Intervenční léčba stabilní ICHS.

O. Hlinomaz

I. IKAK, ICRC, FN u sv. Anny, Brno

Stabilní ICHS

- Epizody reversibilního nepoměru mezi poptávkou myokardu po O_2 a jeho nabídkou spojeným s ischémií nebo hypoxií

- Vznikají při zátěži nebo i spontánně

Želízko M et al.: Souhrn Doporučených postupů ESC pro dg. a léčbu ICHS -2013.

Stabilní ICHS

- často spojeny s bolestmi (nepříjemnými pocity) na hrudi (AP)
- stabilizované stavy po AKS

Želízko M et al.: Souhrn Doporučených postupů ESC pro dg. a léčbu ICHS -2013.

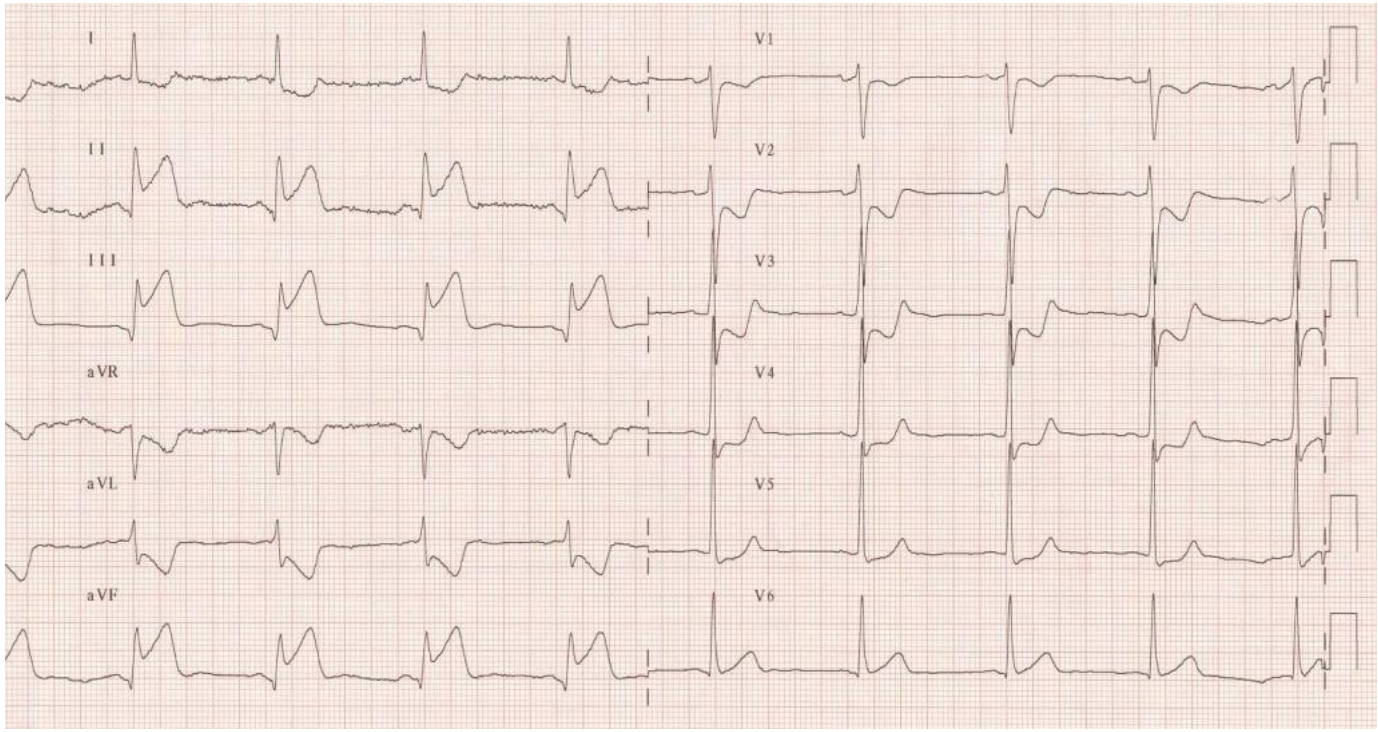
Příčiny ischémie myokardu

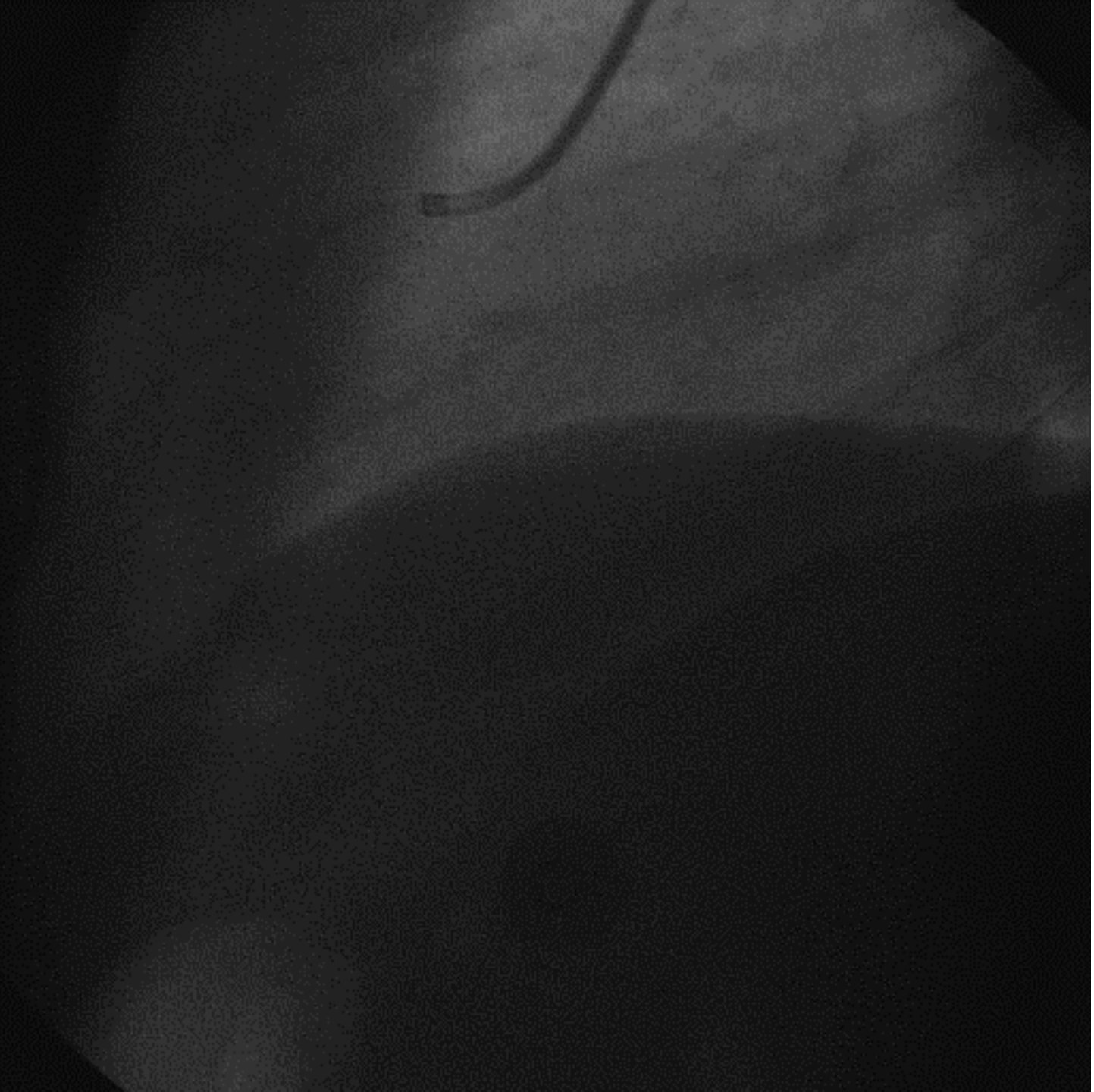
- Stenóza koronární arterie na podkladě aterosklerózy – revaskularizace (PCI, CABG)
- Spasmus koronární arterie
- Mikrovaskulární dysfunkce

Želízko M et al.: Souhrn Doporučených postupů ESC pro dg. a léčbu ICHS -2013.

