Mechanická trombektomie v léčbě iCMP

Petr Widimský, Jakub Sulženko, Boris Kožnar, Dušan Kučera, Tomáš Hauer, David Lauer, Ivana Štětkářová, Tomáš Peisker, Peter Vaško, Hana Malíková

FNKV a 3.LF UK Praha

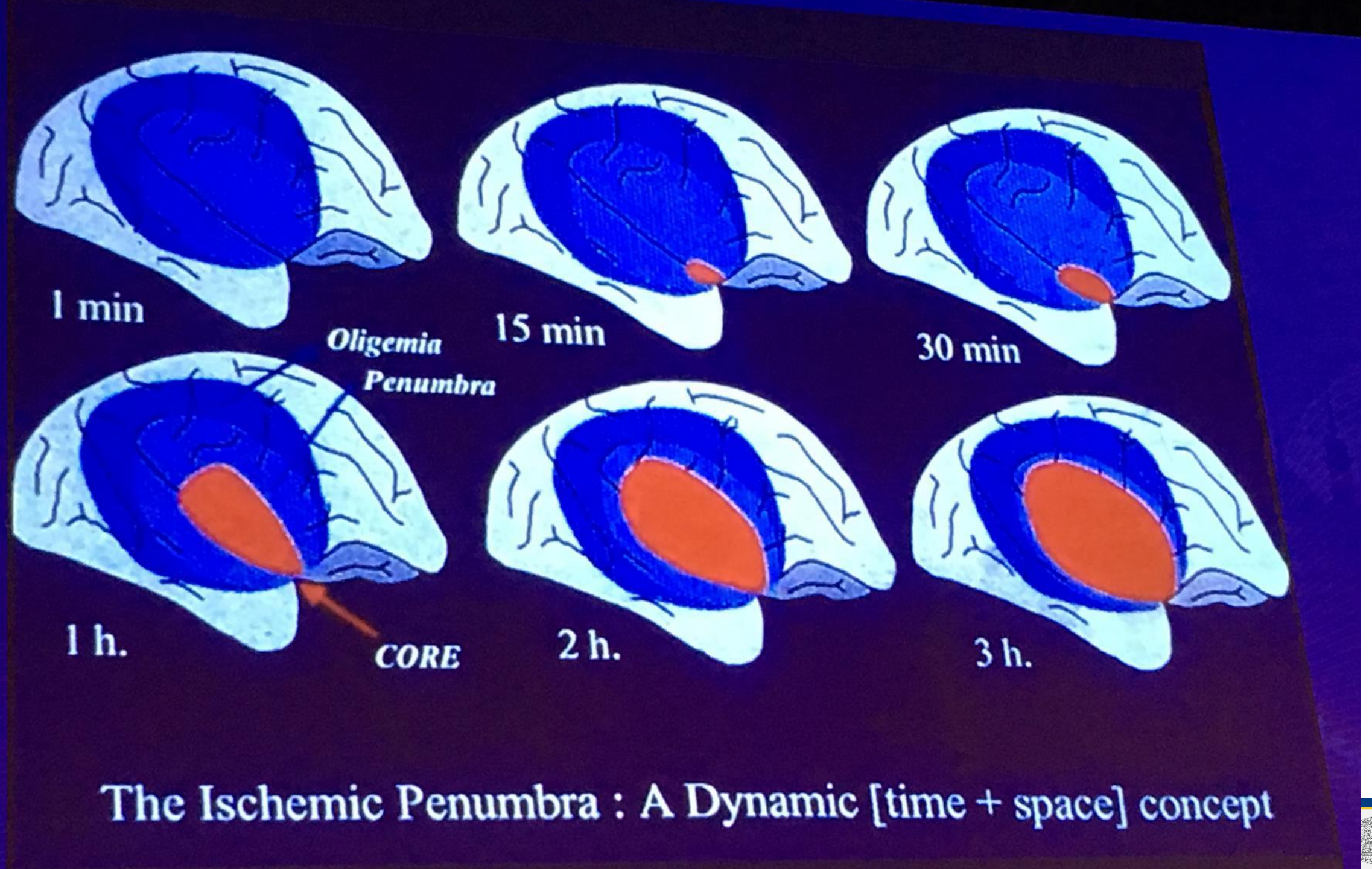
(Kardiologická klinika, Neurologická klinika, Radiologická klinika)

R.I.P. Professor Vaclav Chaloupka
1947 - 2024

- president of the Czech Society of Cardiology 2008-11
- 2010: Acute ischemic stroke (after RF intervention for AF)
- ǂ Oct 24, 2024

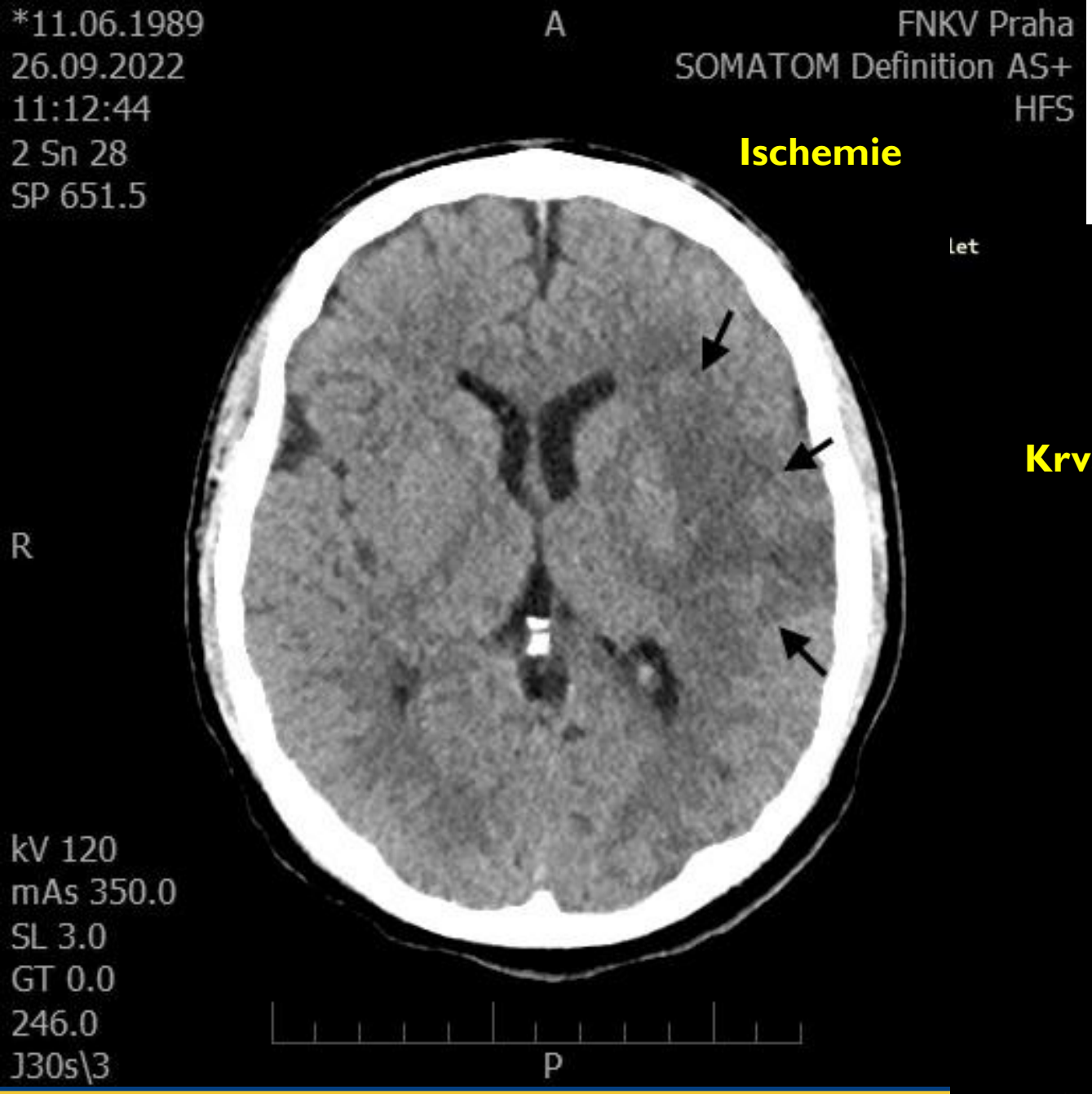
Přirozený průběh středně těžkých a těžkých iktů (NIHSS ≥6)

- Mortalita do 3 měsíců: cca 40%
- Významná trvalá invalidita: cca 45%
- Soběstačnost s mírnou neurologickou dysfunkcí: cca 15%
- Úplná neurologická úprava všech funkcí: vzácná

