ICCA STROKE 2019

WIST

Successful retrograde recanalization of an acute right dominant vertebral artery through the left PCOM in a patient with acute vertebrobasilar ischemic stroke

Anton A. Khilchuk, MD; Maksim V. Agarkov, MD

Interventional Radiologist, Saint-Petersburg State City Hospital №40

Assistant Lecturer, Saint-Petersburg State University

DISCLOSURE STATEMENT OF FINANCIAL INTEREST

Authors DO NOT have a financial interest/arrangement or affiliation with one or more organizations that could be perceived as a real or apparent conflict of interest in the context of the subject of this presentation.

INTRODUCTION

Acute occlusions of the large posterior circulation, such as vertebral, basilar and posterior cerebral cause about a fifth of all strokes.

In basilar artery occlusion (BAO) clinical presentation differs from moderate symptoms to catastrophic strokes.

BAO is a rare, urgent situation and accounts for about 1% of all strokes and is reported in 8% of patients with acute vertebrobasilar ischemia[1,2].

1. Haussen DC et al. Posterior communicating and vertebral artery configuration and outcome in endovascular treatment of acute basilar artery occlusion. J Neurointerv Surg. 2015 Dec;7(12):864-7. doi: 10.1136/neurintsurg-2014-011327
2. Mattle HP, Arnold M, Lindsberg PJ, et al. Basilar artery occlusion. Lancet Neurol 2011;10:1002–14. doi: 10.1016/S1474-4422(11)70229-0

INTRODUCTION

Advanced endovascular technology and techniques allow interventional specialists to utilize novel ways of posterior circulation recanalization, especially when routine approaches are not eligible[1,2,3].

1. Haussen DC et al. Posterior communicating and vertebral artery configuration and outcome in endovascular treatment of acute basilar artery occlusion. J Neurointerv Surg. 2015 Dec;7(12):864-7. doi: 10.1136/neurintsurg-2014-011327
2. Liu W, Kung DK, Mahaney KB, et al. Anterior-to-posterior circulation approach for mechanical thrombectomy of an acutely occluded basilar artery using the penumbra aspiration system. World Neurosurg 2012;77:398.E17–20. doi: 10.1016/j.wneu.2011.04.025
3. Morales A, Parry PV, Jadhav A, Jovin T. A novel route of revascularization in basilar artery occlusion and review of the literature. J Neurointerv Surg. 2016 Jul;8(7):e25. doi: 10.1136/neurintsurg-2015-011723

INTRODUCTION

Several authors described non-standard revascularization techniques in acute ischemic strokes due to basilar and middle cerebral arteries occlusions with full technical and clinical success.

World Neurosurg. 2010 Jan;73(1):17-21. doi: 10.1016/j.surneu.2009.05.020. Epub 2009 Jul 29.

World Neurosurg. 2012 Feb;77(2):398.E17-20. doi: 10.1016/j.wneu.2011.04.025. Epub 2011 Nov 7.

Neurointervention. 2016 Mar;11(1):55-8. doi: 10.5469/neuroint.2016.11.1.55. Epub 2016 Mar 3.

J Neurointerv Surg. 2016 Jul;8(7):e25. doi: 10.1136/neurintsurg-2015-011723.rep. Epub 2015 Jun 10.

World Neurosurg. 2018 Apr;112:46-52. doi: 10.1016/j.wneu.2018.01.038. Epub 2018 Jan 12.

Mechanical Thrombectomy of Acute Middle Cerebral Artery Occlusion Using Trans-Anterior Communicating Artery Approach.

Amuluru K[1], Romero CE[2], Pyle L[2], El-Ghanem M[3], Al-Mufti F[4].

