4.–7. KVĚTNA 2024 | VELETRHY BRNO
XXXII.
VÝROČNÍ SJEZD
ČESKÉ KARDIOLOGICKÉ
SPOLEČNOSTI

Kdy je pozdě a kdy ne
–
lokální trombolýza a ECMO u high-risk PE

MUDr. Milan Plíva, MUDr. Aleš Král PhD., MUDr. Vojtěch Novotný PhD.

Kardiologické centrum AGEL Pardubice

Interní klinika – Kardiologické oddělení Nemocnice Pardubice

High-risk PE a ECMO

- HR PE představují 5% všech dg. plicních embolií
- 30-denní mortalita 10-25%, 50-80% u pacientů po KPR !

frontiers | Frontiers in Cardiovascular Medicine

TYPE Mini Review
PUBLISHED 21 December 2023
DOI 10.3389/fcvm.2023.1298686

Check for updates

OPEN ACCESS

EDITED BY
Guo-wei Tu,
Fudan University, China

REVIEWED BY
Deane Smith,
New York University, United States

Current status of ECMO for massive pulmonary embolism

Mark G. Davies[1,2]* and Joseph P. Hart[3]

[1]Center for Quality, Effectiveness, and Outcomes in Cardiovascular Diseases, Houston, TX, United States, [2]Department of Vascular/Endovascular Surgery, Ascension Health, Waco, TX, United States, [3]Division of Vascular Surgery, Medical College of Wisconsin, Milwaukee, WI, United States

There are three strategies for ECMO utilization in MPE: bridge to definitive interventional therapy, sole therapy, and recovery after interventional treatment.

AGEL Kardiologické centrum

NEMOCNICE PARDUBICKÉHO KRAJE

High-risk PE a ECMO – doporučené postupy

ECMO may be considered, in combination with surgical embolectomy or catheter-directed treatment, in refractory circulatory collapse or cardiac arrest.	IIb

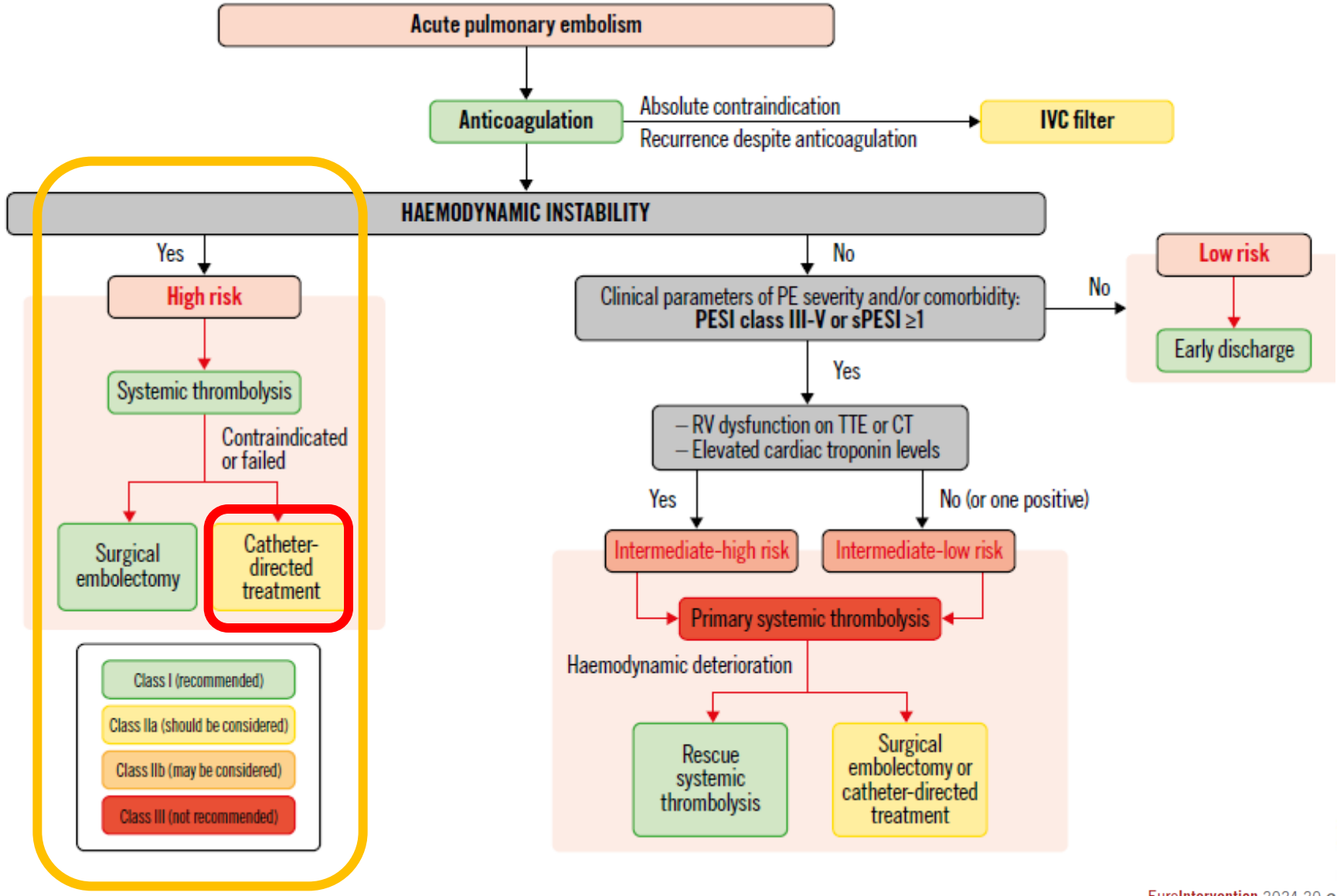
(ECMO), may be helpful in patients with high-risk PE, and circulatory collapse or cardiac arrest. Survival of critically ill patients has been described in a number of case series,[247–252] but no RCTs testing the efficacy and safety of these devices in the setting of high-risk PE have been conducted to date