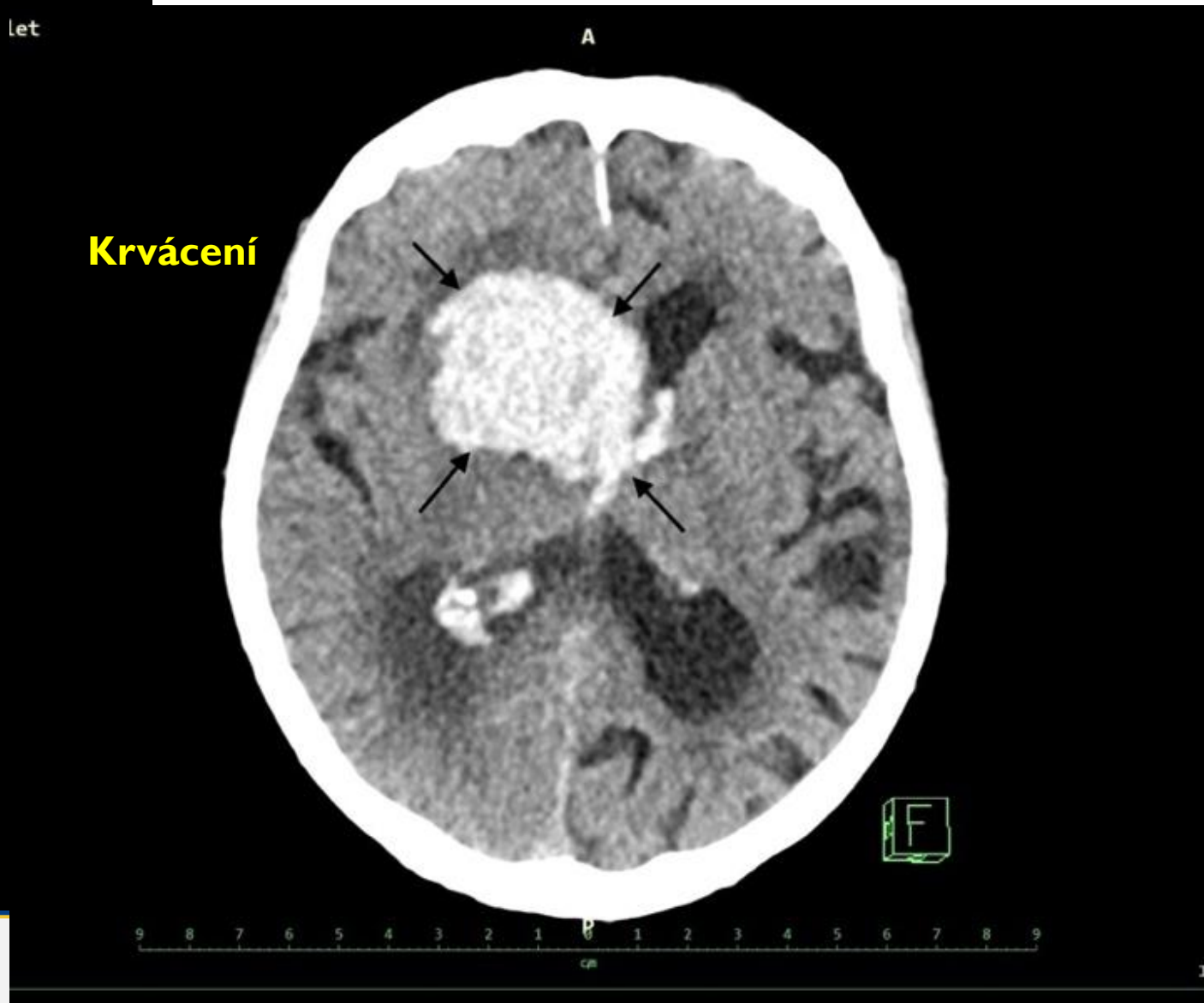


The Ischemic Penumbra : A Dynamic [time + space] concept

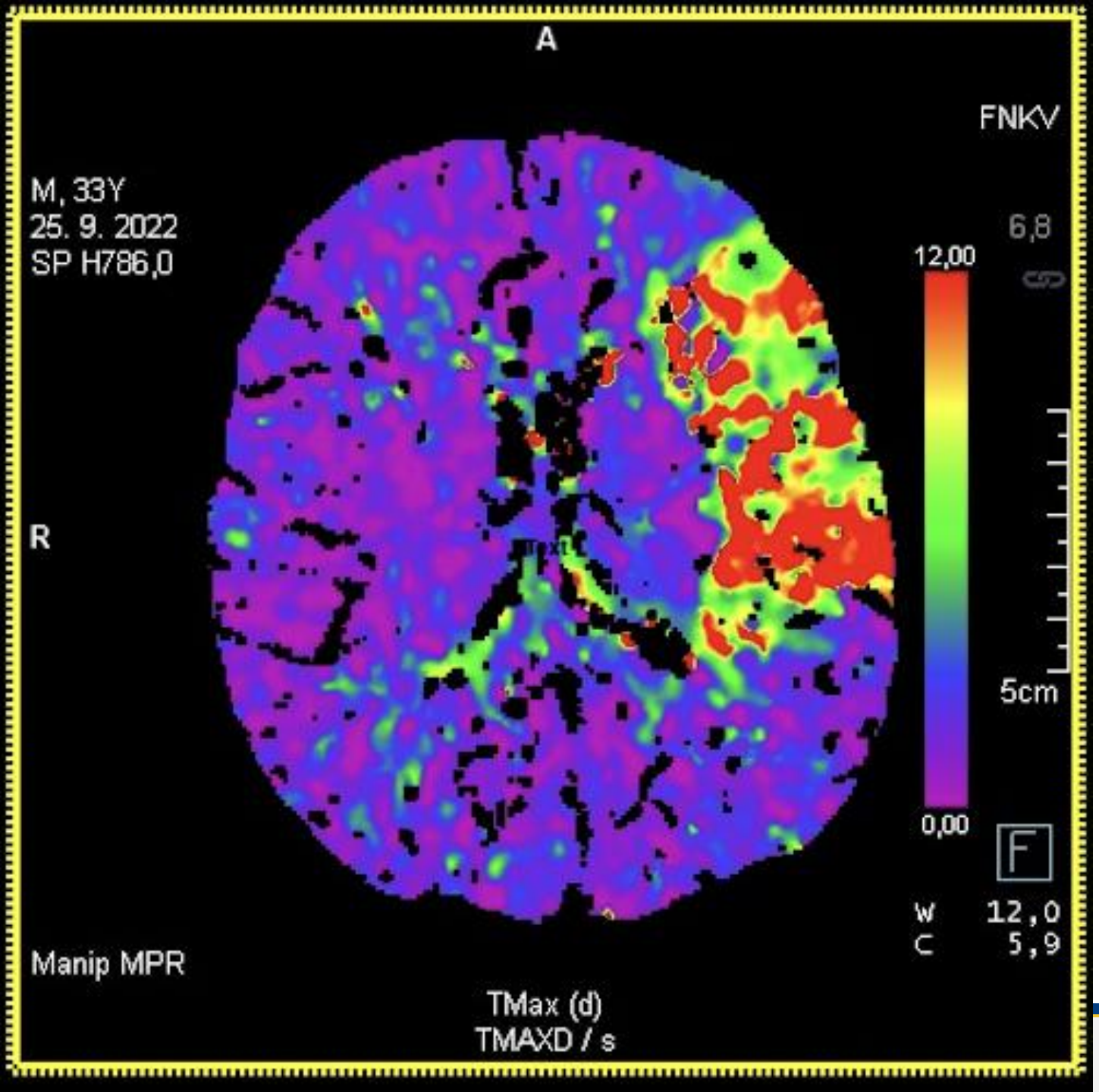
Mechnická trombektomie ve FNKV 2012 - 2025