INTRODUCTION

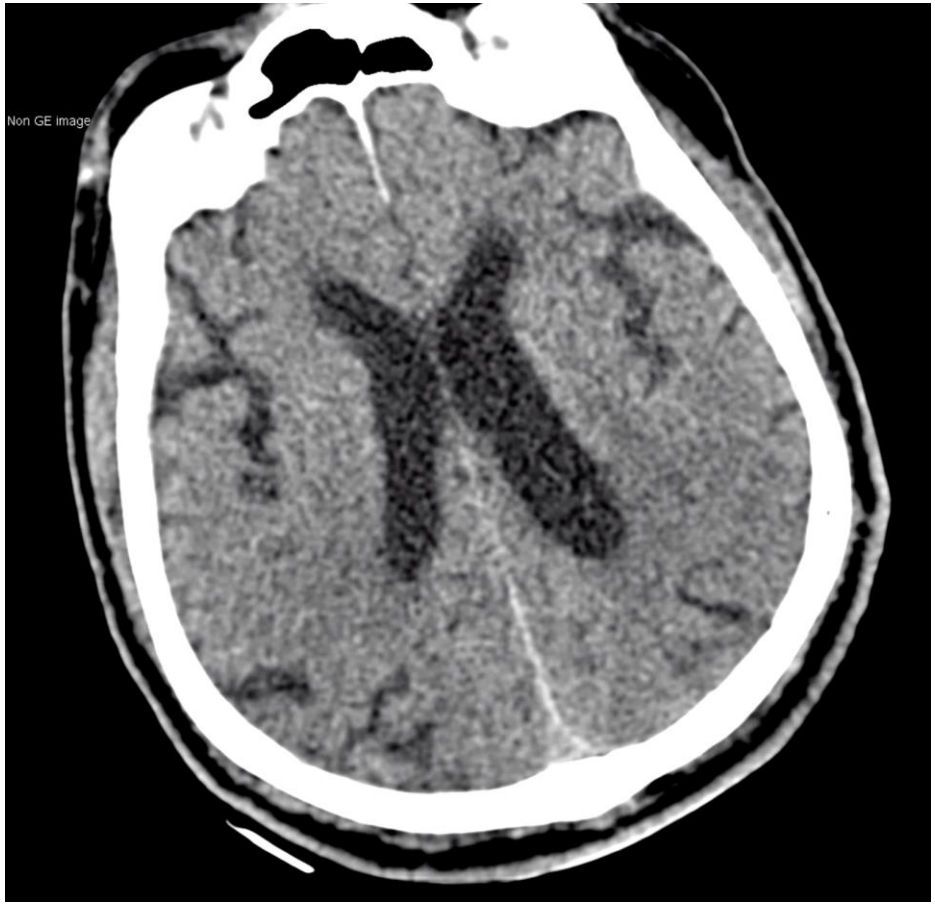
We present the report of retrograde right vertebral artery (VA) recanalization using left posterior communicating artery (PCOM) for subsequent anterograde balloon angioplasty and stenting of a right VA ostium.

HISTORY AND PHYSICAL

- 73-year-old male
- Smoking, hypertension, CAD, PAD
- BMI 38,2 kg/m^2
- 1 hour symptom onset
- NIHSS score 25, Coma 2
- No coagulation disorders