European Heart Journal (2020) 41, 543603

AGEL Kardiologické centrum

NEMOCNICE PARDUBICKÉHO KRAJE

Léčba high-risk PE



AGEL Kardiologické centrum

NEMOCNICE PARDUBICKÉHO KRAJE

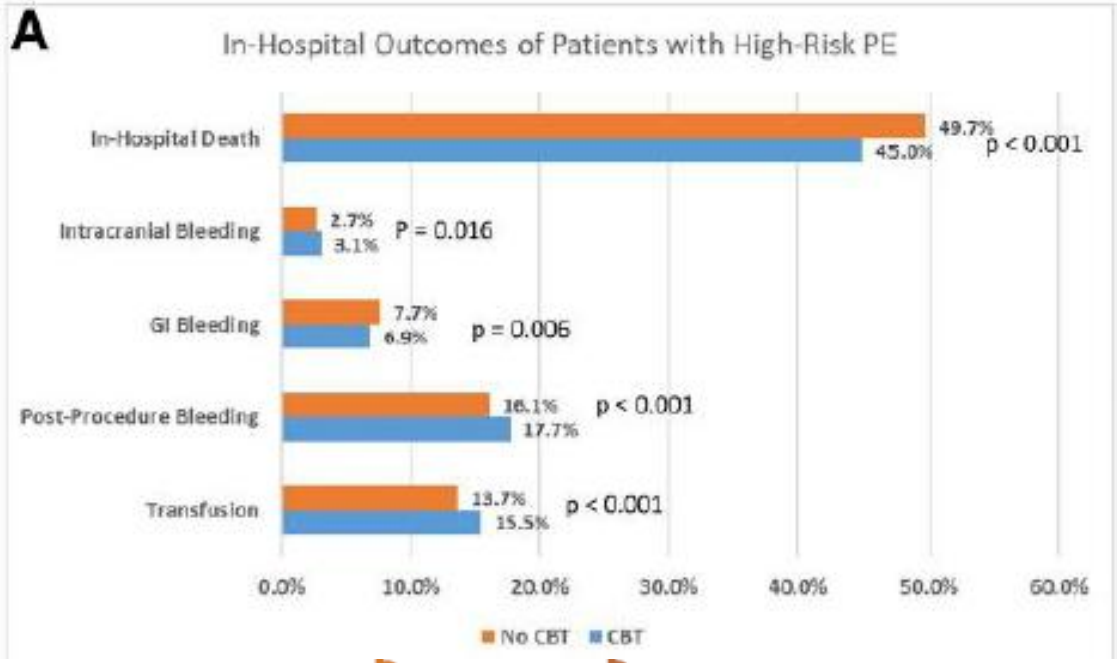
EuroIntervention 2024;20:e408-e424 • Simone Finocchiaro *et al.*

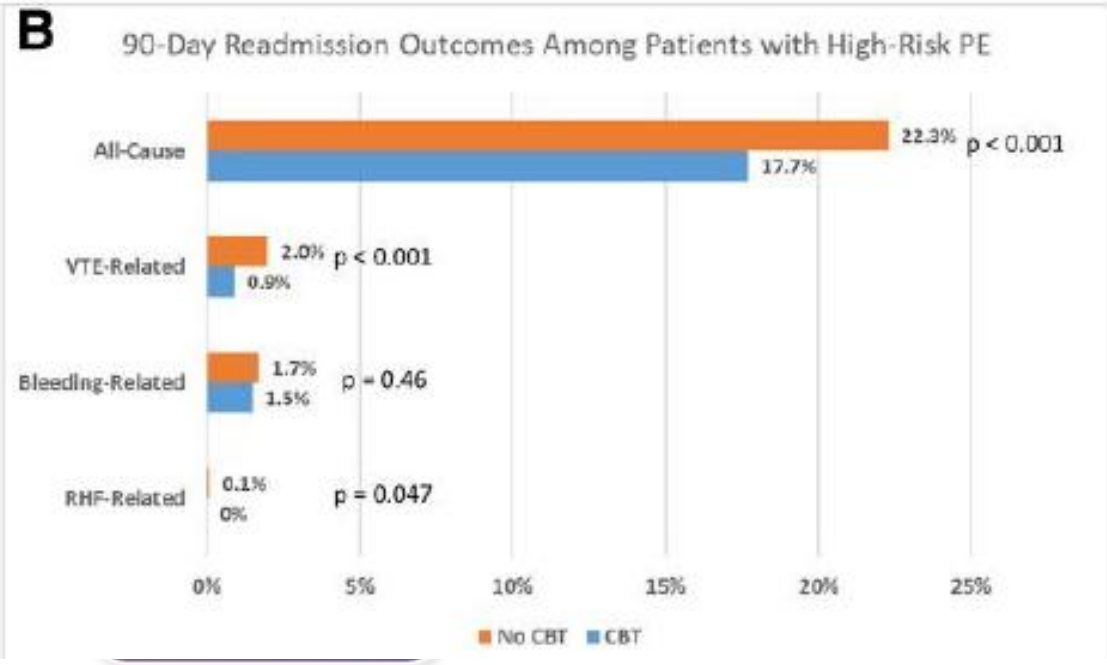
Aktuální evidence pro CBT u high-risk PE