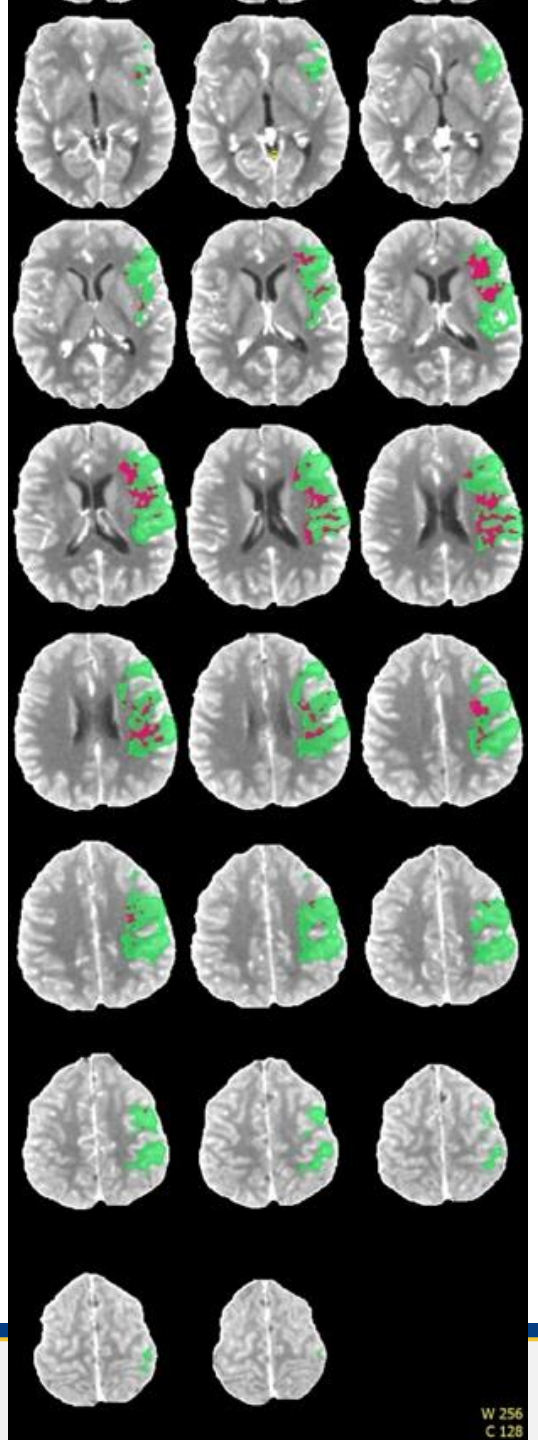


Ischemie

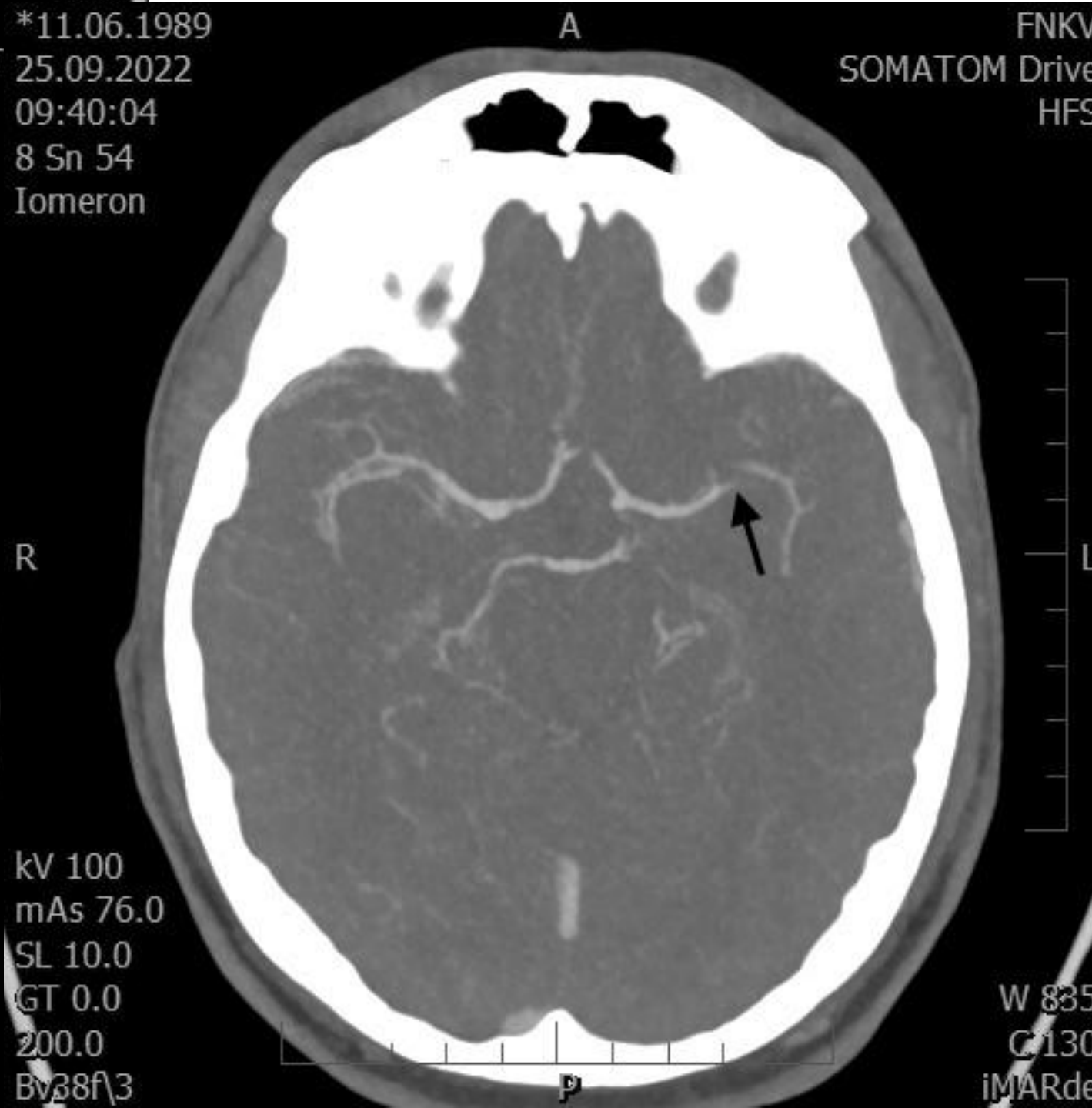


Krvácení

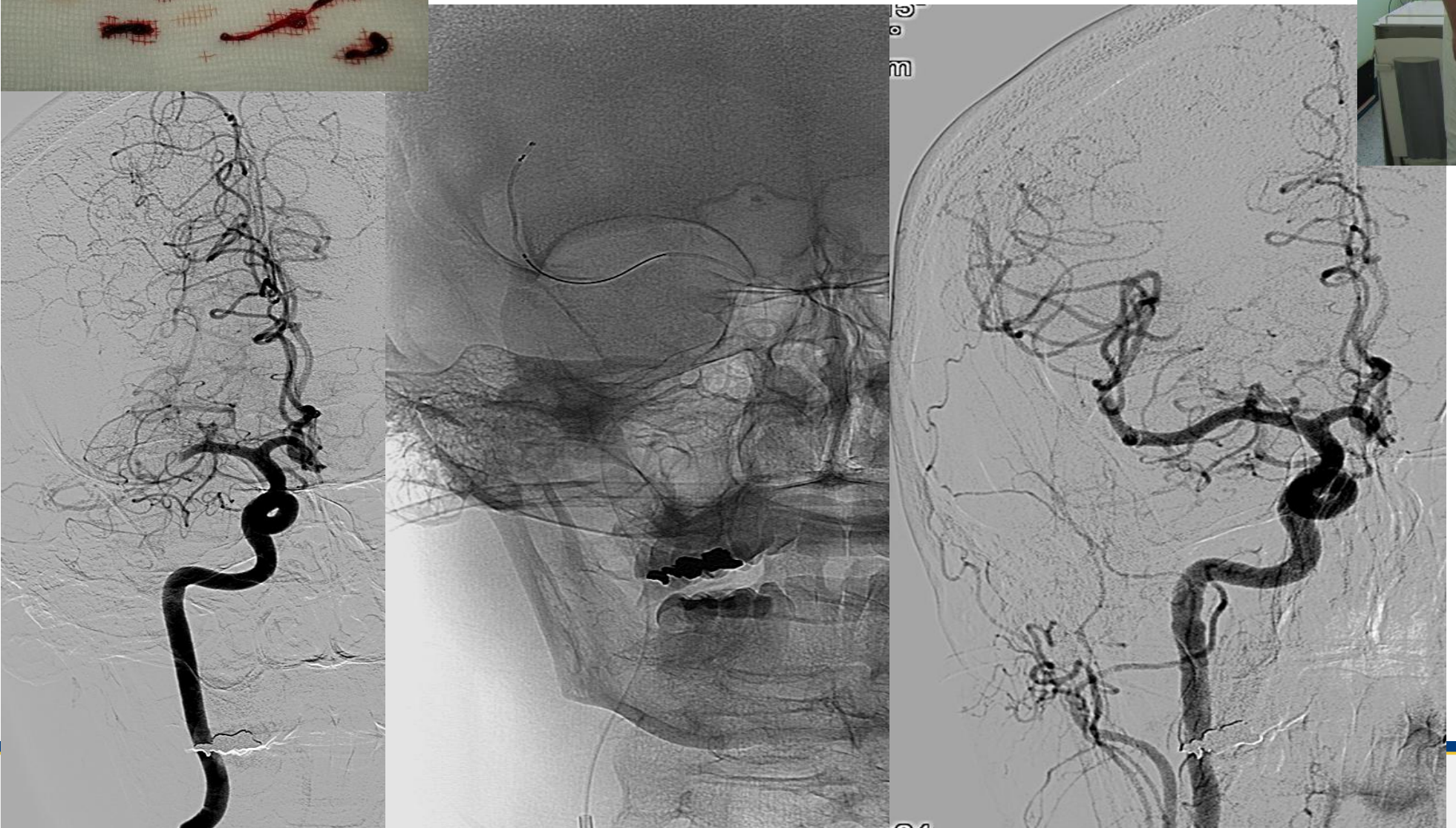

A
FNKV
M, 33Y
25. 9. 2022
SP H786,0
6,8
12,00
0,00
5cm
R
F
W 12,0
C 5,9
Manip MPR
TMax (d)
TMAXD / s


W 256
C 128


*11.06.1989
25.09.2022
09:40:03
43 Sn 52
Iomeron
H
SOMAT
R


*11.06.1989
25.09.2022
09:40:04
8 Sn 54
Iomeron
A
FNKV
SOMATOM Drive
HFS
R
kV 100
mAs 76.0
SL 10.0
GT 0.0
200.0
Bv38f\3
P
W 835
C 130
iMARde