Není pochyb o tom, že PCI má smysl u

STEMI





A.S., 1942
STEMI DS

Hypertenze
Kouření
HLP

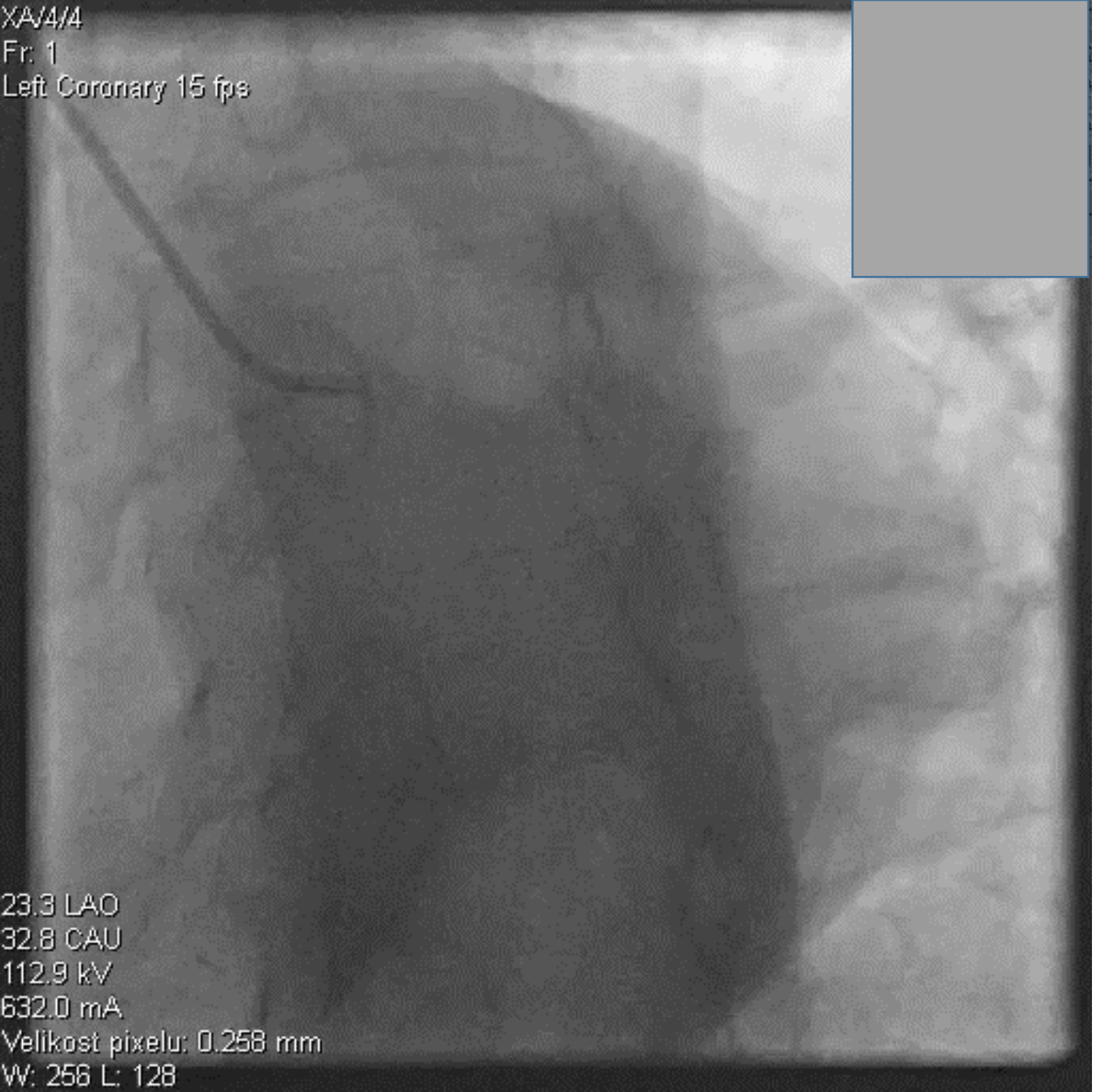
A.S., 1942
STEMI DS

Primární PCI
1 DES

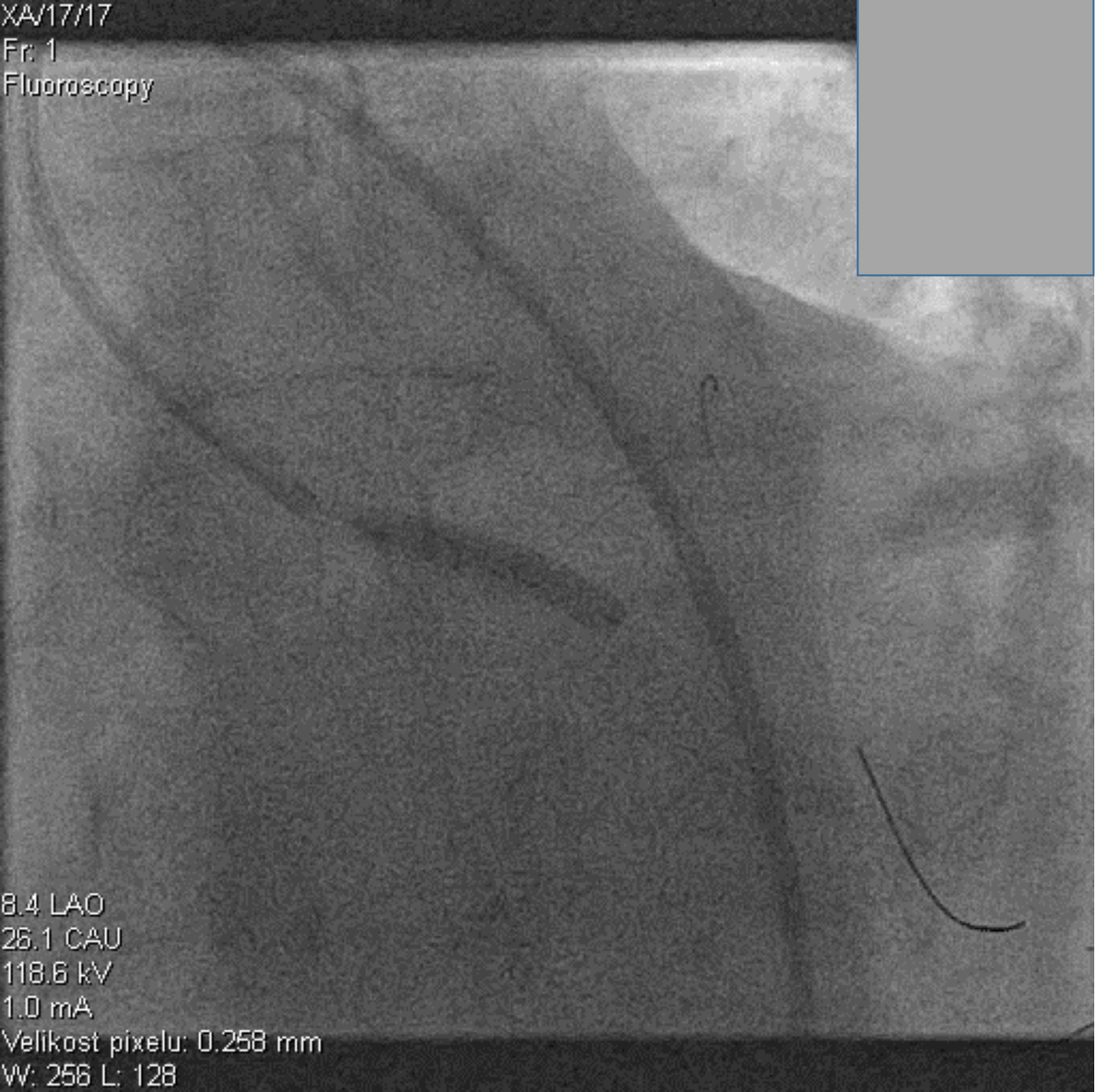
Není pochyb o tom, že PCI má smysl u

NSTEMI/NAP

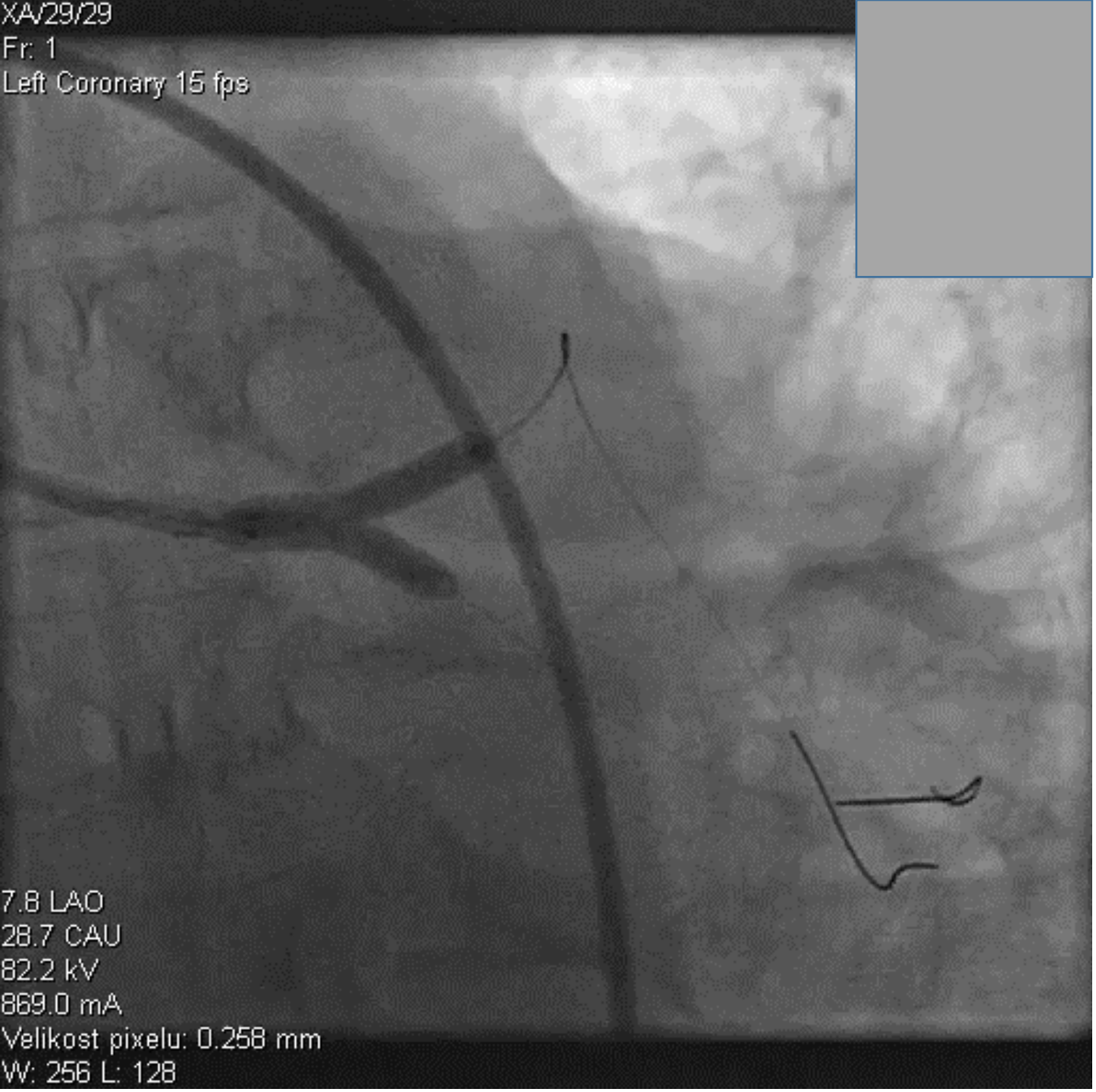
aterotrombóza


XA/4/4
Fr: 1
Left Coronary 15 fps
23.3 LAO
32.8 CAU
112.9 kV
632.0 mA
Velikost pixelu: 0.258 mm
W: 256 L: 128