Intermediate or high-risk PE

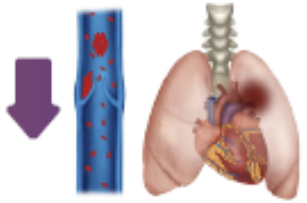
In-hospital death

High risk





- **14 903** patients with high-risk PE
- **42 829** patients with intermediate-risk PE
- **2076 (13.9%)** of high-risk PE
- **8824 (20.6%)** of intermediate-risk PE managed with CBT



High risk
HR 0.46 (95% CI 0.34–0.63)

Intermediate risk
HR 0.66 (95% CI 0.57–0.76)

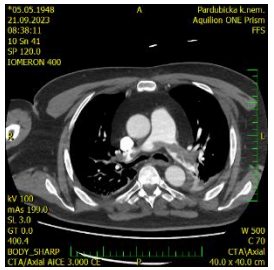
AGEL Kardiologické centrum

NEMOCNICE PARDUBICKÉHO KRAJE

D.I. *1948

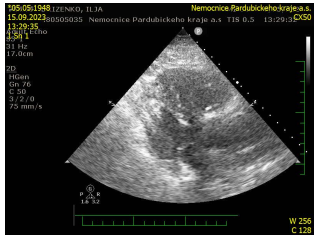
- 15.9.2023 – kolapsový stav na ulici

- ležící, komunikující, bledý, cyanotický, těžká hyposaturace



?

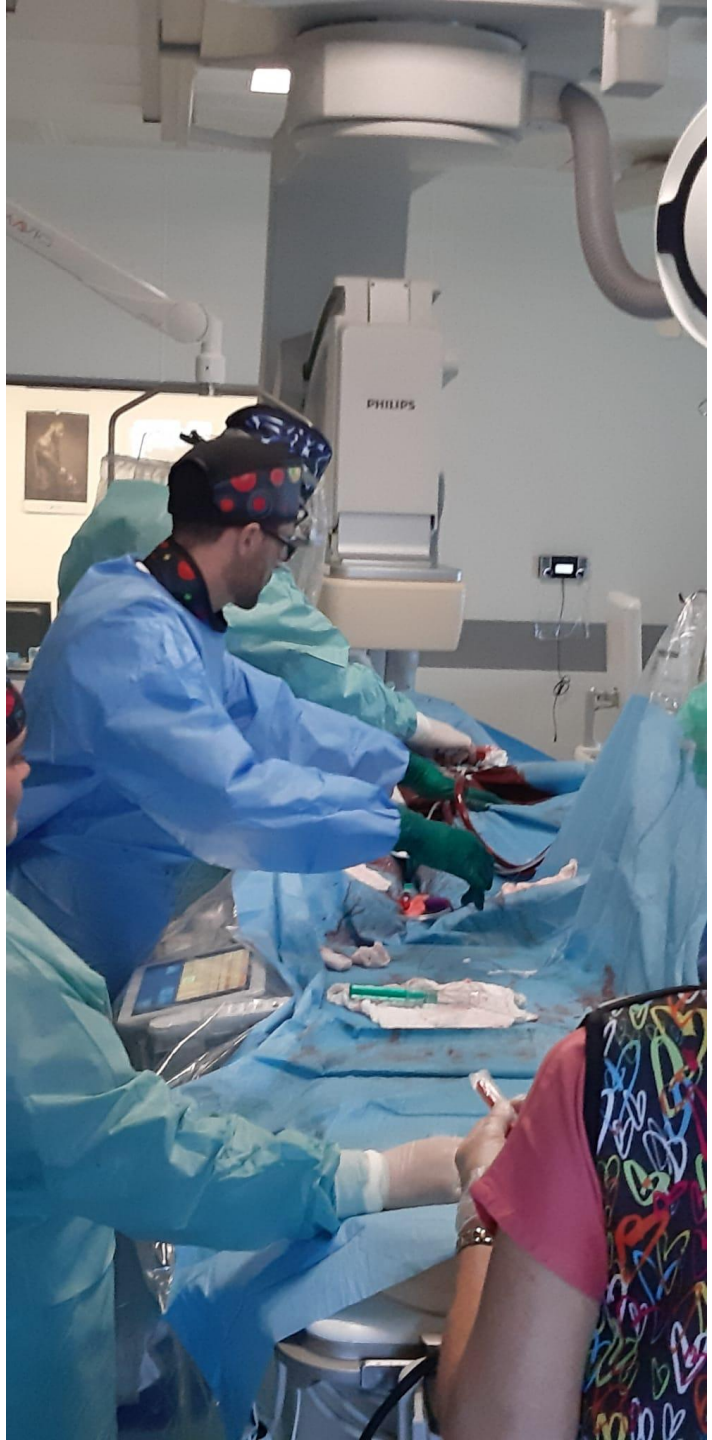
- v průběhu nakládání do vozu RZP bradykardie s následnou PEA → KPR, zajištění dýchacích cest, ROSC 5 minut
- příjem na oddělení, dle bed side UZ dilatace a dysfunkce LK, oběhově nestabilní při podpoře oběhu NoA