Říjen 2012: první pacientka léčená MT ve FNKV




FNKV-Odd. intervenční ang
Allu

Fakta

European Heart Journal Advance Access published June 12, 2015

European Heart Journal
doi:10.1093/eurheartj/ehv270

FASTTRACK CLINICAL RESEARCH
Vascular medicine

Endovascular therapy for acute ischaemic stroke: a systematic review and meta-analysis of randomized trials

Partha Sardar[1]*†, Saurav Chatterjee[2†], Jay Giri[3], Amartya Kundu[4], Anwar Tandar[1], Parijat Sen[5], Ramez Nairooz[6], Jessica Huston[1], John J. Ryan[1], Riyaz Bashir[7], Sahil A. Parikh[8], Christopher J. White[9], Philip M. Meyers[10], Debabrata Mukherjee[11], Jennifer J. Majersik[12], and William A. Gray[13]

N = 1283

Funkční neurologický výsledek

A

Study or Subgroup	Intervention Events	Intervention Total	Control Events	Control Total	Weight	Odds Ratio M-H, Random, 95% CI
ESCAPE 2015	87	164	43	147	26.1%	2.73 [1.71, 4.37]
EXTEND-IA 2015	25	35	14	35	5.8%	3.75 [1.38, 10.17]
MR CLEAN 2015	76	233	51	267	34.2%	2.05 [1.36, 3.09]
REVASCAT 2015	45	103	29	103	17.1%	1.98 [1.11, 3.53]
SWIFT PRIME 2015	59	98	33	98	16.9%	2.98 [1.66, 5.33]
Total (95% CI)		**633**		**650**	**100.0%**	**2.42 [1.91, 3.08]**
Total events	292		170			

Heterogeneity: Tau² = 0.00; Chi² = 2.58, df = 4 (P = 0.63); I² = 0%
Test for overall effect: Z = 7.24 (P < 0.00001)

Odds Ratio M-H, Random, 95% CI
0.01 0.1 1 10 100
Favors Control Favors Intervention

Mortalita do 3 měsíců

B

Study or Subgroup	Intervention Events	Intervention Total	Control Events	Control Total	Weight	Odds Ratio M-H, Random, 95% CI
ESCAPE 2015	17	164	28	147	23.5%	0.49 [0.26, 0.94]
EXTEND-IA 2015	3	35	7	35	6.7%	0.38 [0.09, 1.59]
MR CLEAN 2015	44	233	49	267	35.2%	1.04 [0.66, 1.63]
REVASCAT 2015	19	103	16	103	20.1%	1.23 [0.59, 2.55]
SWIFT PRIME 2015	9	98	12	98	14.4%	0.72 [0.29, 1.81]
Total (95% CI)		**633**		**650**	**100.0%**	**0.80 [0.54, 1.18]**
Total events	92		112			

Heterogeneity: Tau² = 0.06; Chi² = 5.79, df = 4 (P = 0.22); I² = 31%
Test for overall effect: Z = 1.12 (P = 0.26)

Odds Ratio M-H, Random, 95% CI
0.01 0.1 1 10 100
Favors Intervention Favors Control

Výskyt intrakraniál. krvácení

C

Study or Subgroup	Intervention Events	Intervention Total	Control Events	Control Total	Weight	Odds Ratio M-H, Random, 95% CI
ESCAPE 2015	6	165	4	150	19.0%	1.38 [0.38, 4.98]
EXTEND-IA 2015	0	35	2	35	3.3%	0.19 [0.01, 4.08]
MR CLEAN 2015	18	233	17	267	66.2%	1.23 [0.62, 2.45]
REVASCAT 2015	2	103	2	103	8.0%	1.00 [0.14, 7.24]
SWIFT PRIME 2015	0	98	3	98	3.5%	0.14 [0.01, 2.72]
Total (95% CI)		**634**		**653**	**100.0%**	**1.08 [0.62, 1.88]**
Total events	26		28			

Heterogeneity: Tau² = 0.00; Chi² = 3.42, df = 4 (P = 0.49); I² = 0%
Test for overall effect: Z = 0.26 (P = 0.80)

Odds Ratio M-H, Random, 95% CI
0.01 0.1 1 10 100
Favors Intervention Favors Control

Figure 2 Analysis limited to newer (2014–15) trials: (*A*) functional independence (90-day mRS of 0–2) with EVT; (*B*) mortality with EVT; and (*C*) sICH with EVT.

JACC: CARDIOVASCULAR INTERVENTIONS VOL. 14, NO. 7, 2021

PUBLISHED BY ELSEVIER

PERIPHERAL

Stable Clinical Outcomes When a Stroke Thrombectomy Program Is Started in an Experienced Cardiology Cath Lab

Jakub Sulženko, MD, PhD,[a] Boris Kožnar, MD, PhD,[a] Tomáš Peisker, MD, PhD,[b] Peter Vaško, MD, PhD,[b] Jana Vavrová, MD,[b] Ivana Štětkářová, MD, CSc,[b] Petr Widimský, MD, DrSc[a]

- 2012 - 2022: 510 patients with moderate-to-severe acute ischemic stroke
- mean age 69 ±13 years,
- mean admission NIHSS score 16 ±6
- 45% with documented atrial fibrillation
- 20% with previous minor stroke history
- 12% of patients had posterior circulation stroke, 88% anterior stroke

FIGURE 1 Number of Procedures Performed per Year

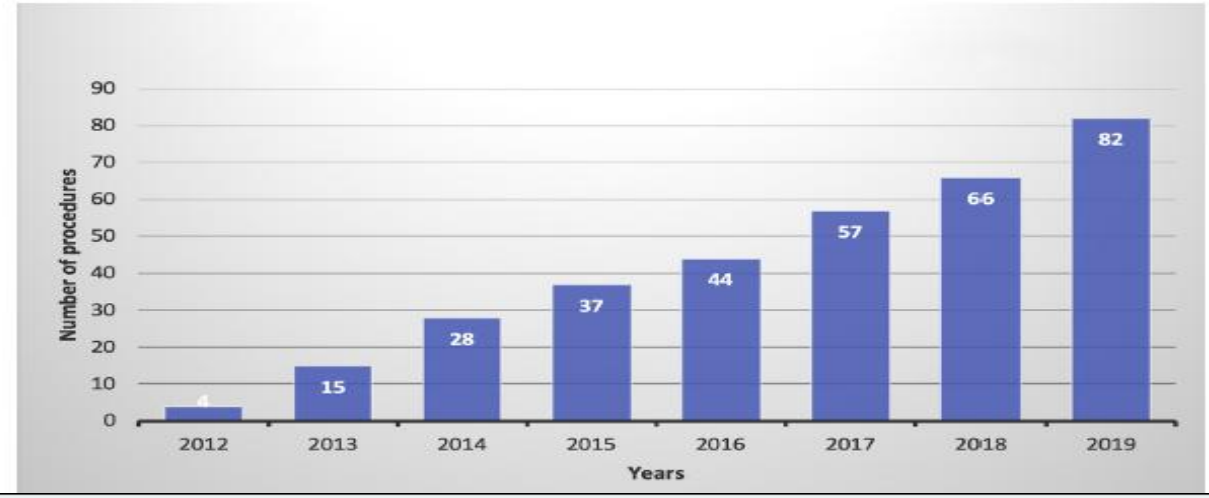
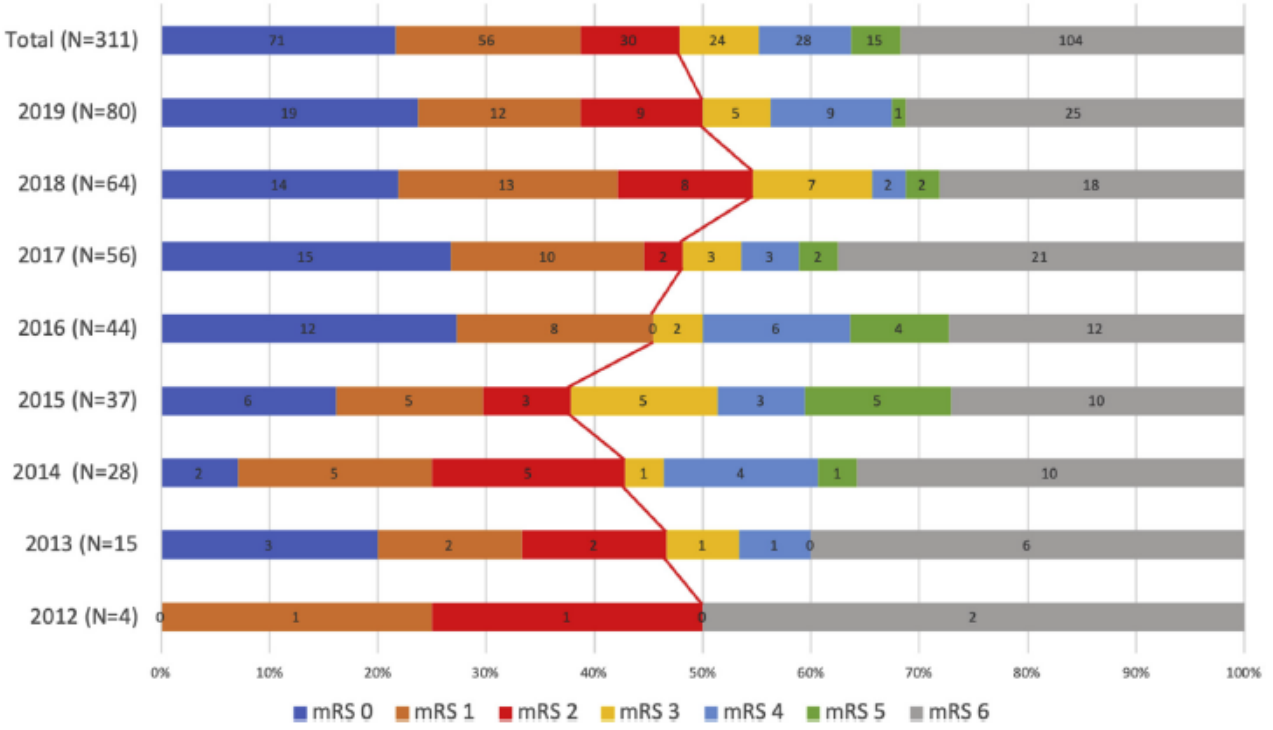
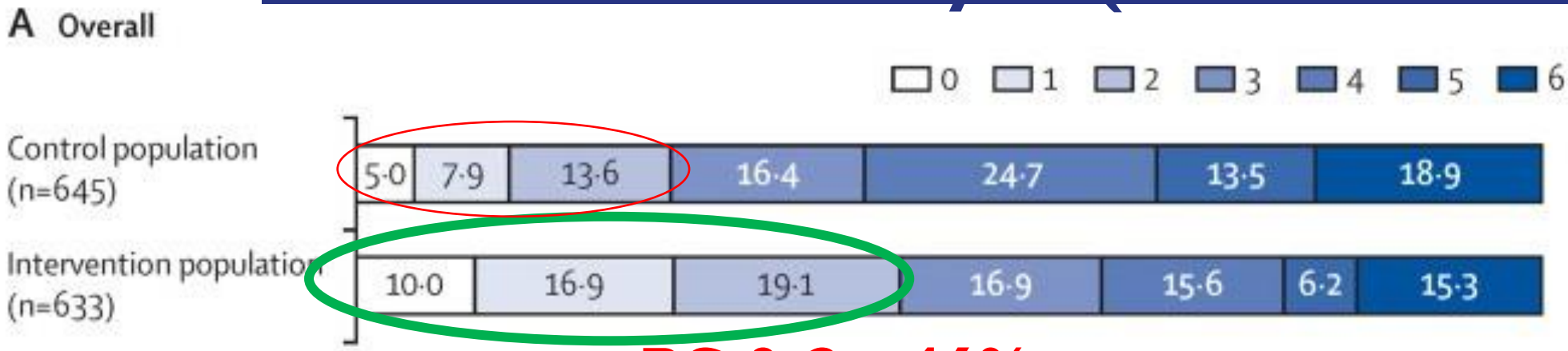