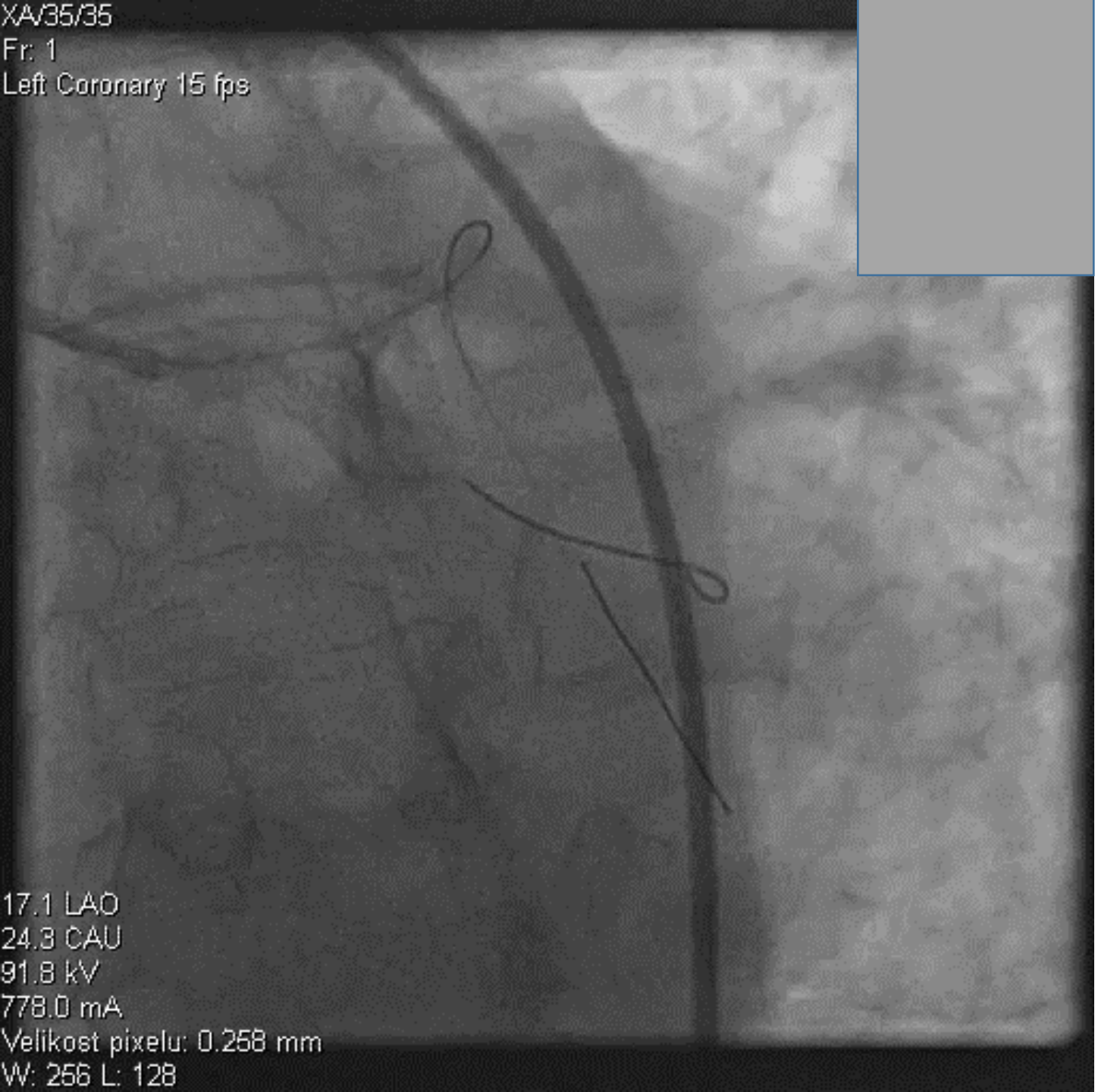
M, 40 let
NAP


XA/17/17
Fr: 1
Fluoroscopy
8.4 LAO
26.1 CAU
118.6 kV
1.0 mA
Velikost pixelu: 0.258 mm
W: 256 L: 128

Onyx 3,5 18



RIA (TAP)
Onyx 3,0 18
kissing

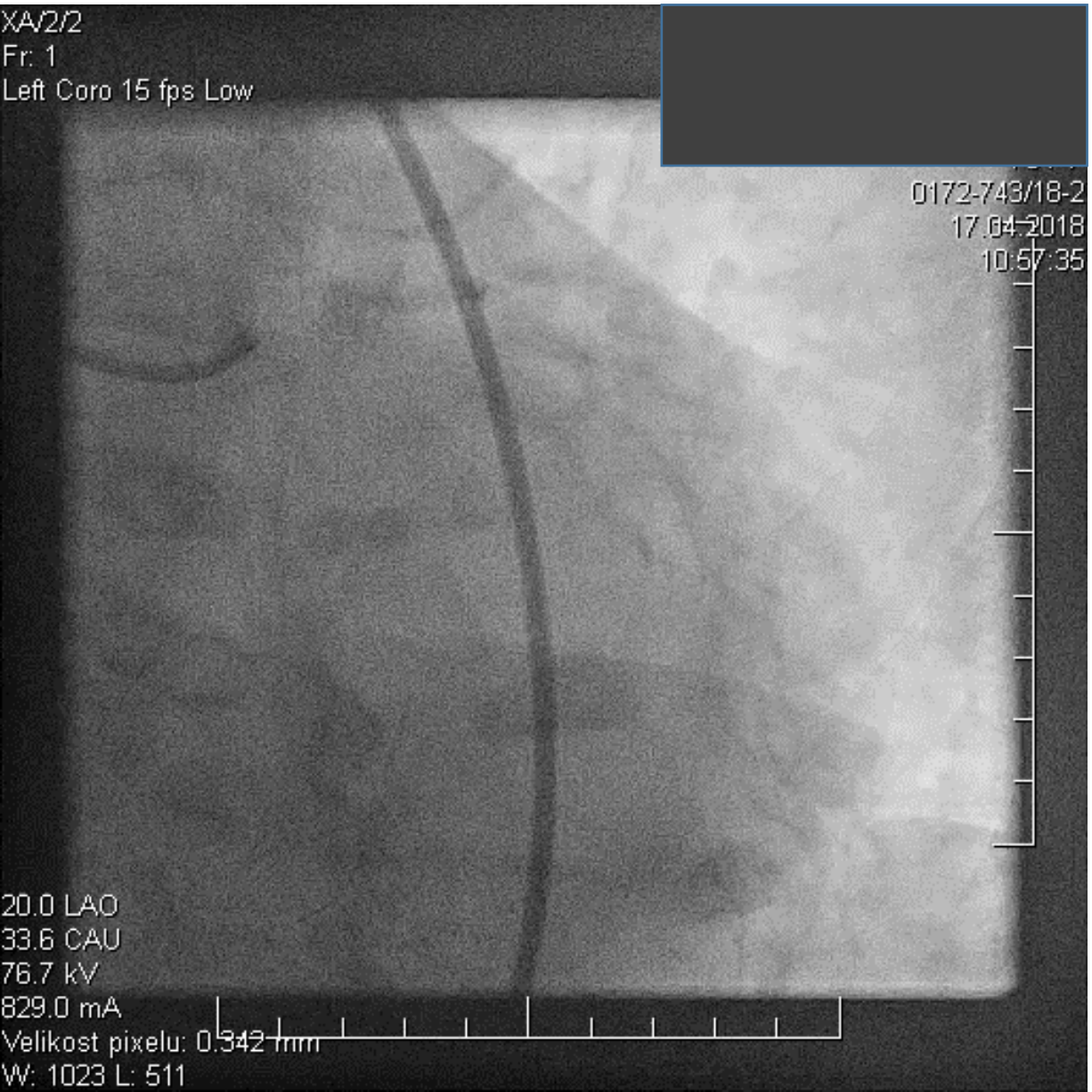

XA/35/35
Fr: 1
Left Coronary 15 fps
17.1 LAO
24.3 CAU
91.8 kV
778.0 mA
Velikost pixelu: 0.258 mm
W: 256 L: 128

Předmětem diskuze je ?

M, 73 let
H, DM, HLP

4 měsíce námahová AP

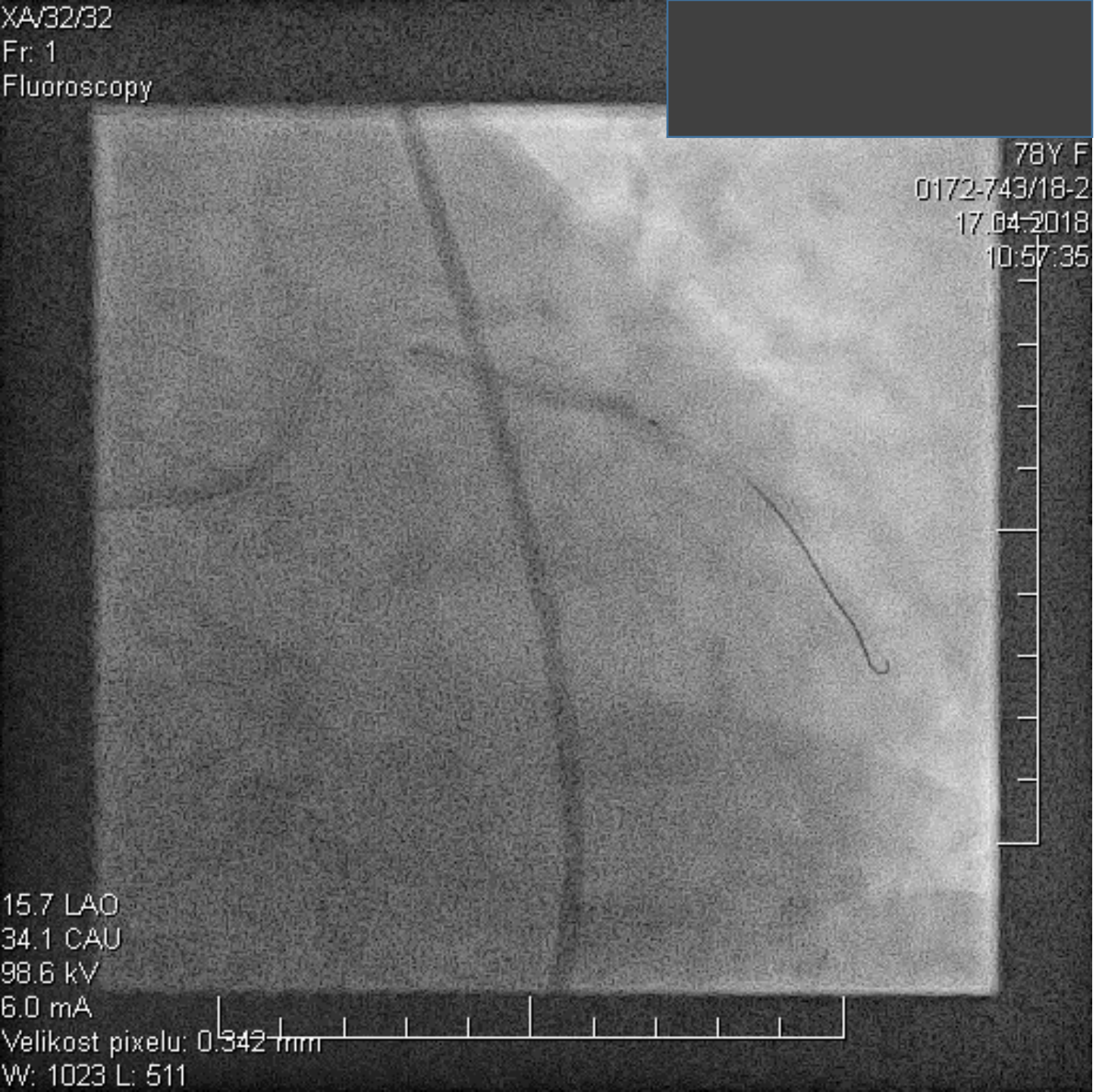
Nebo snad ?