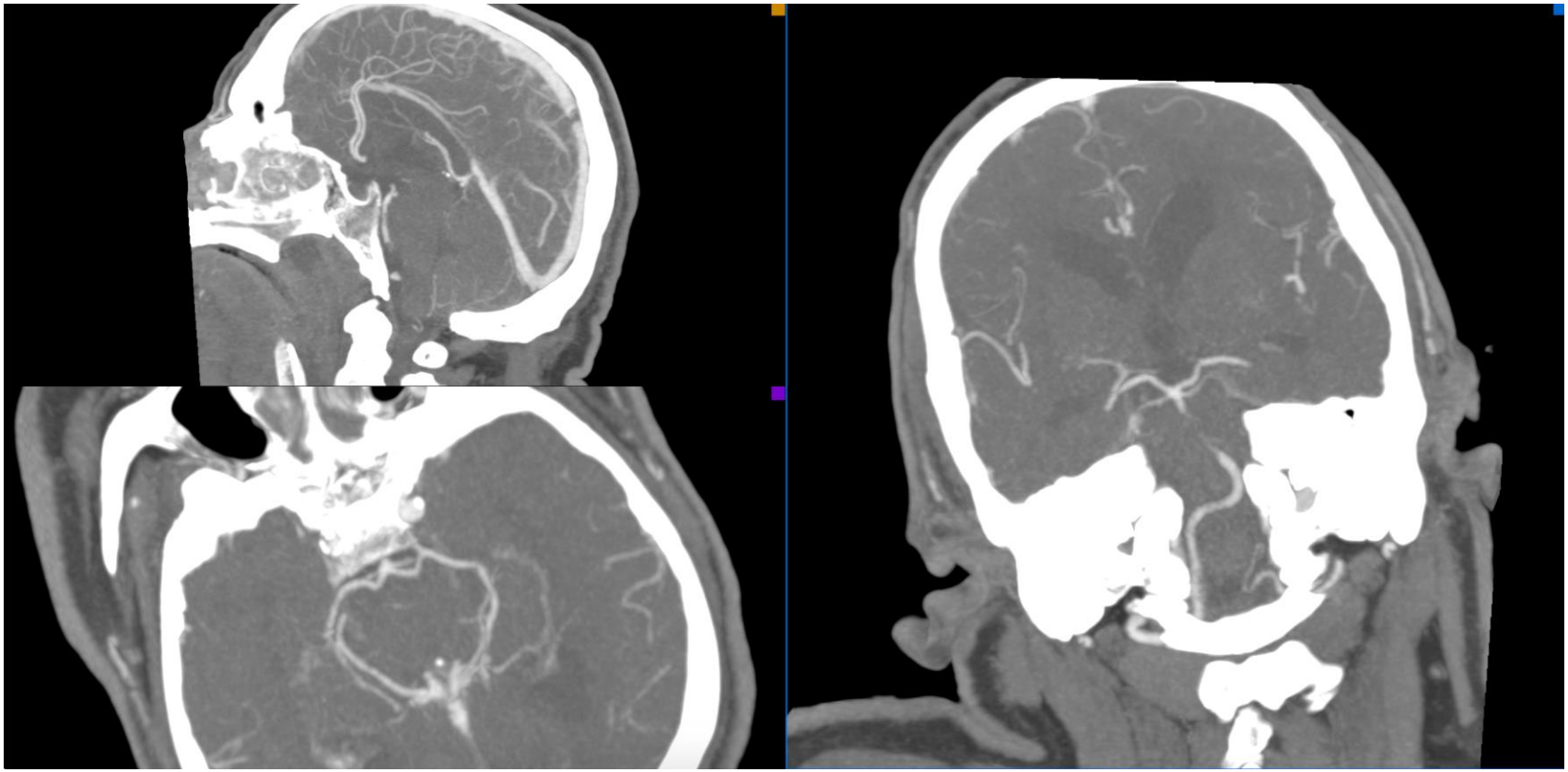
IMAGING

Native CT scan



IMAGING

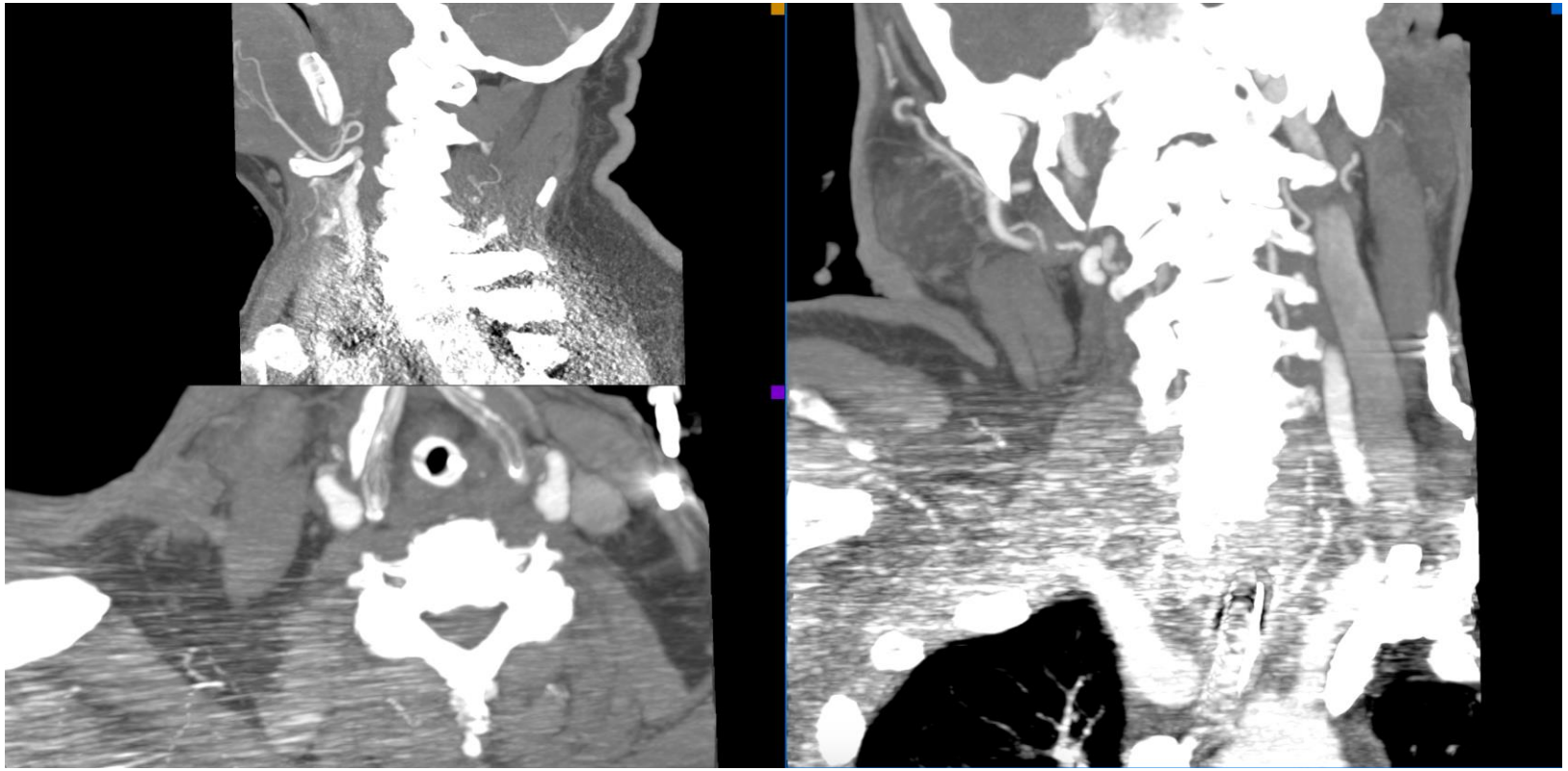
CTA



- Patent BA (hypoperfused? stenotic?), patent PCAs

IMAGING

CTA



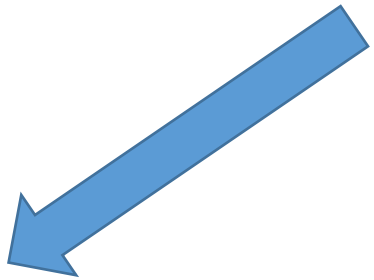
- Severely artifacted, unreadable

INDICATONS

- Rapid progression of symptoms
- Deteriorating critical condition
- CT and CTA data