FIGURE 2 mRS Scores at 90 Days Post-Procedure



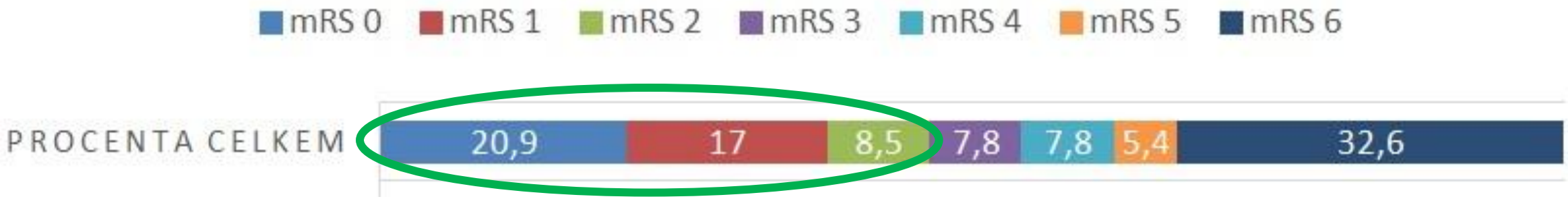
mRS = Modified Rankin Scale.

HERMES metaanalysis (anterior strokes)



mRS 0-2 - 46%

FNKV (all strokes incl. posterior)