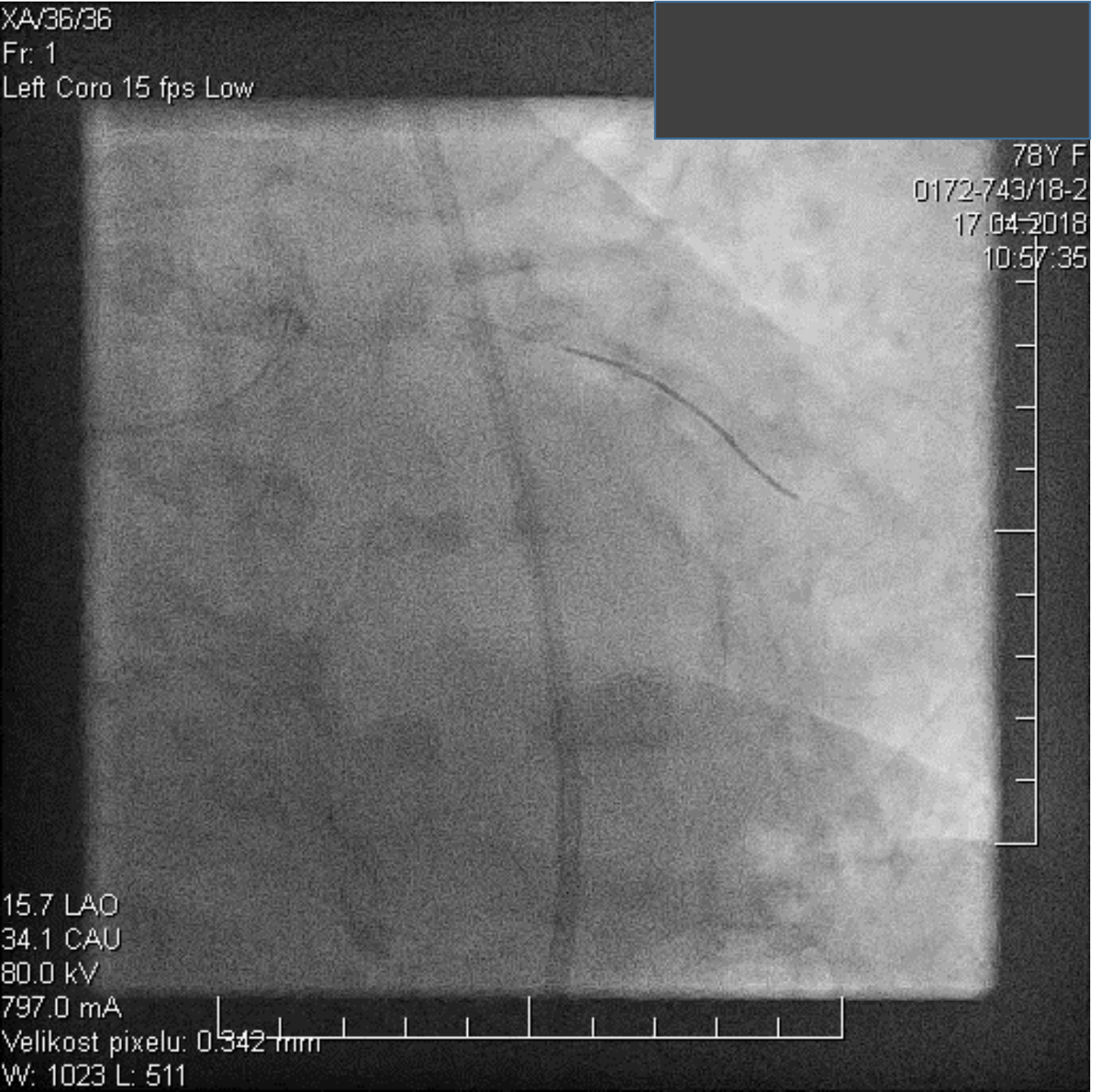


Ž, 78 let
H, DM, HLP

AP CCS III


XA/11/11
Fr: 1
Left Coro 15 fps Low
78Y F
0172-743/18-2
17.04.2018
10:57:35
14.5 LAO
35.2 CAU
76.4 kV
833.0 mA
Velikost pixelu: 0.342 mm
W: 1023 L: 511


XA/32/32
Fr: 1
Fluoroscopy
78Y F
0172-743/18-2
17.04.2018
10:57:35
15.7 LAO
34.1 CAU
98.6 kV
6.0 mA
Velikost pixelu: 0.342 mm
W: 1023 L: 511



ko za 14 dní

bez AP

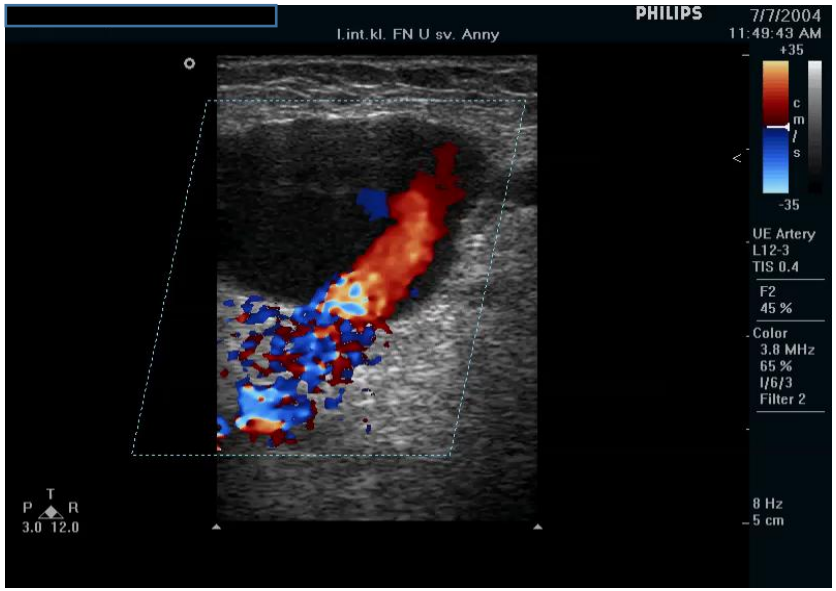
Studie: Stabilní ICHS a revaskularizace

	TIME	MASS II	SWISSI II	COURAGE	BARI-2D	JSAP	FAME-2
Recruitment (years)	1996-2000	1995-2000	1991-97	1999-2004	2001-2005	2002-2004	2010-2012
Study size (n)	301	611	201	2287	2368	384	888
Mean age (years)	80	60	55	61	62	64	64
Angina CCS	II-IV	II-III	0	0-III	0-II	0-II	I-IV
Stress ischaemia (% of patients)	69	NA	100	NA	NA	NA	100
Prior MI (% of patients)	47	44	100	39	38	15	37
Mean LVEF (%)	52	67	57	62	NA	65	16% with EF <0.50
Angiographic selection	No	Yes	Yes	Yes	Yes	Yes	Yes
Mandatory documented ischaemia	No	No	Yes	No	No	No	Yes
Revascularization	PCI or CABG	PCI or CABG	PCI	PCI	PCI or CABG	PCI	PCI
PEP	Angina	Death/MI/ refractory angina	Death/MI/ revasc	Death/MI	Death	Death/ACS	Death/MI/ Urgent revasc
Revascularization better on PEP	Yes	No at 1 year Yes at 5 years (CABG)	Yes	No	No	Yes	Yes

ACS = acute coronary syndrome; CABG = coronary artery bypass graft; CCS = Canadian Cardiovascular Society; EF = ejection fraction; LVEF = left ventricular ejection fraction; MI = myocardial infarction; PCI = percutaneous coronary intervention; PEP = primary endpoint; revasc = revascularization. This slide corresponds to Table 33 in the full text.

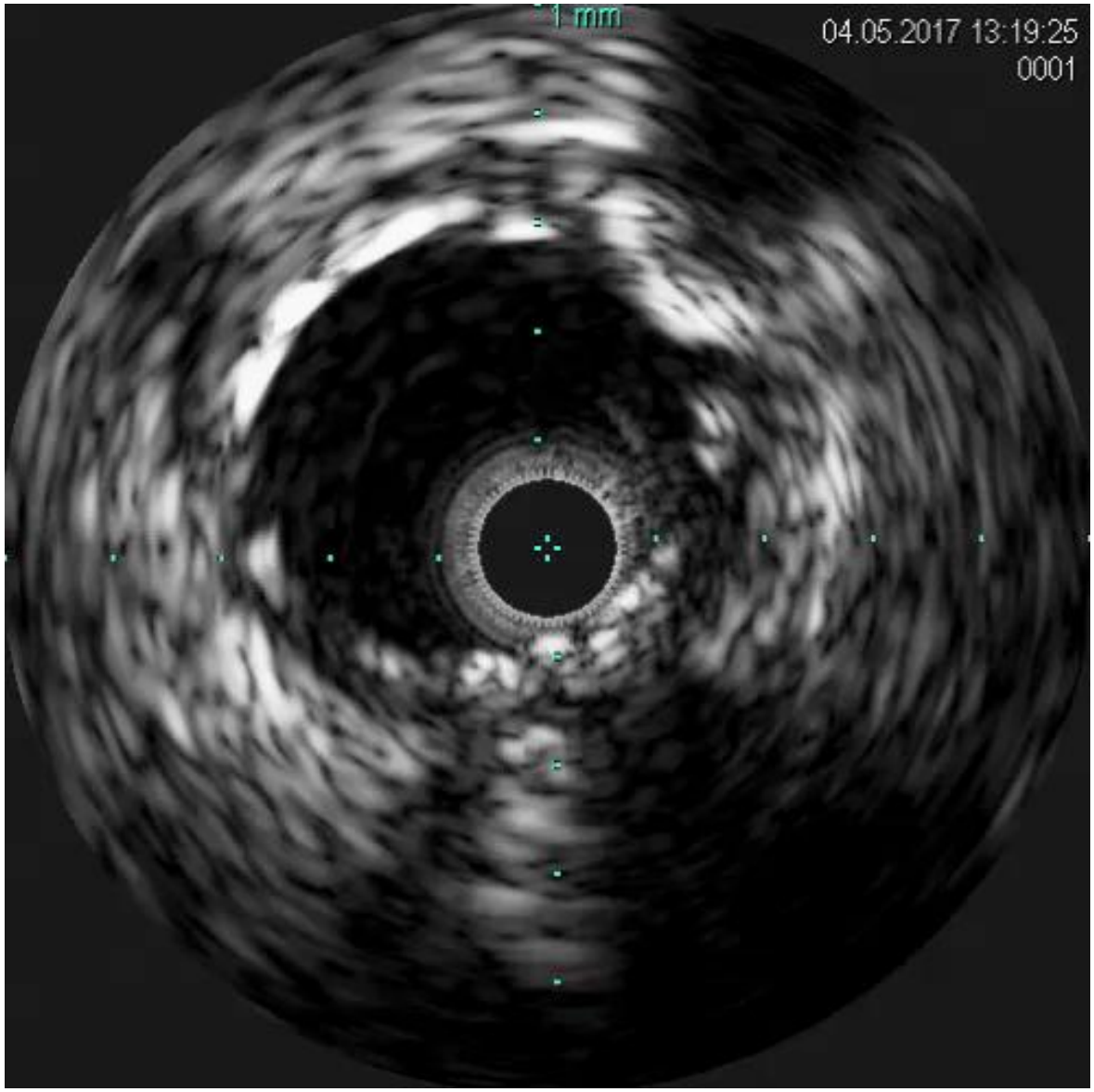
Eur Heart J 2013;34:2949–3003. doi:10.1093/eurheartj/eht296