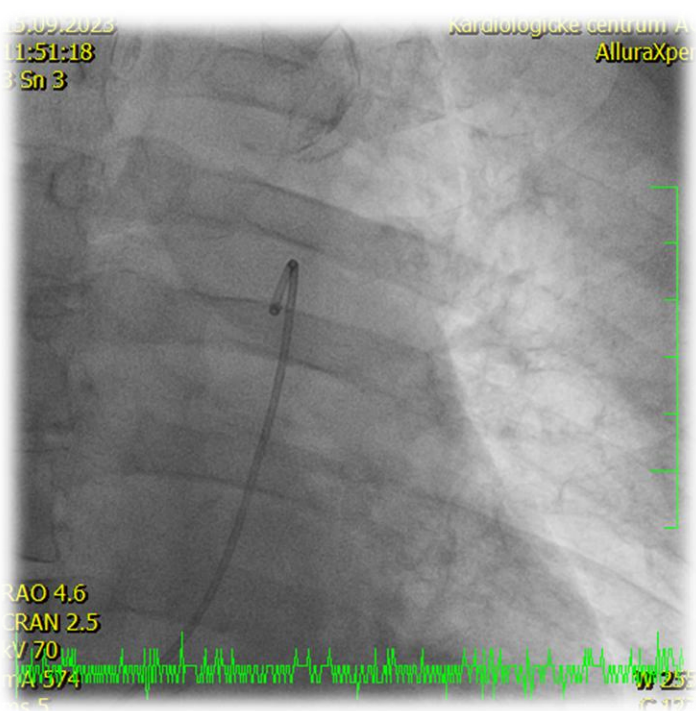


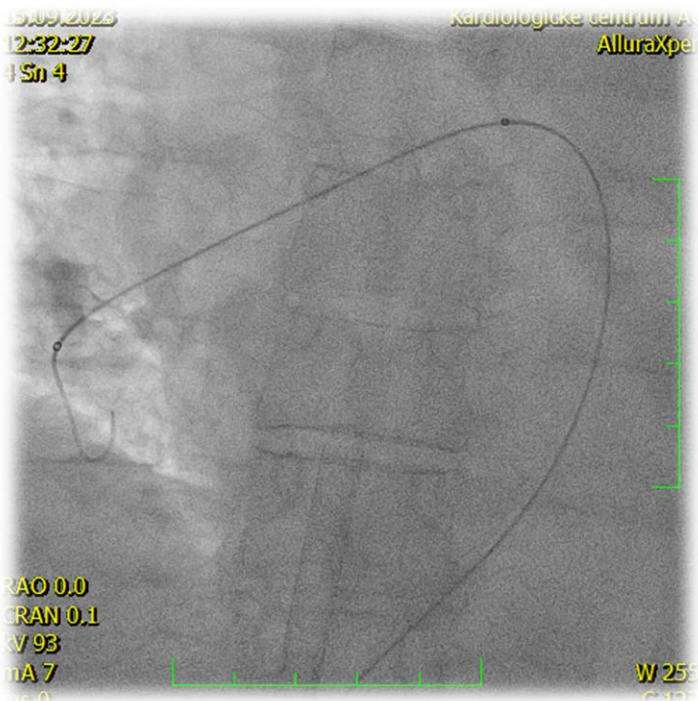
- známé komorbidity – metabolický syndrom + BHP
- rozhodnuto o napojení na ECMO + CDT (systémová trombolýza neindikována pro susp. na možnou traumatickou komplikaci KPR)