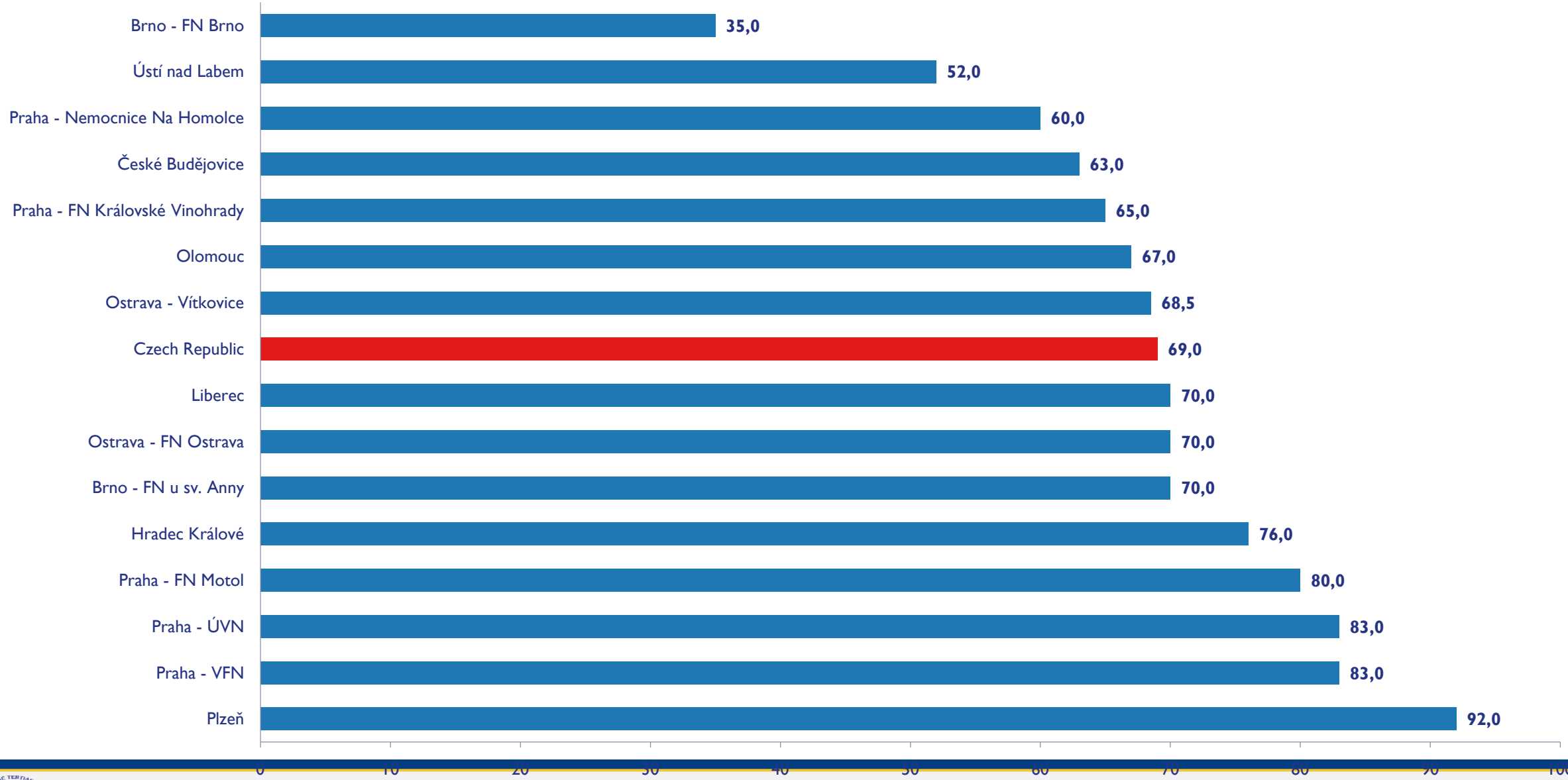
mRS 0-2 – 47%

RES-Q
Data for Life

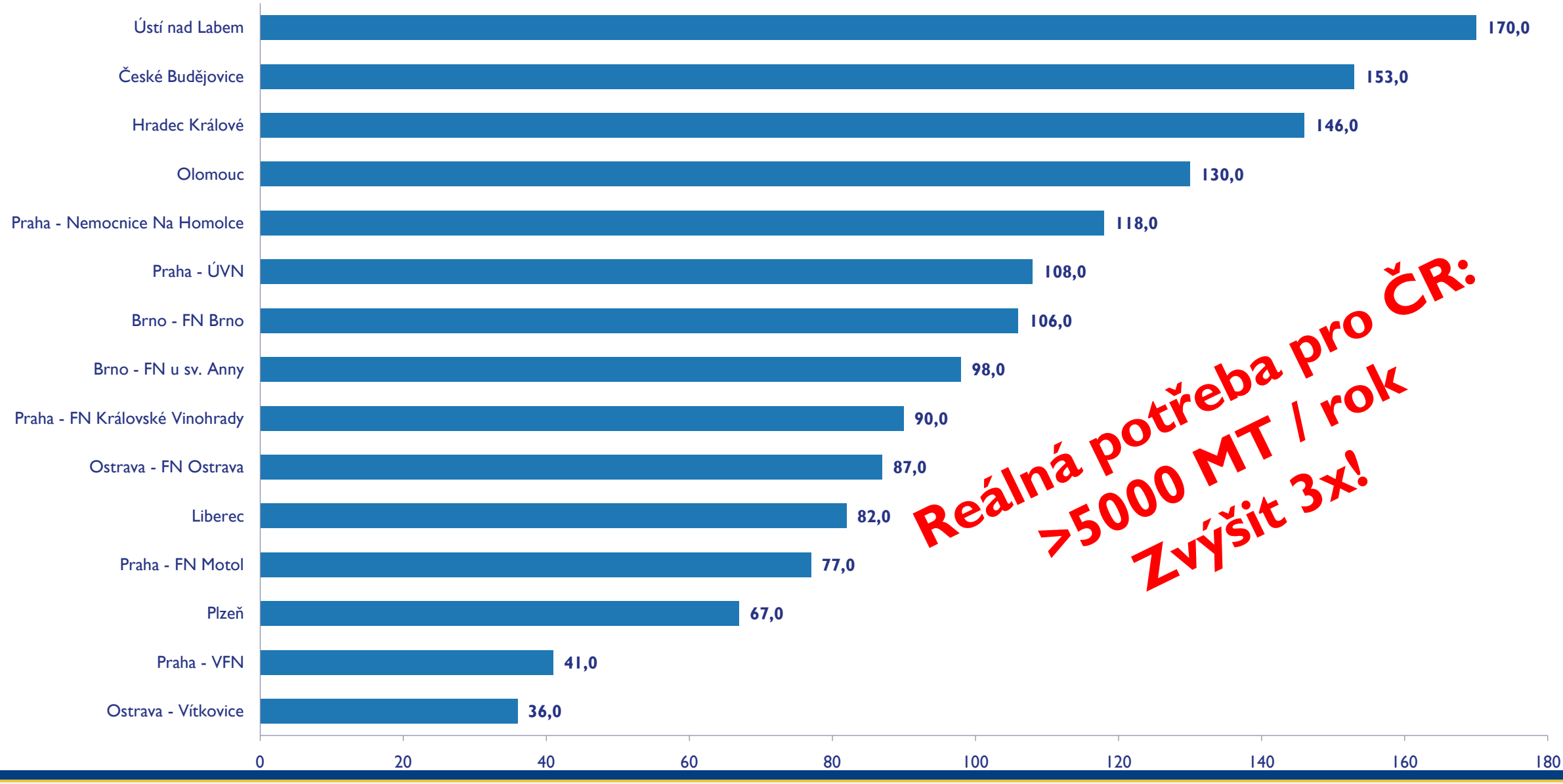
Czech Republic - Monthly Report

January-December 2022

Report was generated on May 10, 2023


Brno - FN Brno
35,0
Ústí nad Labem
52,0
Praha - Nemocnice Na Homolce
60,0
České Budějovice
63,0
Praha - FN Královské Vinohrady
65,0
Olomouc
67,0
Ostrava - Vítkovice
68,5
Czech Republic
69,0
Liberec
70,0
Ostrava - FN Ostrava
70,0
Brno - FN u sv. Anny
70,0
Hradec Králové
76,0
Praha - FN Motol
80,0
Praha - ÚVN
83,0
Praha - VFN
83,0
Plzeň
92,0
0
10
20
30
40
50
60
70
80
90
100
čas [minuty]

Počet MT na nemocnici (celá ČR n = 1509)



Reálná potřeba pro ČR:
>5000 MT / rok
Zvýšit 3x!

EVT na 1 000 000 obyvatel 2019

Odhady pro EU
2024 cca 50 000 MT / rok
Skutečná potřeba:
Cca 250 000 MT / rok
Zvýšit 5x !

Recentní klíčové studie

Přímá trombektomie (bez TL) = facilitovaná trombektomie (s „bridging“ TL)

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 MAY 21, 2020 VOL. 382 NO. 21

Endovascular Thrombectomy with or without Intravenou
Alteplase in Acute Stroke

P. Yang, Yongwei Zhang, L. Zhang, Yongxin Zhang, K.M. Treurniet, W. Chen, Y. Peng, H. Han, J. Wang, S.
C. Yin, S. Liu, P. Wang, Q. Fang, Hongchao Shi, J. Yang, C. Wen, C. Li, C. Jiang, J. Sun, X. Yue, M. Lou, M.
H. Shu, D. Sun, H. Liang, Tong Li, F. Guo, K. Ke, H. Yuan, G. Wang, W. Yang, Huaizhang Shi, Tianxiao Li
P. Xing, P. Zhang, Y. Zhou, H. Wang, Y. Xu, Q. Huang, T. Wu, R. Zhao, Q. Li, Y. Fang, Laixing Wang, J. Lu
J. Fu, X. Zhong, Y. Wang, Longde Wang, M. Goyal, D.W.J. Dippel, B. Hong, B. Deng, Y.B.W.E.M. Roo
C.B.L.M. Majoie, and J. Liu, for the DIRECT-MT Investigators*

Median duration (IQR) — min		
From stroke onset to randomization	167 (125–206)	177 (126–215)
From randomization to start of alteplase**	NA	7 (4–12)
From randomization to groin puncture††	31 (20–45)	36 (22–50.5)
From randomization to revascularization‡‡	102 (74–141)	96 (71.5–130.5)
From hospital admission to intravenous alteplase§§	NA	59 (45–78)
From hospital admission to groin puncture¶¶	84 (67–105)	85.5 (70–115)

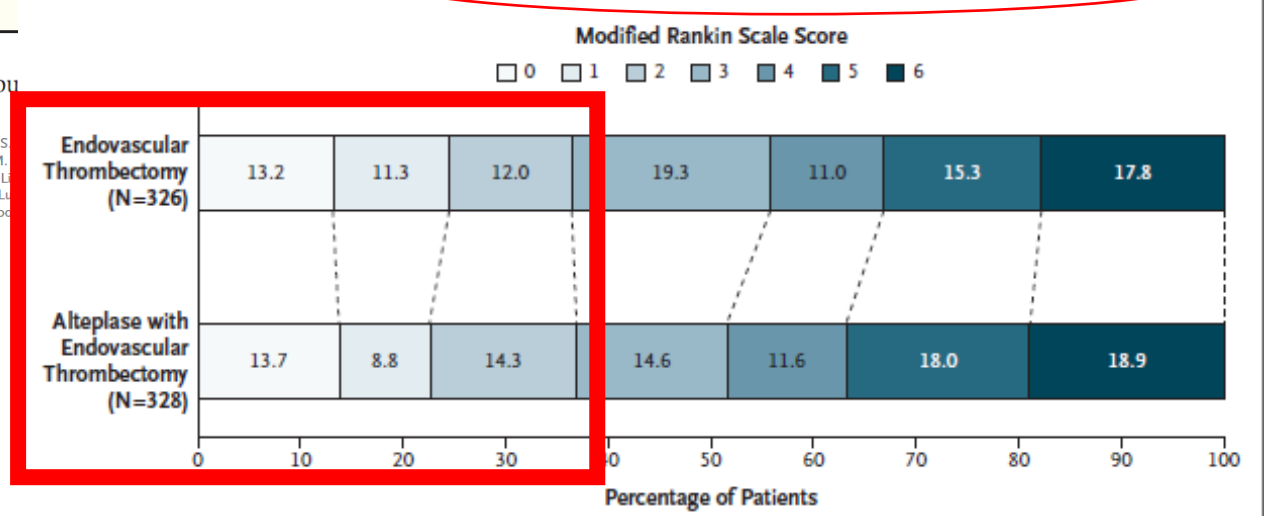


Figure 2. Distribution of Functional Outcomes at 90 Days in the Intention-to-Treat Population.