Radiální přístup

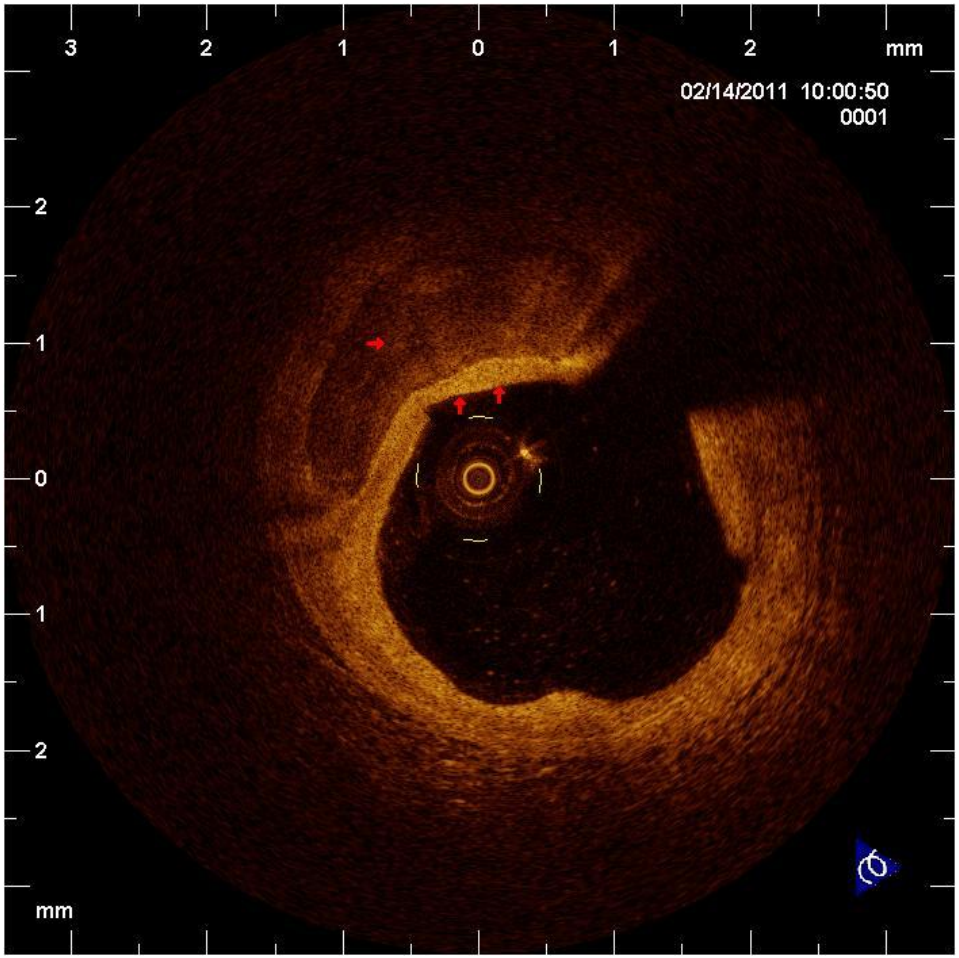


96% (52%)

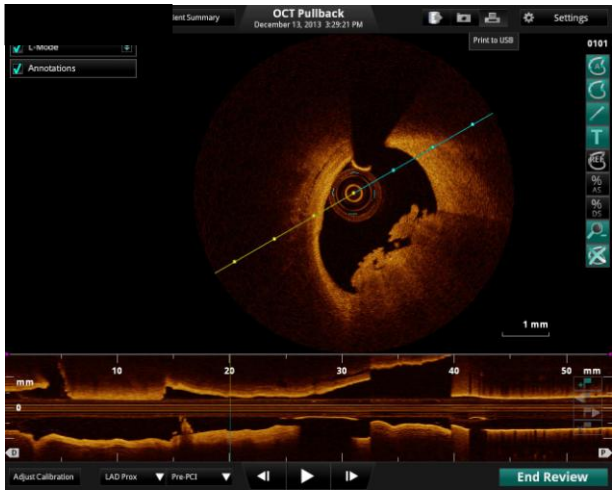
Intrakoronární ultrazvuk - IVUS



OCT a stabilita plátu



- Lipid necrotic core
- Fibrous cap < 65µm
- Neovascularization
- Thrombus
- Dissection
- Calcified nodule
- Plaque burden > 40%



Prati F et al.: EHJ 2012:31,401-415

Koho revaskularizovat?

Extent of CAD (anatomical and/or functional)		Class[b]	Level[c]
For prognosis	Left main disease with stenosis >50%[a]	I	A
	Any proximal LAD stenosis >50%[a]	I	A
	Two-vessel or three-vessel disease with stenosis > 50%[a] with impaired LV function (LVEF<40%)[a]	I	A
	Large area of ischaemia (>10% LV)	I	B
	Single remaining patent coronary artery with stenosis >50%[a]	I	C
For symptoms	Any coronary stenosis >50%[a] in the presence of limiting angina or angina equivalent, unresponsive to medical therapy	I	A

CAD = coronary artery disease; FFR = fractional flow reserve; LAD = left anterior descending coronary artery; LV = left ventricular.
[a]With documented ischaemia or FFR ≤ 0.80 for diameter stenosis <90%.

Dyspnoea/cardiac heart failure with >10% ischaemia/viability supplied by stenosis >50%.	IIb	B	IIa	B
No limiting symptoms with OMT in vessel other than left main or proximal LAD or single remaining vessel or vessel subtending area of ischaemia <10% of myocardium or with FFR ≥0.80.	III	A	III	C

Revasc.+ SCAD guidelines 2013, 2014

Imperial College London

Objective Randomised Blinded Investigation with optimal medical Therapy of Angioplasty in stable angina (ORBITA trial): a randomized double-blind trial

Rasha Al-Lamee, MD

Imperial College London

Principal hypothesis:
Symptom relief in stable angina

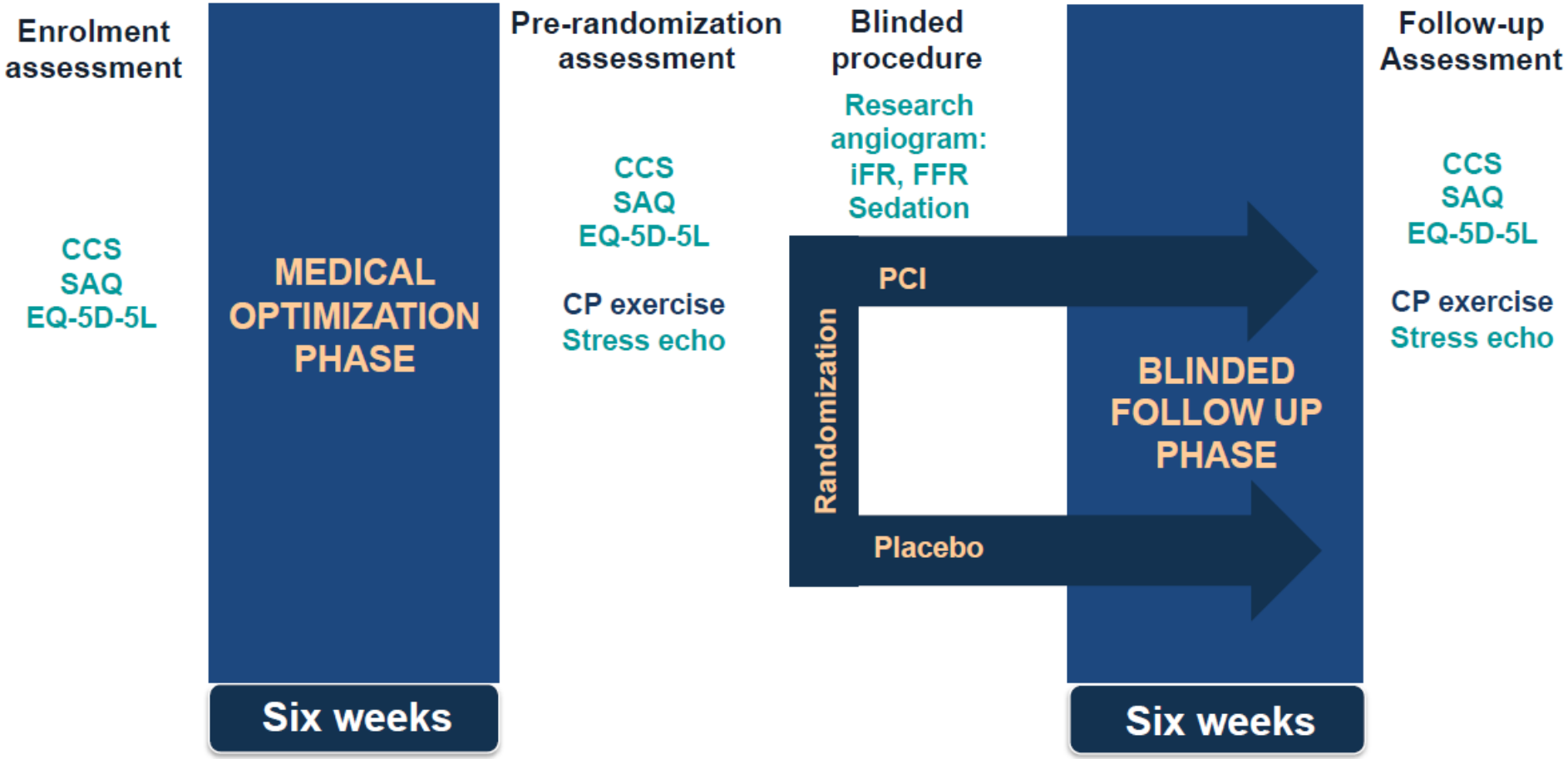
PCI increases exercise time more than placebo procedure

Primary endpoint

Difference in exercise time increment between the arms

For patients to be willing to participate in this first placebo-controlled trial of PCI, duration must long enough for full hemodynamic effect but not so long as to inhibit recruitment