- No thrombus burden
- High deficit

~~Thrombolysis~~

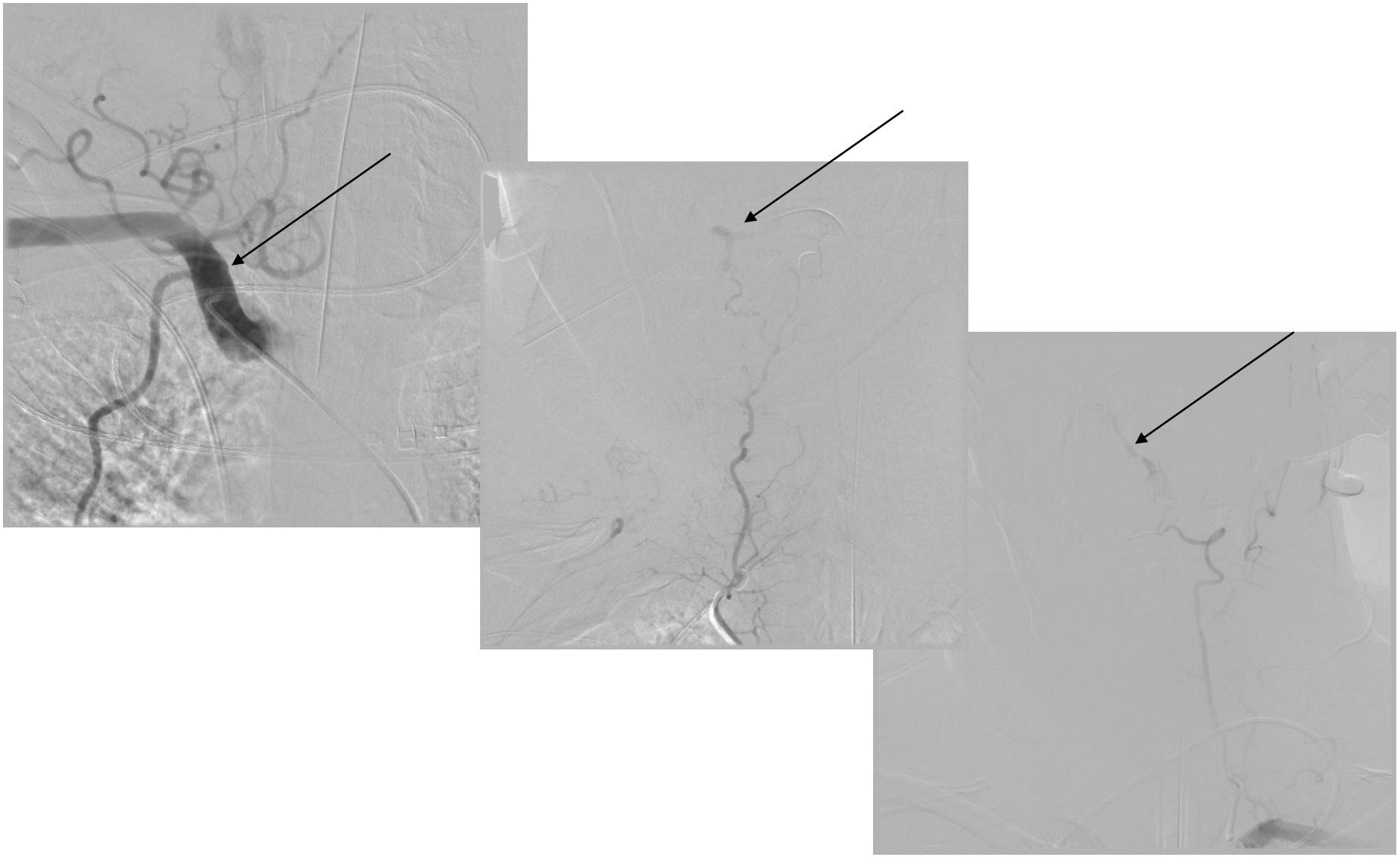


Angiography

ICCA STROKE 2019

WIST

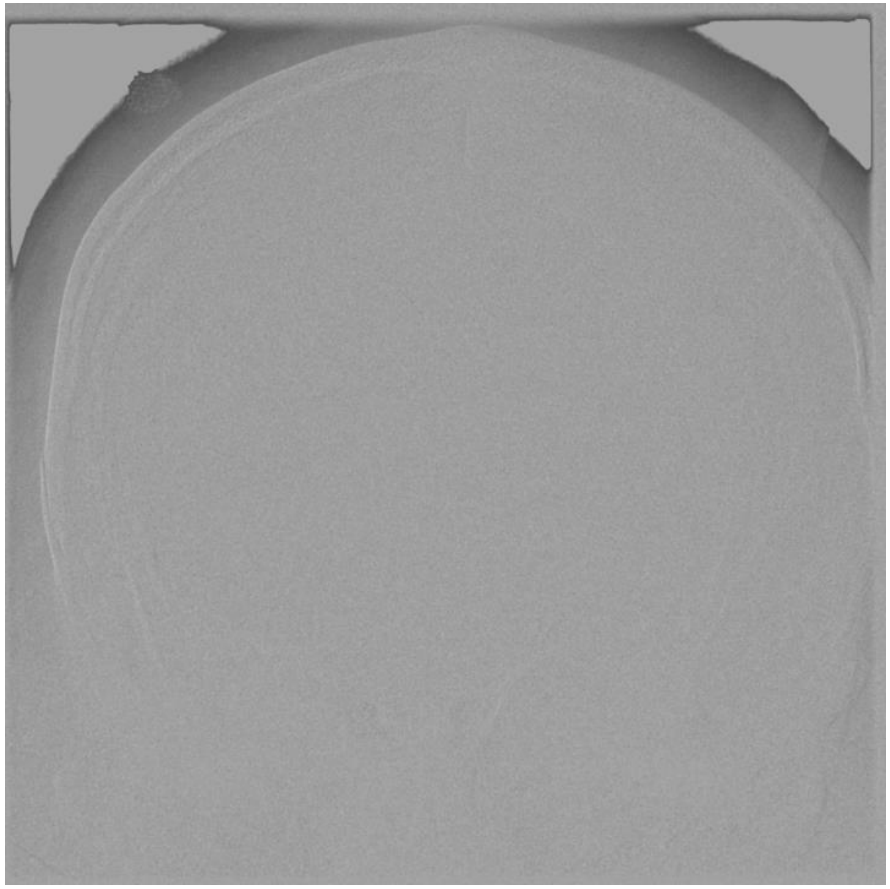
INTERVENTION