Imaging outcomes				
Successful reperfusion before thrombectomy, as assessed on initial DSA — no. (%)¶	8 (2.4)	23 (7.0)	Odds ratio	0.33 (0.14 to 0.74)
eTICI score of 2b, 2c, or 3, as assessed on final angiogram — no./total no. (%)‖	243/306 (79.4)	267/316 (84.5)	Odds ratio	0.70 (0.47 to 1.06)
Recanalization at 24–72 hr, as assessed on CTA — no./total no. (%)**	240/282 (85.1)	245/275 (89.1)	Odds ratio	0.71 (0.42 to 1.20)
Median lesion volume on CT (IQR) — ml††	36.3 (9.8 to 114.8)	36.7 (9.6 to 99.2)	Beta coefficient	3.78 (–9.43 to 16.99)

Trial of Endovascular Therapy for Acute Ischemic Stroke with Large Infarct

Huo X et al. (ANGEL-ASPECT trial), NEJM 2023

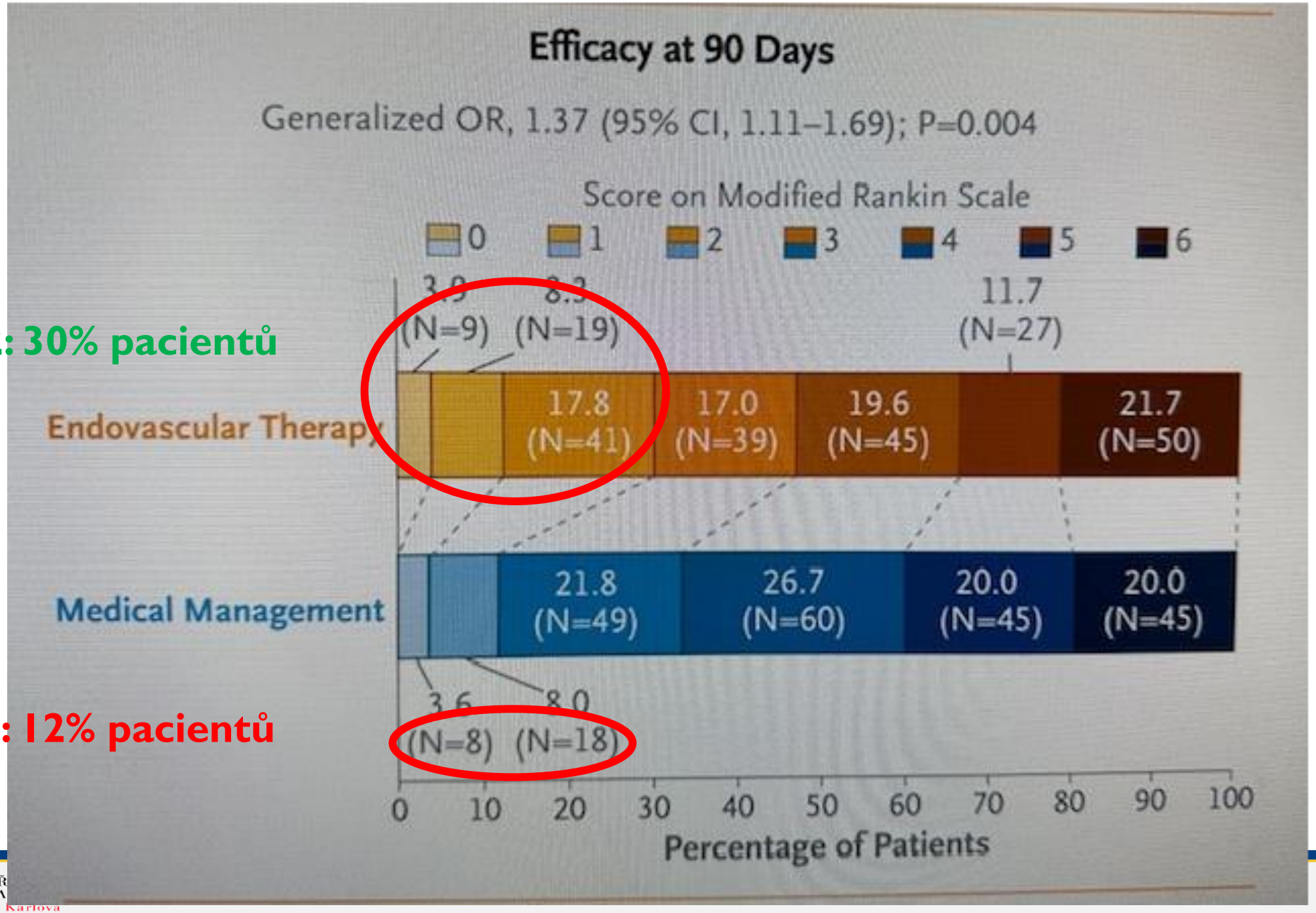
- **Acute LVO (anterior circulation) and ASPECTS 3-5 (or infarct-core volume 70-100 ml).**
- **Within 24 hours from the time last known to be well**
- **Trial stopped early due to the efficacy of endovascular therapy.**

- **Better outcomes of endovascular therapy over medical management alone (OR 1.37; 95% CI 1.11 - 1.69; P=0.004).**

- **Symptomatic intracranial hemorrhage 6.1% (endovascular-therapy) vs. 2.7% (medical-management)**
- **Any intracranial hemorrhage 49.1% vs. 17.3%**

mRs 0-2: 30% pacientů

mRs 0-2: 12% pacientů



Trial of Thrombectomy for Stroke with a Large Infarct of Unrestricted Size.

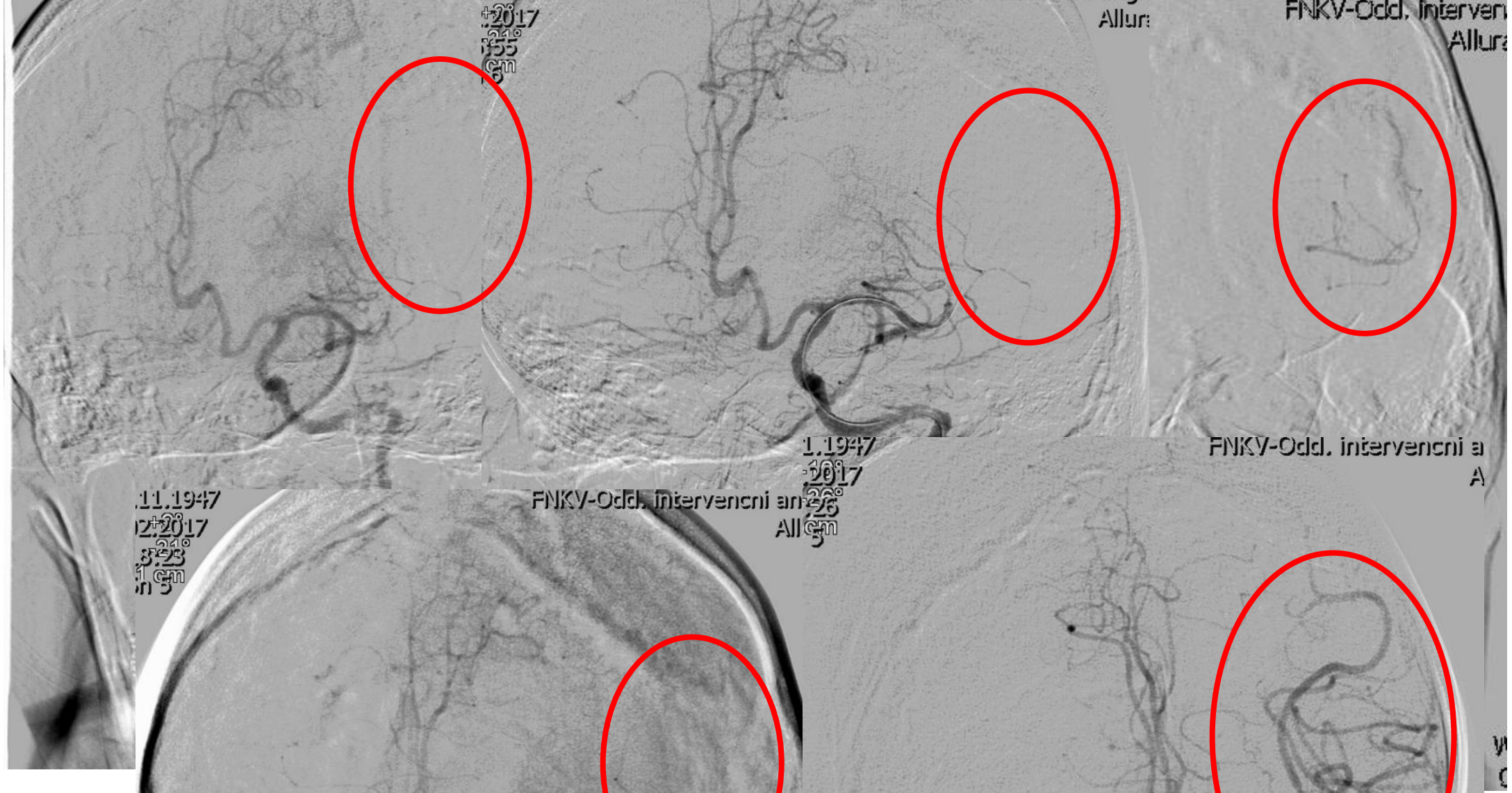
LASTE trial (Costalat V et al., NEJM 2024)