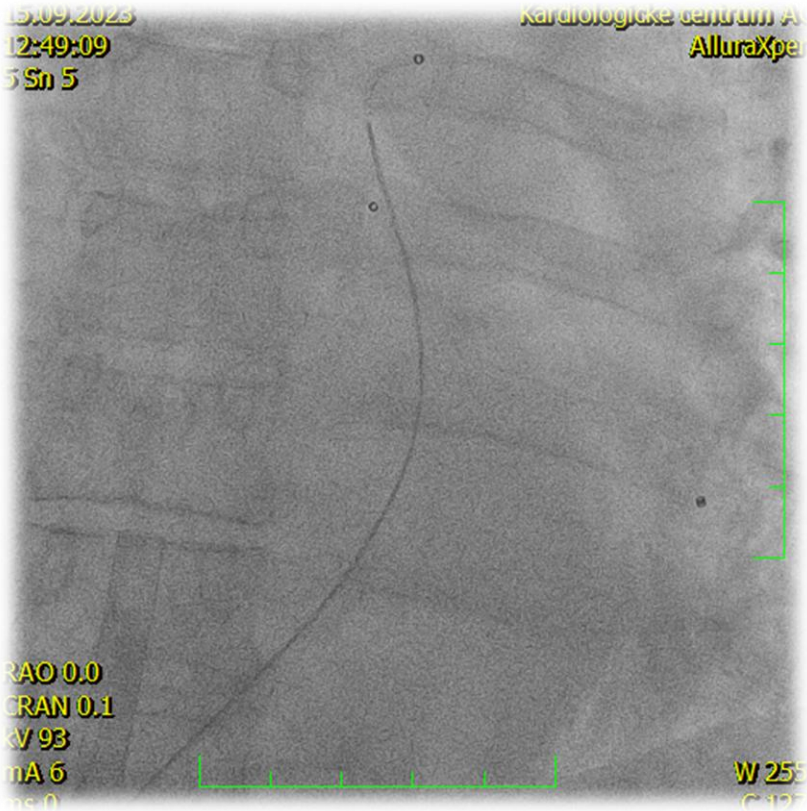
AGEL Kardiologické centrum

NEMOCNICE PARDUBICKÉHO KRAJE

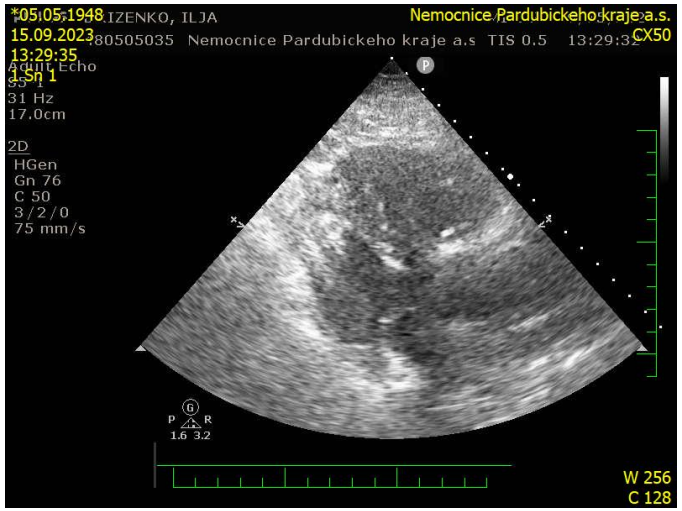

PHILIPS

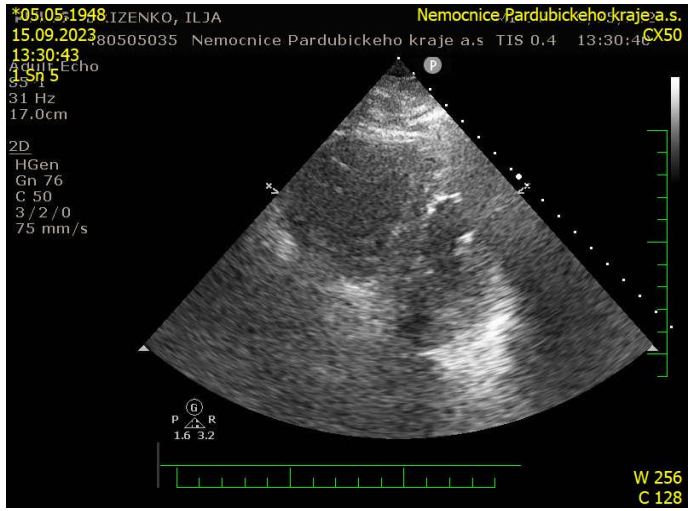

Kardiologické centrum
AlluraXper
Sn 3
RAO 4.6
CRAN 2.5
kV 70
mA 574

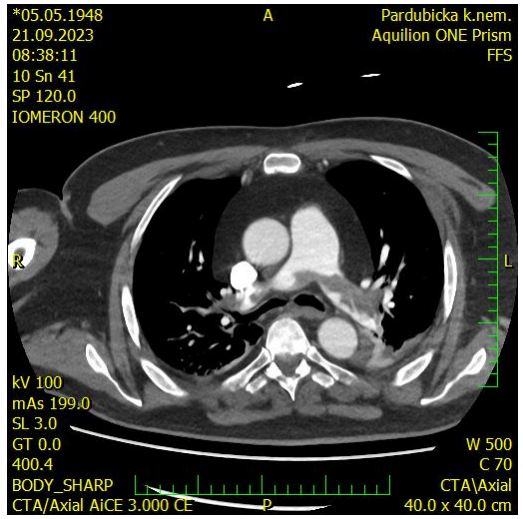

Kardiologické centrum
AlluraXper
Sn 4
RAO 0.0
CRAN 0.1
kV 93
mA 7

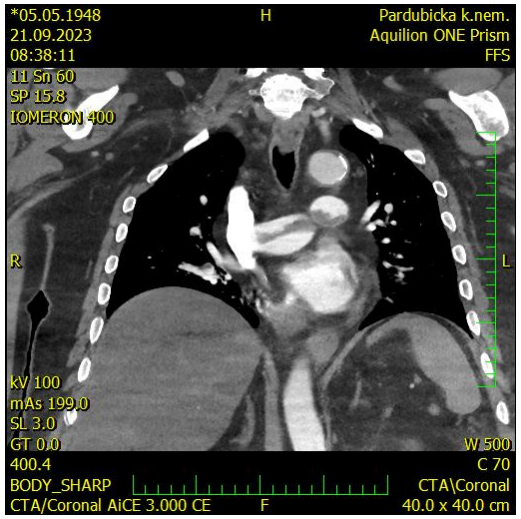

AlluraXper
Sn 5
RAO 0.0
CRAN 0.1
kV 93
mA 6

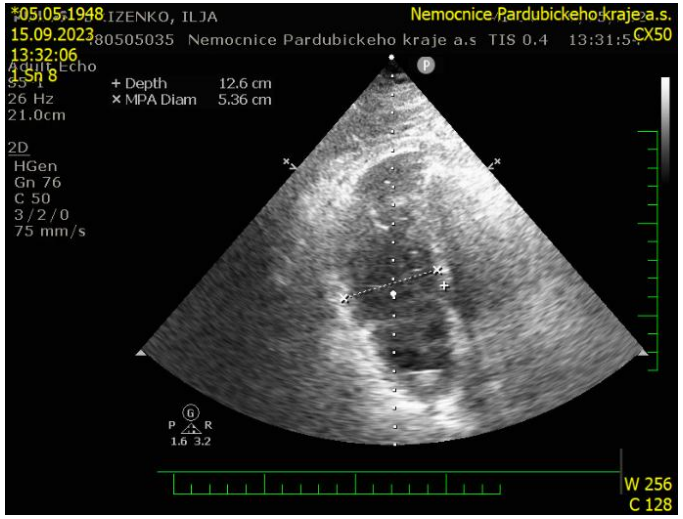