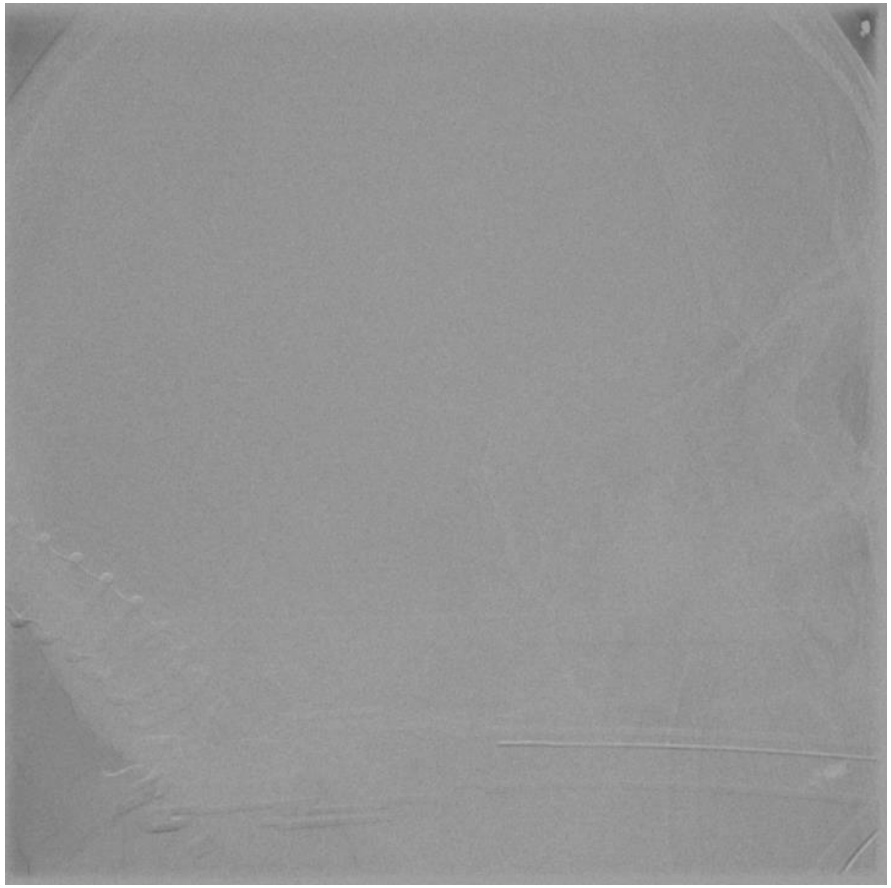


ICCA STROKE 2019

WIST

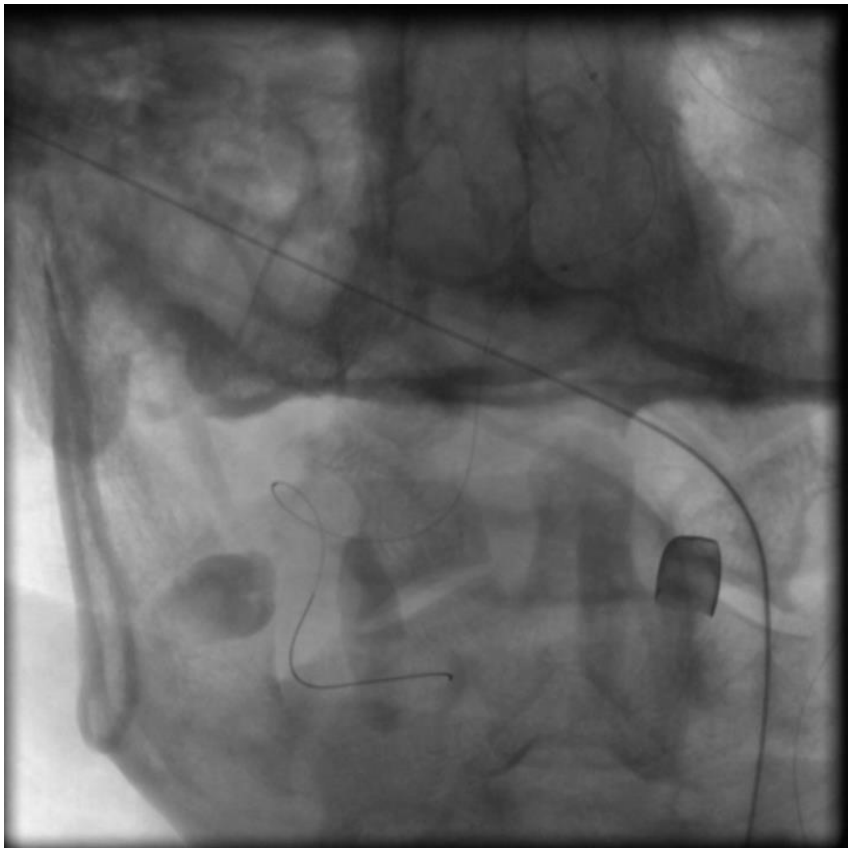
INTERVENTION





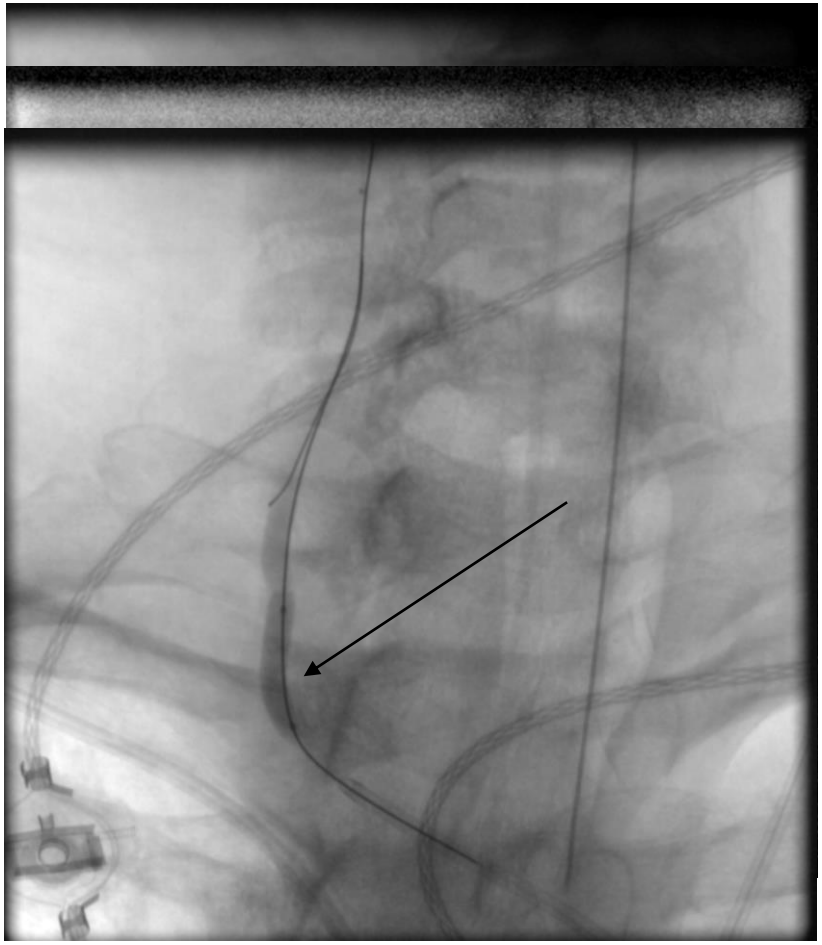
INTERVENTION

- 30 minutes of failed anterograde attempts with JR 4 6F (Cordis, USA) guiding catheter and 0.014” wire
- Switched to PCOM retrograde approach using MPA 6F (Cordis, USA), 0,020”- 150 cm microcatheter and 0,014” soft hydrophilic wire