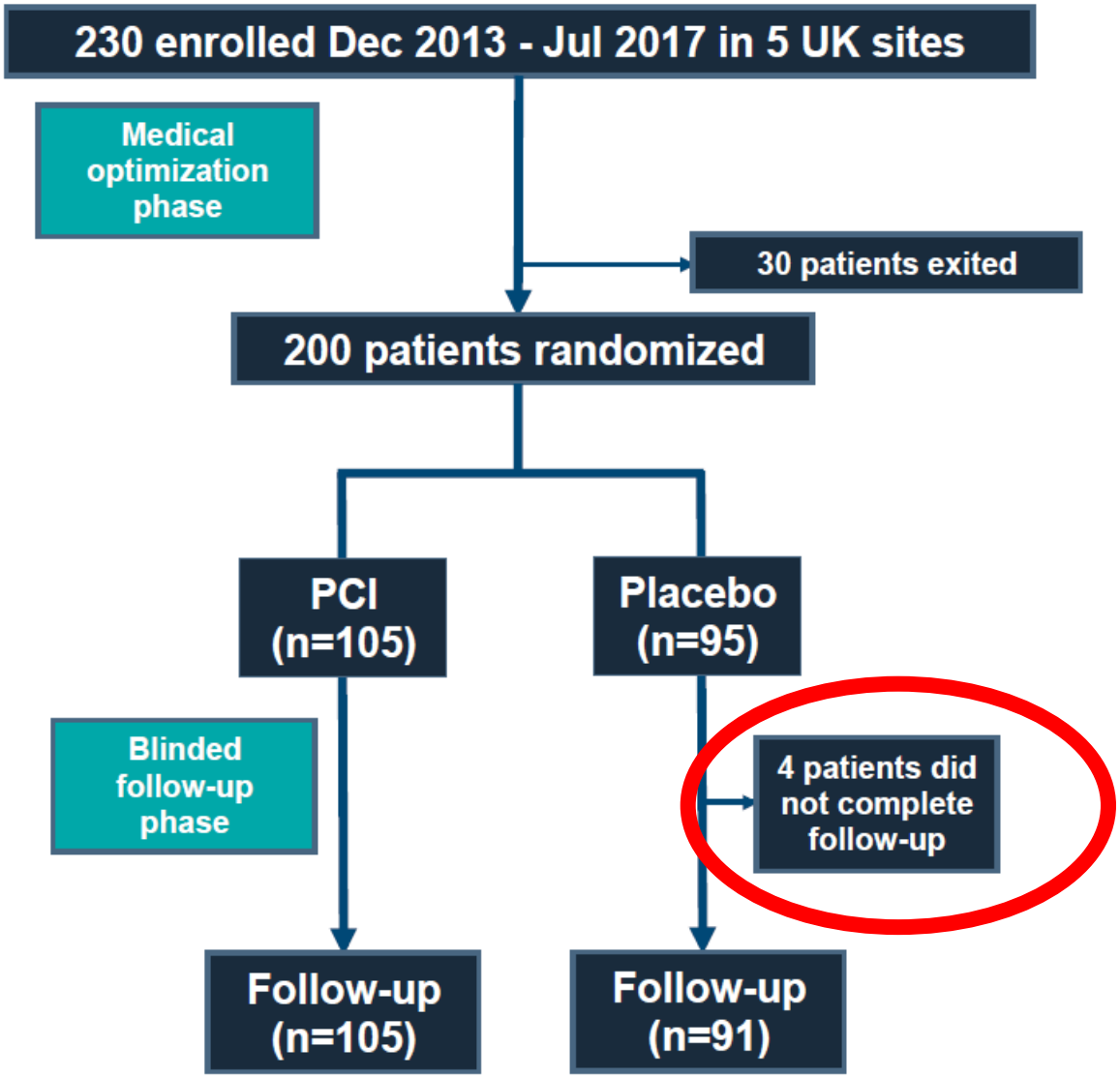
Study design



Neodpovídá to běžné praxi

- Během 6-ti týdnů před zákrokem intenzivní léčba s častými kontrolami
- Po zákroku velmi vysoká compliance
- Follow up jen 6 týdnů

ORBITA trial



Mějme rozum!!!

- ORBITA: 200 pacientů (105 PCI) za 3,5 roku

- **PCI**
  - **40 let pozitivních zkušeností**
  - **500 000 PCI ve světě ročně pro SAP**
  - **cca 9400 PCI v ČR v r. 2017 pro SAP**

Stenosis severity

	PCI n = 105	Placebo n = 95	P
Area stenosis by QCA (%)	84.6 (SD 10.2)	84.2 (SD 10.3)	0.781
FFR	0.69 (SD 0.16)	0.69 (SD 0.16)	0.778
iFR	0.76 (SD 0.22)	0.76 (SD 0.21)	0.751

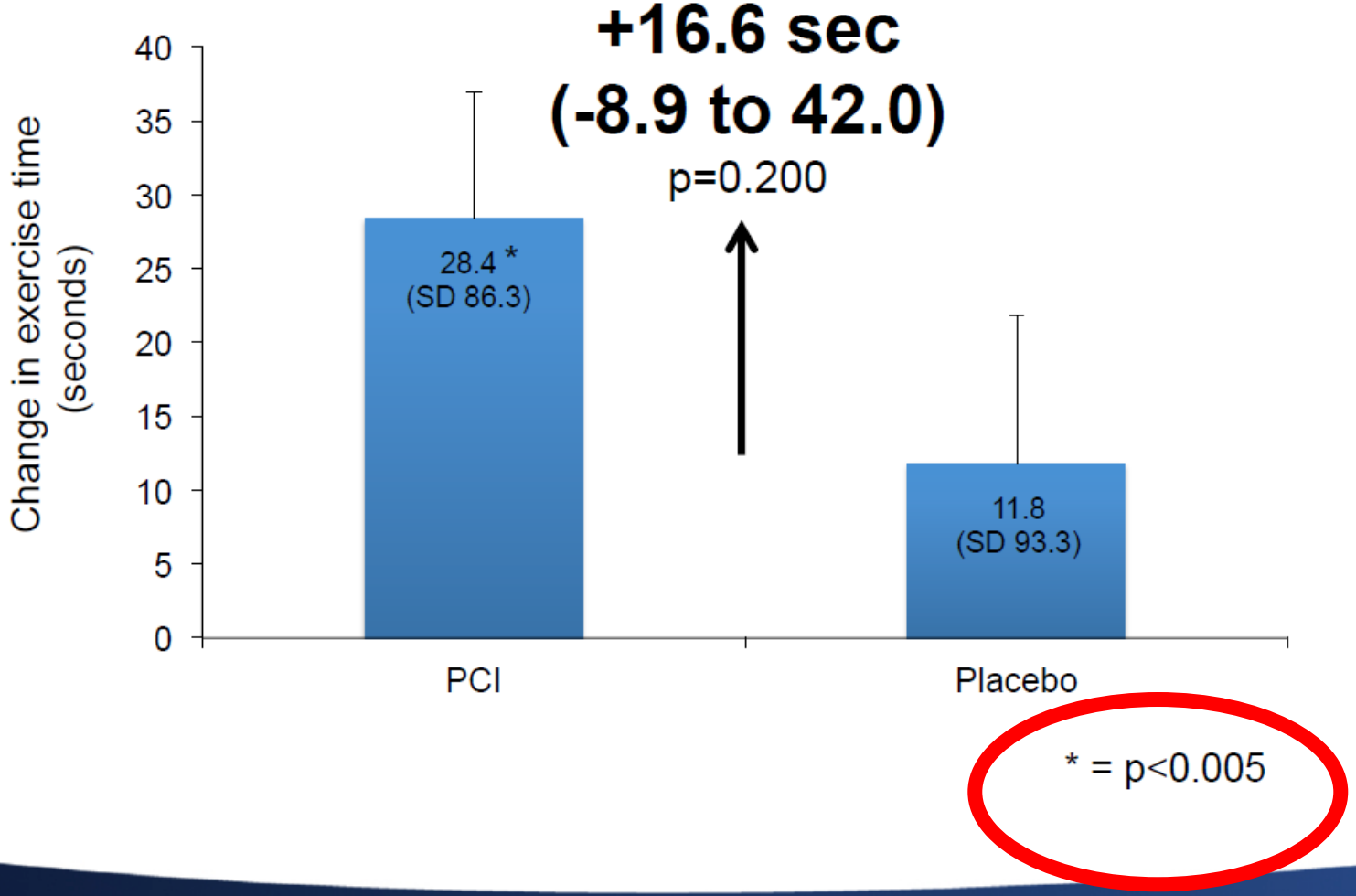
ORBITA

- 27% pacientů FFR ≥0,80 tzn.

- u 27% pacientů PCI neměla být provedena !!!!!

Primary endpoint result

Change in total exercise time



- Tolerance zátěže – hodně subjektivní ukazatel
- Změna délky zátěže 2,5x větší v PCI skupině
  (i když statisticky nevýzn.)
- Placebo efekt by se vs při delším sledování neuplatnil

Secondary endpoint results

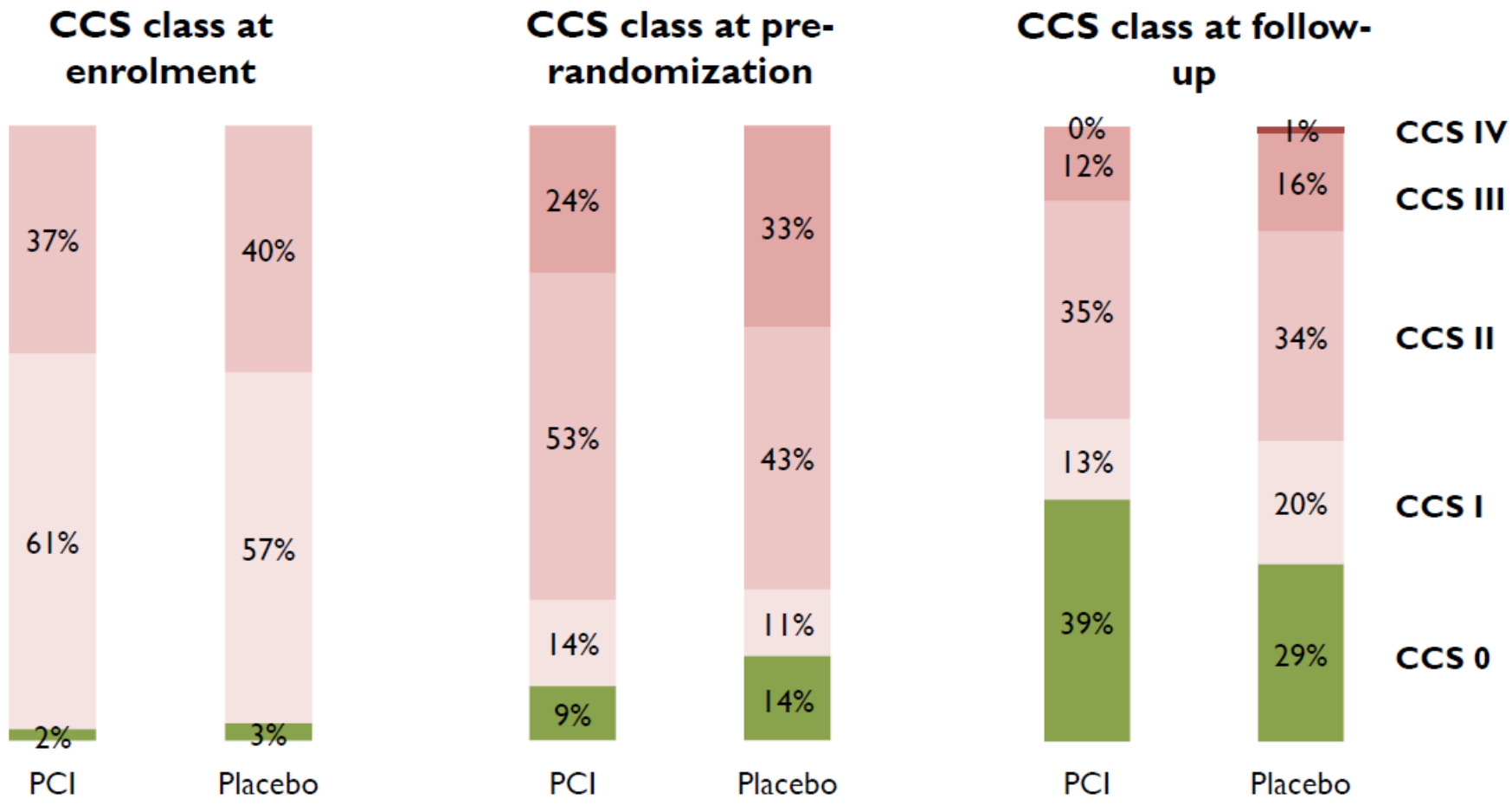
Blinded evaluation of ischaemia reduction