Vstupní CT a ECHO

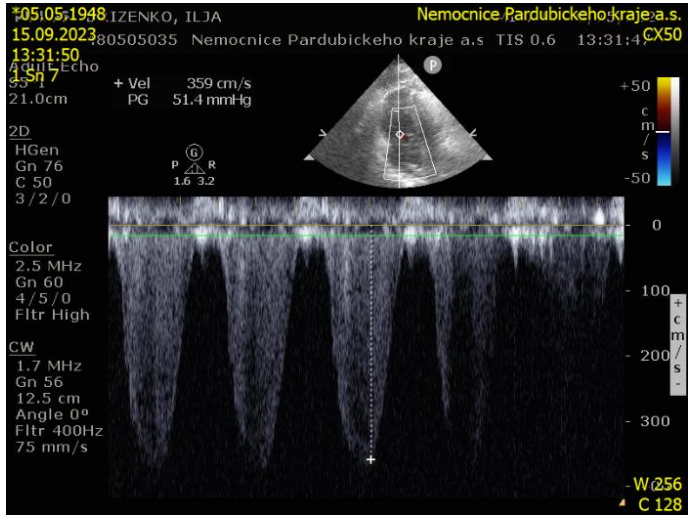


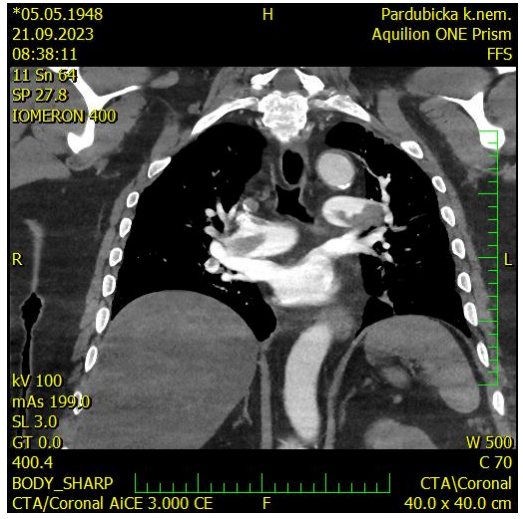


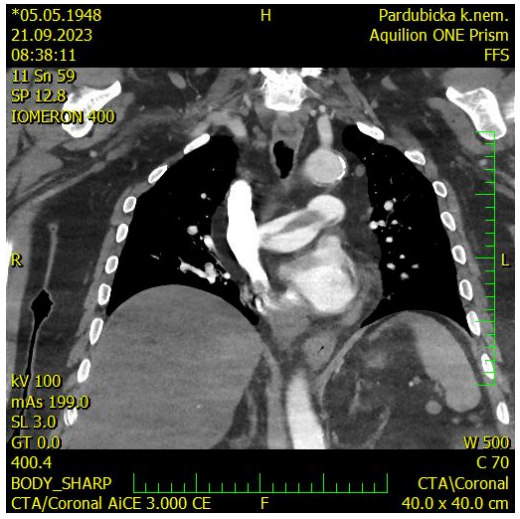










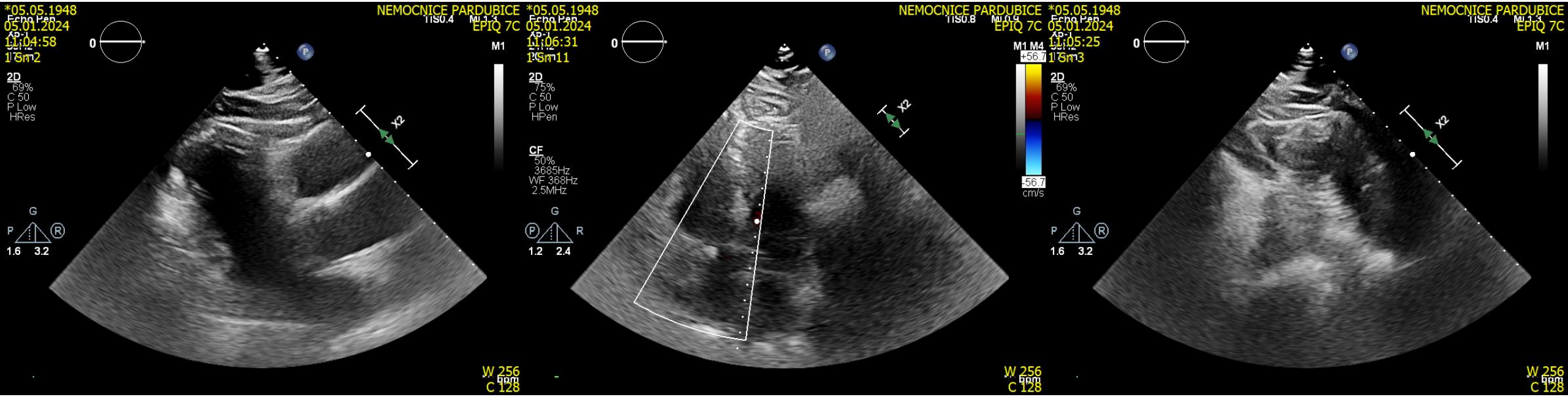


Průběh hospitalizace

- po zavedení ECMO a CDT velmi rychlá stabilizace oběhu
- již další den hosp. dle UZ zlepšení velikosti a funkce PK, oběhová stabilita bez nutnosti NoA a minimalizace podpory ECMO →indikována dekanylace
- chirurgické odstranění kanyl komplikováno hemoragickým šokem s nutností podání plasmy a krevních převodů
- další komplikací rozvoj respiračního infektu, přesto 19.9.2023 extubace
- zdroj embolizace – hluboká žilní trombóza v. femoralis l.sin.
- odléčení infektu, nastavení p.o. terapie
- 5.10.2024 překlad k rehabilitační péči

Follow up 3 měsíce

- subjektivně bez potíží, soběstačný, nelimitován dušností v klidu ani při námaze
- ECHO - normalizace nálezu na pravostranných srdečních oddílech, bez zn. plicní hypertenze



Blíží se čas pPPI ?