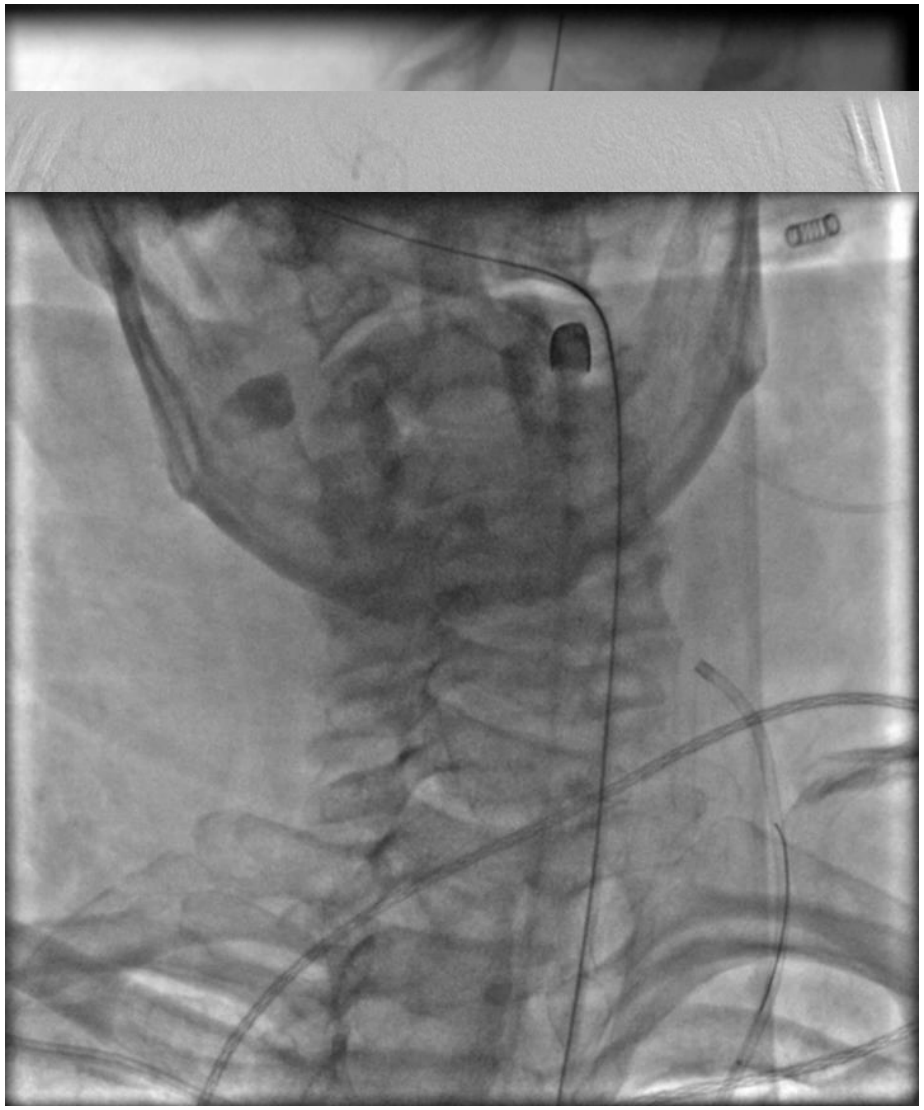
INTERVENTION

- Wire and microcatheter successfully passed through the PCOM and reached right vertebral ostium and right subclavian artery.
- Using 0.014” wire as a marker, we switched back to JR 4 6F and used 0.014” Miracle 6 (Asahi Intecc, Japan) for a more aggressive approach.
- We’ve managed to find the true lumen of right VA and 3.0 x 20 mm balloon angioplasty was performed with good anterograde vertebral blood flow.



INTERVENTION

- We then proceeded with 4.0 x 24 mm bare-metal stent implantation
- Semi-selective angiogram due to the ostial stent
- Final semi-selective angiogram due to the ostial stent



INTERVENTION

- In 3 hours patient was awake, extubated in 12 hours with significant improvement, NIHSS score - 8
- 24 h NIHSS score - 4
- 24 h control CT - minimal cerebral infarct
- Discharged on a 10th day with mRS 2

- The patient died in two weeks from ventricular fibrillation during his stroke rehab program

LEARNING POINTS

This case underscores

- the complexity of arterial thrombotic events
- the beneficial role of endovascular intervention in vertebral occlusions
- the necessity of prospective studies that identify optimal methods of treating vertebrobasilar stroke and their effectiveness and safety

Radiology Case Reports 13 (2018) 475–478

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: http://Elsevier.com/locate/radcr

RCR RADIOLOGY CASE REPORTS

Neuroradiology

Successful retrograde recanalization of acute right dominant vertebral artery occlusion through the left posterior communicating artery in a patient with acute vertebrobasilar ischemic stroke

Anton A. Khilchuk MD[a,*], *Maksim V. Agarkov MD*[a], *Sergey V. Vlasenko MD, PhD*[a,b], *Sergey G. Scherbak MD, Doctor of Sciences, professor*[b], *Andrey M. Sarana MD, PhD*[b], *Svetlana V. Lebedeva MD*[c]

[a] *Department of Interventional Radiology, City Hospital №40, Borisova str. 9, Sestroretsk, Saint-Petersburg, 197706, Russian Federation*

[b] *Medical Faculty, Saint-Petersburg State University, Universitetskaya emb. 7-9, Saint-Petersburg, 199034, Russian Federation*

[c] *Regional cardiovascular center, City Hospital №40, Borisova str. 9, Sestroretsk, Saint-Petersburg, 197706, Russian Federation*

Radiol Case Rep. 2018 Mar 2;13(2):475-478. doi: 10.1016/j.radcr.2018.02.008. eCollection 2018 Apr.

Successful retrograde recanalization of acute right dominant vertebral artery occlusion through the left posterior communicating artery in a patient with acute vertebrobasilar ischemic stroke.

Khilchuk AA[1], Agarkov MV[1], Vlasenko SV[1,2], Scherbak SG[2], Sarana AM[2], Lebedeva SV[3].

ICCA STROKE 2019

WIST

THANK YOU!

angio.gb40