Objektivní ukazatel

Peak stress wall motion index score	PCI n = 80	Placebo n = 57
Pre-randomization	1.11 (0.18)	1.11 (0.18)
Follow-up	1.03 (0.06)	1.13 (0.19)
Δ (Pre-randomization to follow-up)	-0.08 (0.17) **p<0.0001**	0.02 (0.16) p=0.433
Difference in Δ between arms	-0.09 (-0.15 to -0.04) **p=0.0011**	

Secondary endpoint results

Change in CCS Class



Conclusions

- ORBITA is the first placebo-controlled randomized trial of PCI
- Coronary stenoses were severe (mean area reduction 84.4%, FFR 0.69, iFR 0.76)
- PCI did significantly reduce ischaemia as assessed by FFR, iFR and stress echo
- However, PCI did not improve exercise time above placebo

Conclusions

- The results are consistent with the clinical experience that patients with stable angina report symptom relief after *unblinded* PCI

- ORBITA shows that this relief relies on both the true physical effect and the placebo effect

Published in The Lancet today

Revaskularizace dle Symptomů

Kvalita života

Závěr

- Individuální přístup – řídit se klinikou
- Nedělat hraniční a málo významné stenózy
- Více využívat neinvazivních zátěžových testů
- Sekundární prevence aterosklerózy

Intervenční léčba ICHS?

Jednoznačně ANO

Medikamentózní léčba ICHS?

Jednoznačně ANO

Appropriate Use Score (1-9)					
One-Vessel Disease					
		Asymptomatic			
		Not on AA Therapy or With AA Therapy		**Not on AA Therapy**	
Indication		**PCI**	**CABG**	**PCI**	**CABG**
No Proximal LAD or Proximal Left Dominant LCX Involvement					
1.	■ Low-risk findings on noninvasive testing	R (2)	R (1)	R (3)	R (2)
2.	■ Intermediate- or high-risk findings on noninvasive testing	M (4)	R (3)	M (5)	M (4)
3.	■ No stress test performed or, if performed, results are indeterminate ■ FFR ≤0.80*	M (4)	R (2)	M (5)	R (3)

Rarely appropriate 1-3, may be appropriate 4-6, appropriate 7-9

Duke Treadmill Score

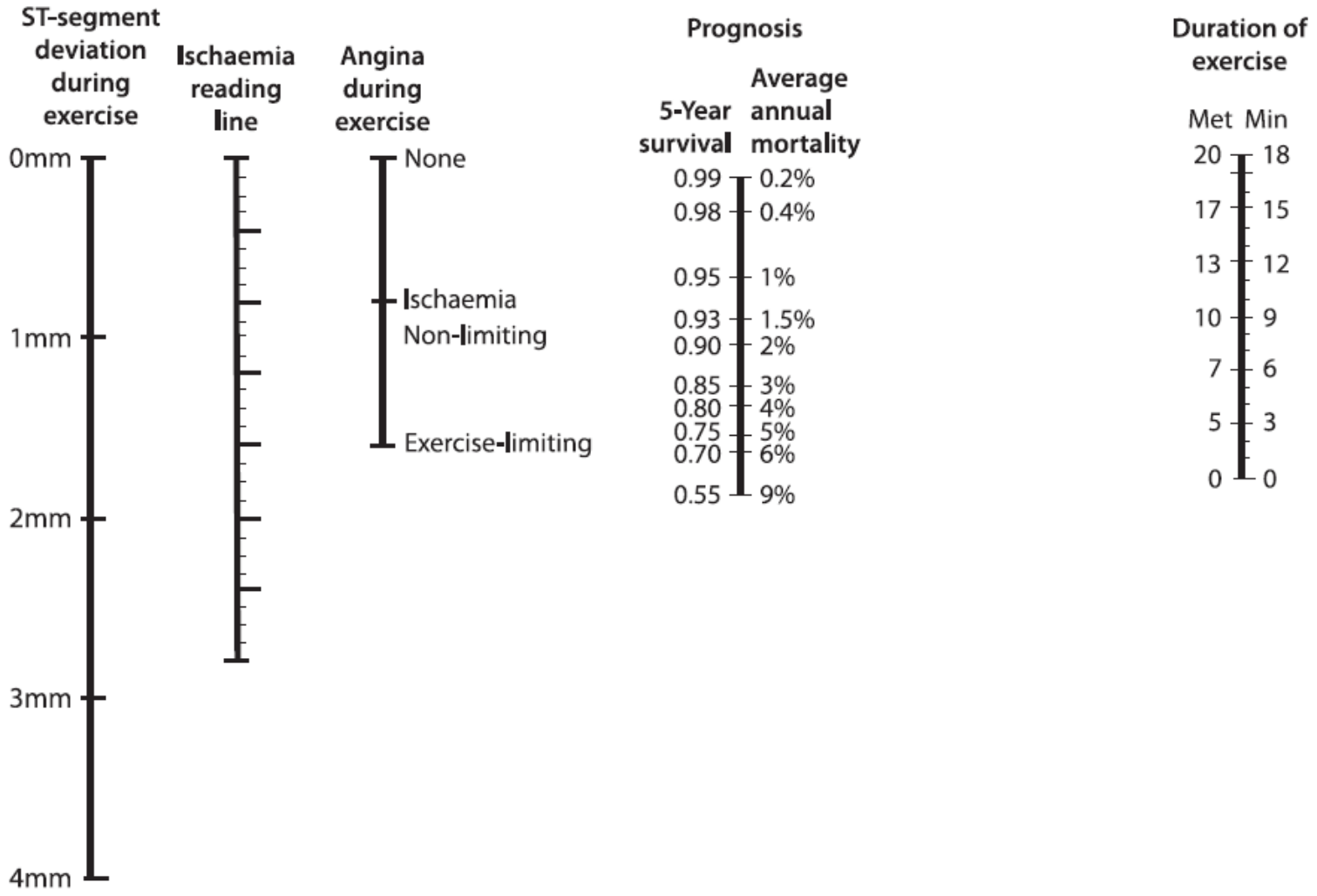
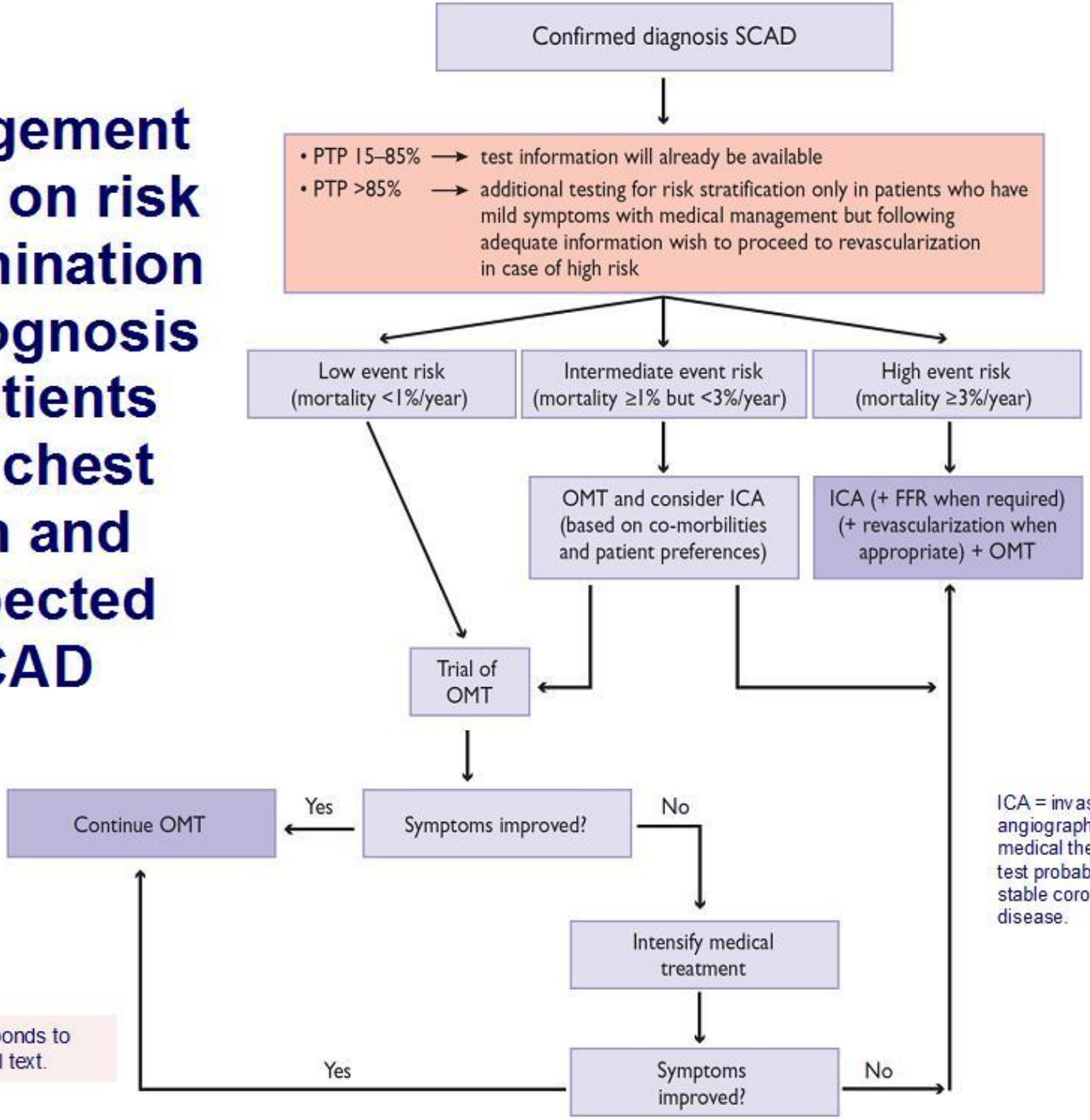