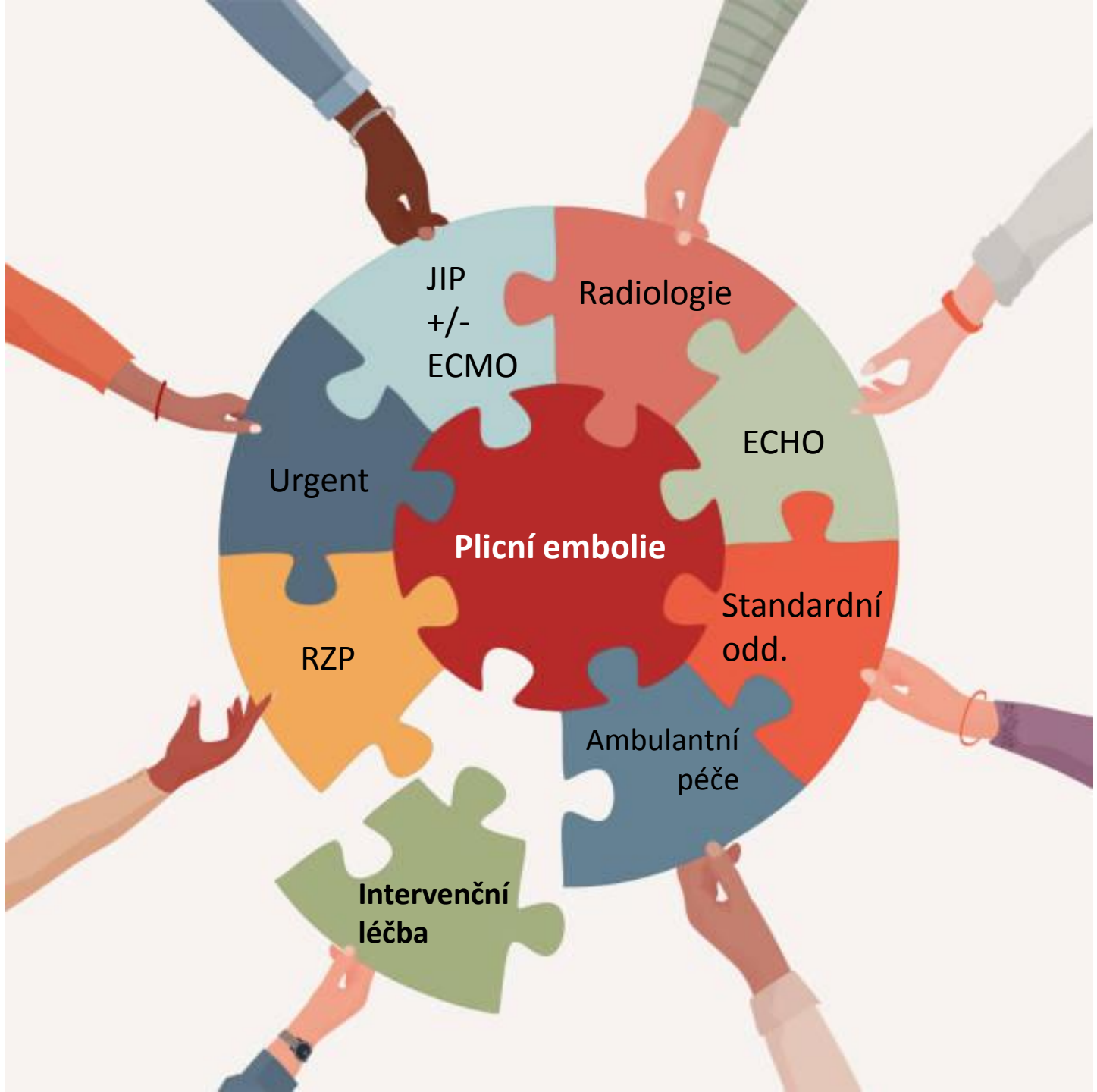
We explore future perspectives, proposing "percutaneous primary pulmonary intervention" as a potential paradigm shift in the field.

Table 4. Ongoing randomised trials of pulmonary embolism treatment enrolling 100 patients or more.

Trial	Design	Sample	Population	Intervention	Control	Primary outcomes	Follow-up
HI-PEITHO (NCT04790370)	Single-blind, phase 4	406	Intermediate-high-risk PE	USAT	Standard anticoagulation	All-cause death, haemodynamic decompensation, recurrent PE	7 days
NCT05612854	Open-label, phase 1	200	Intermediate-high-risk PE	Fragmentation, aspiration	Standard anticoagulation	MACE	2 years
PE-TRACT (NCT05591118)	Open-label, phase 3	500	Intermediate-high-risk PE	CDT or mechanical thrombectomy	Standard anticoagulation	Peak oxygen consumption, NYHA FC, major bleeding	7 days, 3 months, 12 months
PEERLESS (NCT05111613)	Open-label	550	Intermediate-high-risk PE	Aspiration embolectomy (FlowTriever system)	CDT	All-cause death, intracranial haemorrhage, major bleeding, haemodynamic decompensation	7 days
PEERLESS II (NCT06055920)	Open-label	1,200	Intermediate-high-risk PE	Aspiration embolectomy (FlowTriever system)	Standard anticoagulation	Haemodynamic decompensation, all-cause hospital readmission, bailout therapy	30 days
PRAGUE-26 (NCT05493163)	Open-label, phase 4	558	Intermediate-high-risk PE	CDT	Standard anticoagulation	All-cause death, haemodynamic decompensation, recurrent PE	7 days
STORM-PE (NCT05684796)	Open-label	100	Intermediate-high-risk PE	Aspiration embolectomy (Indigo system)	Standard anticoagulation	Change in right ventricle/left ventricle ratio	48 hours
STRATIFY (NCT04088292)	Single-blind, phase 3, 1:1:1	210	Intermediate-high-risk PE	USAT or low-dose thrombolysis	Standard anticoagulation	Miller score	96 hours

CDT: catheter-directed thrombolysis; MACE: major adverse cardiovascular events; NYHA FC: New York Heart Association Functional Class; PE: pulmonary embolism; USAT: ultrasound-assisted thrombolysis

EuroIntervention 2024;20:e408-e424 • Simone Finocchiaro *et al.*



AGEL Kardiologické centrum

NEMOCNICE PARDUBICKÉHO KRAJE

I don't UNDERSTAND, having a pulmonary embolism isn't on his 'To Do' list!