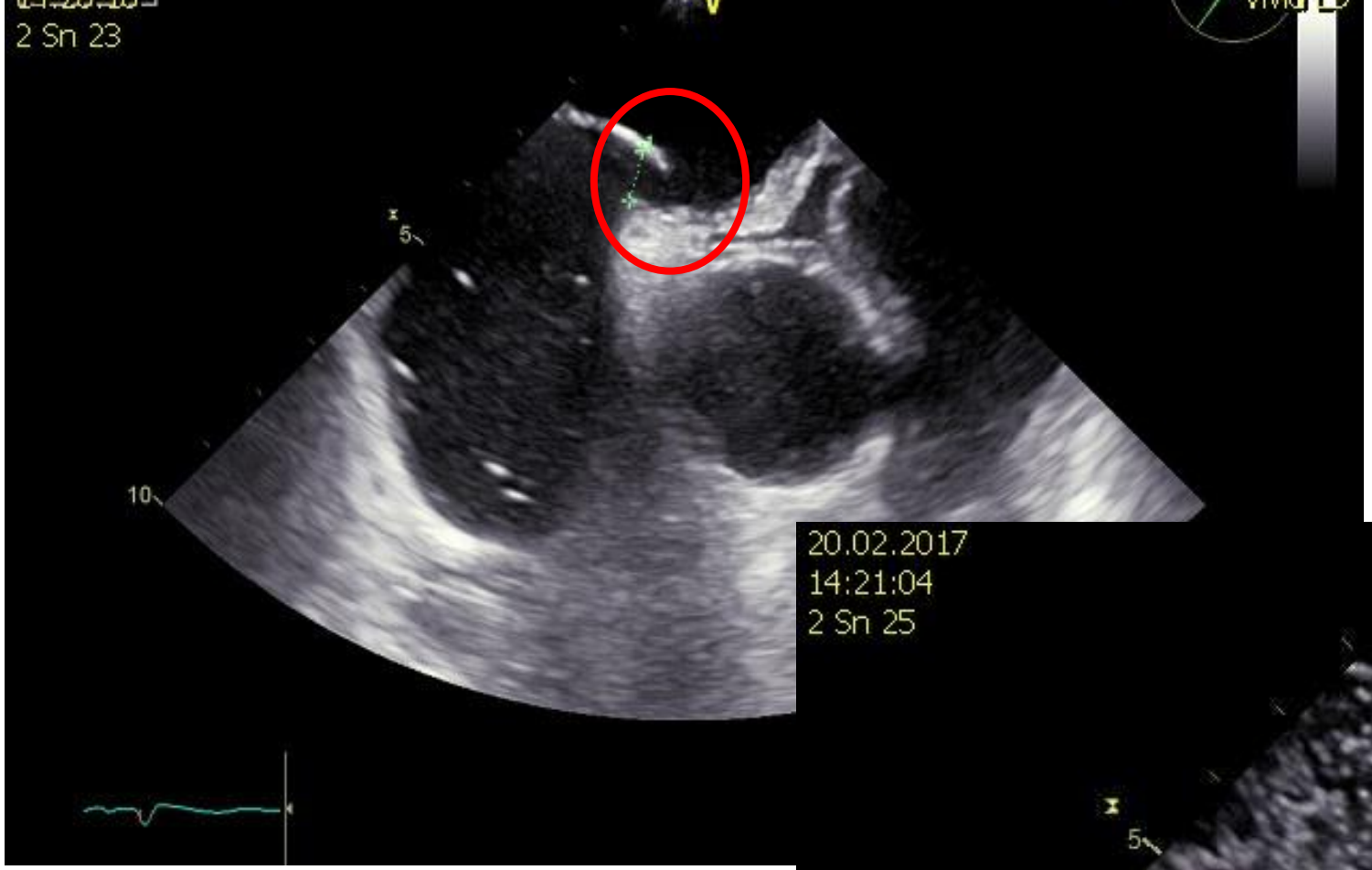
- large infarct (ASPECTS ≤5) within 6.5 hours after symptom onset
- The trial was stopped early because results of similar trials favored thrombectomy.
- Death at 90 days 36.1% (thrombectomy) vs. 55.5% (control) (adjusted RR 0.65; 95% CI, 0.50 to 0.84)

- symptomatic intracerebral hemorrhage 9.6% vs. 5.7% (adjusted RR 1.73; 95% CI, 0.78 to 4.68).
- 6.6% procedure-related complications in the thrombectomy group

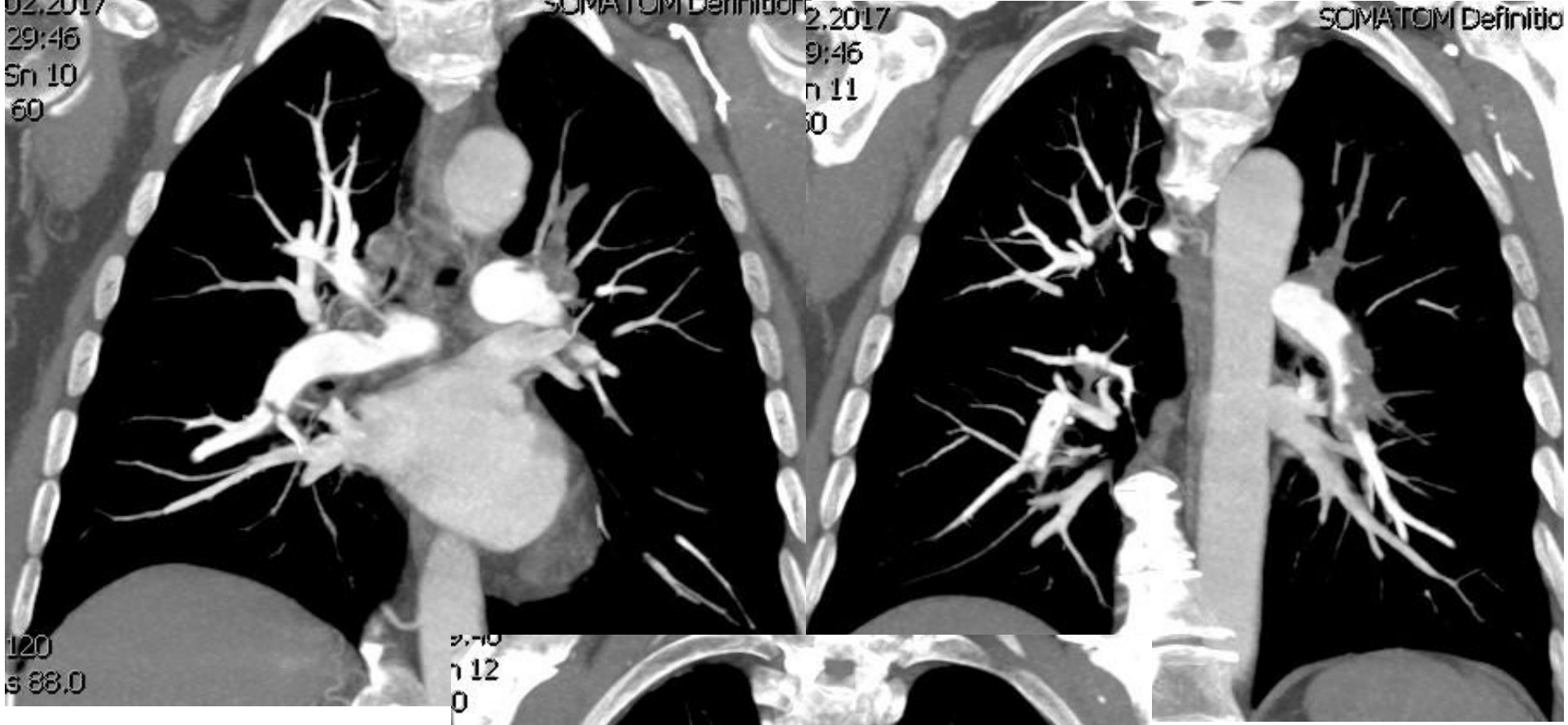
Komplexní pacient s CMP během hospitalizace


FNKV-Odd. ir


FNKV-Odd. intervenční
FNKV-Odd. intervenční


2 Sn 23
5
10


20.02.2017
14:21:04
2 Sn 25
V
GE Vingmed Ultrasound
54
Vivid E9
5
0


SOMATOM Definitio
SOMATOM Definitio


*10.11.1947
22.02.2017
10:41:16
6 Sn 6
FNKV Praha10
AlluraXper

Větší šance pro pacienty

www.ceskatelevize.cz/ct24/domaci/2082303-vetsi-sance-pro-pacienty-s-mrtvici-lekari-zachranili-muze-ktery-driv-nemel-sanci-na

ČT24 ŽIVĚ Archiv ČT

Lékaři zachránili muže, který by dřív neměl šanci na uzdravení

10. 4. 2017

V Česku zemře denně na mrtvici a další cévní nemoci mozku 26 lidí, ročně je to devět a půl tisíce lidí. Po infarktu a rakovině jde o nejčastější příčinu smrti. Pacienti, kteří mrtvici přežijí, často čelí doživotním následkům. Lékařům v pražské vinohradské nemocnici se díky nové metodě podařilo zachránit muže, který by se ještě před pěti lety zřejmě neuzdravil.

Případ Jaroslava Daněčka je podle lékařů unikátní. V únoru mu během čtyř dnů třikrát hrozila smrt ze tří různých důvodů. Jedním z nich byla právě mrtvice

Co dělat, když člověk ve Vašem okolí dostane akutní iktus ?

- Ihned volat 155 a upozornit je, že jde nejspíše o ischemický iktus vhodný k intervenční léčbě
- Po dohodě se ZZS kontaktovat centrum schopné provést okamžitě trombektomii
- Nedávat v přednemocniční fázi žádná antitrombotika !
- Pacient by měl jet rovnou do komplexního cerebrovaskulárního centra a tam přímo na CT !
- Z CT by měl pacient jít okamžitě na angio sál !
- Až po intervenci na JIP !


PHILIPS