Figure W1 Duke Treadmill Score (DTS) for risk stratification in stable coronary artery disease patients.[40] Nomogram of the prognostic relations embodied in the DTS. Determination of prognosis proceeds in five steps. First, the observed amount of exercise-induced ST-segment deviation (the largest elevation or depression after resting changes have been subtracted) is marked on the line for ST-segment deviation during exercise. Second, the observed degree of angina during exercise is marked on the line for angina. Third, the marks for ST-segment deviation and degree of angina are connected with a straight edge. The point where this line intersects the ischaemia-reading line is noted. Fourth, the total number of minutes of exercise in treadmill testing according to the Bruce protocol (or the equivalent in multiples of resting oxygen consumption (METs) from an alternative protocol) is marked on the exercise-duration line. In countries where a bicycle ergometer is used one may—a rule of thumb—assume the following: 3 METS ~ 25W, 5 METS ~ 75W, 6-7 METS ~ 100W, 9 METS ~ 150W; 13 METS ~ 200W. Fifth, the mark for ischaemia is connected with that for exercise duration. The point at which this line intersects the line for prognosis indicates the 5-year survival rate and average annual mortality for patients with these characteristics.

ST depression, the metabolic equivalents (METs) achieved, and the clinical symptoms into the nomogram shown in *Figure W1* or a programme available at http://www.cardiology.org/tools/medcalc/duke/. This calculation will give a value for annual mortality, facilitating the decision on whether the patient is a high risk (annual mortality >3%) or not. This can be used for decision-making according to *Figure 3* in the main document.

Management based on risk determination for prognosis in patients with chest pain and suspected SCAD



ICA = invasive coronary angiography; OMT = optimal medical therapy; PTP = pre-test probability; SCAD = stable coronary artery disease.

This slide corresponds to Figure 3 in the full text.

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Pravděpodobnost ICHS

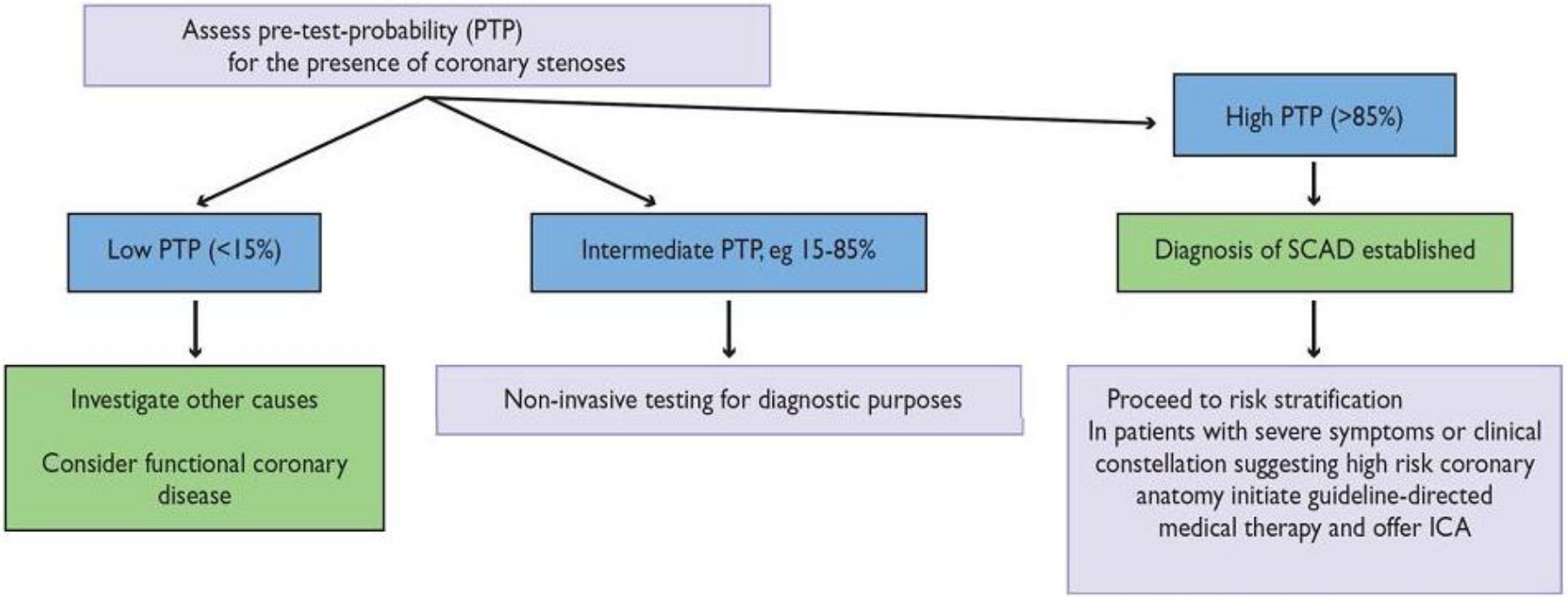
	Typical angina		Atypical angina		Non-anginal pain	
Age	Men	Women	Men	Women	Men	Women
30-39	59	28	29	10	18	5
40-49	69	37	38	14	25	8
50-59	77	47	49	20	34	12
60-69	84	58	59	28	44	17
70-79	89	68	69	37	54	24
>80	93	76	78	47	65	32

[a] Probabilities of obstructive coronary disease shown reflect the estimates for patients aged 35, 45, 55, 65, 75, and 85 years. This slide corresponds to Table 13 in the full text.

From: Genders TS, et al. Eur Heart J 2011;32:1316–1330.

Eur Heart J 2013;34:2949–3003. doi:10.1093/eurheartj/eht296

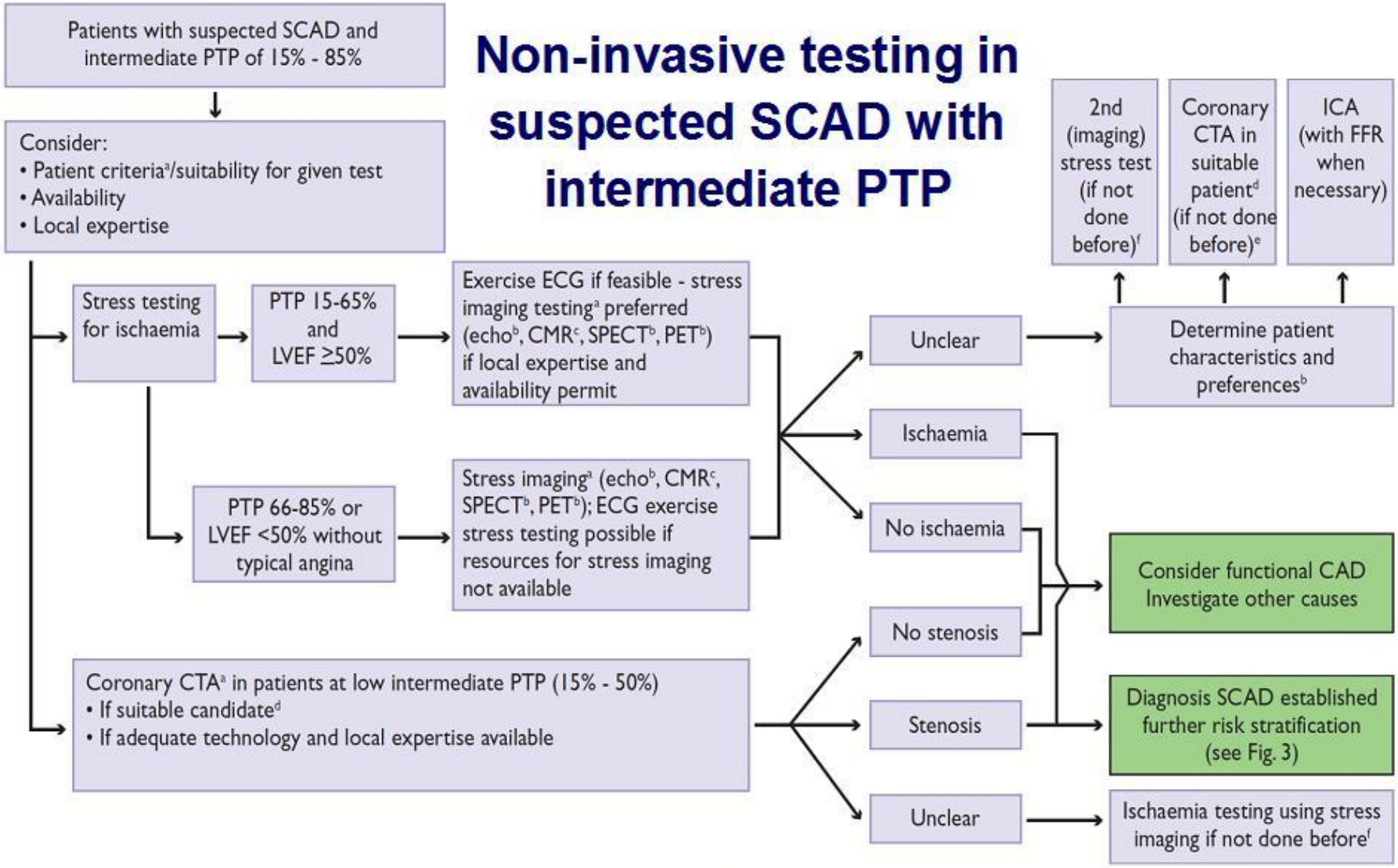
Pacient s anginou pectoris



This slide corresponds to Figure 1 in the full text
ICA = invasive coronary angiography.

Eur Heart J 2013;34:2949–3003. doi:10.1093/eurheartj/eht296

Non-invasive testing in suspected SCAD with intermediate PTP



a. Consider age of patient versus radiation exposure.
b. In patients unable to exercise use echo or SPECT/PET with pharmacologic stress instead.
c. CMR is only performed using pharmacologic stress.
d. Patient characteristics should make a fully diagnostic coronary CTA scan highly probable (see section 6.2.5.1.2) consider result to be unclear in patients with severe diffuse or focal calcification.
e. Proceed as in lower left coronary CTA box.
f. Proceed as in stress testing for ischaemia box.

This slide corresponds to Figure 2 in the full text.

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Radiální přístup

- Minimum komplikací
- Ambulantní
- Dobře dostupný