holay[30], J Zehr[31], D Iancu[1], J Raymond[32]
   Surgical or Endovascular Treatment of MCA Aneurysms: An Agreement Study 2022 Sep 22;43(10):1437-1444
   AJNR AmJNeuroradiol 43:1437–44 Oct 2022
7. Taylor Furst, MD, Nathaniel R. Ellens, MD, Matthew T. Bender, MD, and Thomas K. Mattingly, MD, MSc Ischemic stroke caused by spontaneous anterior circulation intracranial arterial dissections: patient series
   J Neurosurg Case Lessons 5(10): CASE22564, 2023