PCSK9 in patients with recent ACS

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Disclosure

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The NEW ENGLAND JOURNAL of MEDICINE

A HALF-CENTURY OF PROGRESS IN HEALTH: THE NATIONAL ACADEMY OF MEDICINE AT 50

Conquering Atherosclerotic Cardiovascular Disease — 50 Years of Progress

Gary H. Gibbons, M.D., Christine E. Seidman, M.D., and Eric J. Topol, M.D.

One of the most important biomedical success stories of the past half-century in the United States has been a 50% reduction in cardiovascular mortality. This progress reflects the

ROMA : 1850

ESC Congress 2019
together with World
Congress of Cardiology

31 August 2019
Paris - France

PARIS : 1450

Table 11 Recommendations for treatment goals for low-density lipoprotein-cholesterol

Recommendations	Class [a]	Level [b]	Ref [c]
In patients at VERY HIGH CV risk[d], an LDL-C goal of <1.8 mmol/L (70 mg/dL) or a reduction of at least 50% if the baseline LDL-C[e] is between 1.8 and 3.5 mmol/L (70 and 135 mg/dL) is recommended.	I	B	61, 62, 65, 68, 69, 128
In patients at HIGH CV risk[d], an LDL-C goal of <2.6 mmol/L (100 mg/dL), or a reduction of at least 50% if the baseline LDL-C[e] is between 2.6 and 5.2 mmol/L (100 and 200 mg/dL) is recommended.	I	B	65, 129
In subjects at LOW or MODERATE risk[d] an LDL-C goal of <3.0 mmol/L (<115 mg/dL) should be considered.	IIa	C	-

Recommendations for treatment goals for low-density lipoprotein cholesterol

Recommendations	Class[a]	Level[b]
In secondary prevention for patients at very-high risk,[c] an LDL-C reduction of ≥50% from baseline[d] and an LDL-C goal of <1.4 mmol/L (<55 mg/dL) are recommended.[33–35,119,120]	I	A
In primary prevention for individuals at very-high risk but without FH,[c] an LDL-C reduction of ≥50% from baseline[d] and an LDL-C goal of <1.4 mmol/L (<55 mg/dL) are recommended.[34–36]	I	C
In primary prevention for individuals with FH at very-high risk, an LDL-C reduction of ≥50% from baseline and an LDL-C goal of <1.4 mmol/L (<55 mg/dL) should be considered.	IIa	C
For patients with ASCVD who experience a second vascular event within 2 years (not necessarily of the same type as the first event) while taking maximally tolerated statin-based therapy, an LDL-C goal of <1.0 mmol/L (<40 mg/dL) may be considered.[119,120]	IIb	B
In patients at high risk,[c] an LDL-C reduction of ≥50% from baseline[d] and an LDL-C goal of <1.8 mmol/L (<70 mg/dL) are recommended.[34,35]	I	A
In individuals at moderate risk,[c] an LDL-C goal of <2.6 mmol/L (<100 mg/dL) should be considered.[34]	IIa	A
In individuals at low risk,[c] an LDL-C goal <3.0 mmol/L (<116 mg/dL) may be considered.[36]	IIb	A

Catapano AL, et al. Eur Heart J. 2016 Oct 14;37(39):2999-3058.

Eur Heart J. 2020 Jan 1;41(1):111-188. doi: 10.1093/eurheartj/ehz455.

ROMA : 1850

LDL-C <1.8 mmol/L

Statin Infantry

ESC Congress 2019
together with World
Congress of Cardiology

31 August 2019
Paris - France

PARIS : 1450

Statin
(Infantry)

LDL-C <1.4 mmol/L

LDL-C <1.0 mmol/L

Ezetimibe
(Archer)

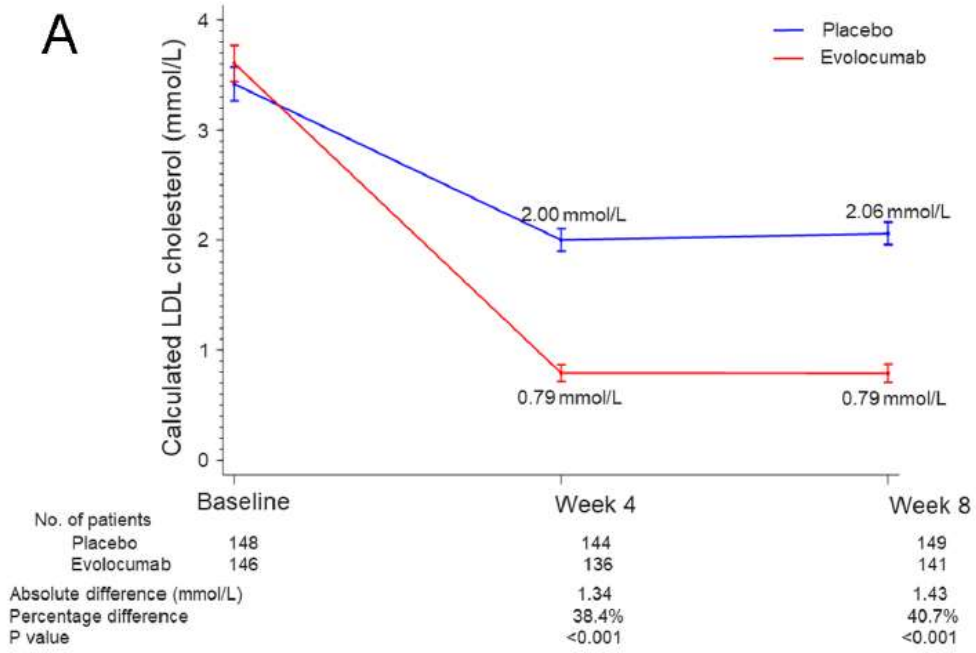
PCSK9
(Cavalryman)

For ACS, not only use combined therapy, but also do it earlier

EVOPACS: ACS 1-3 day

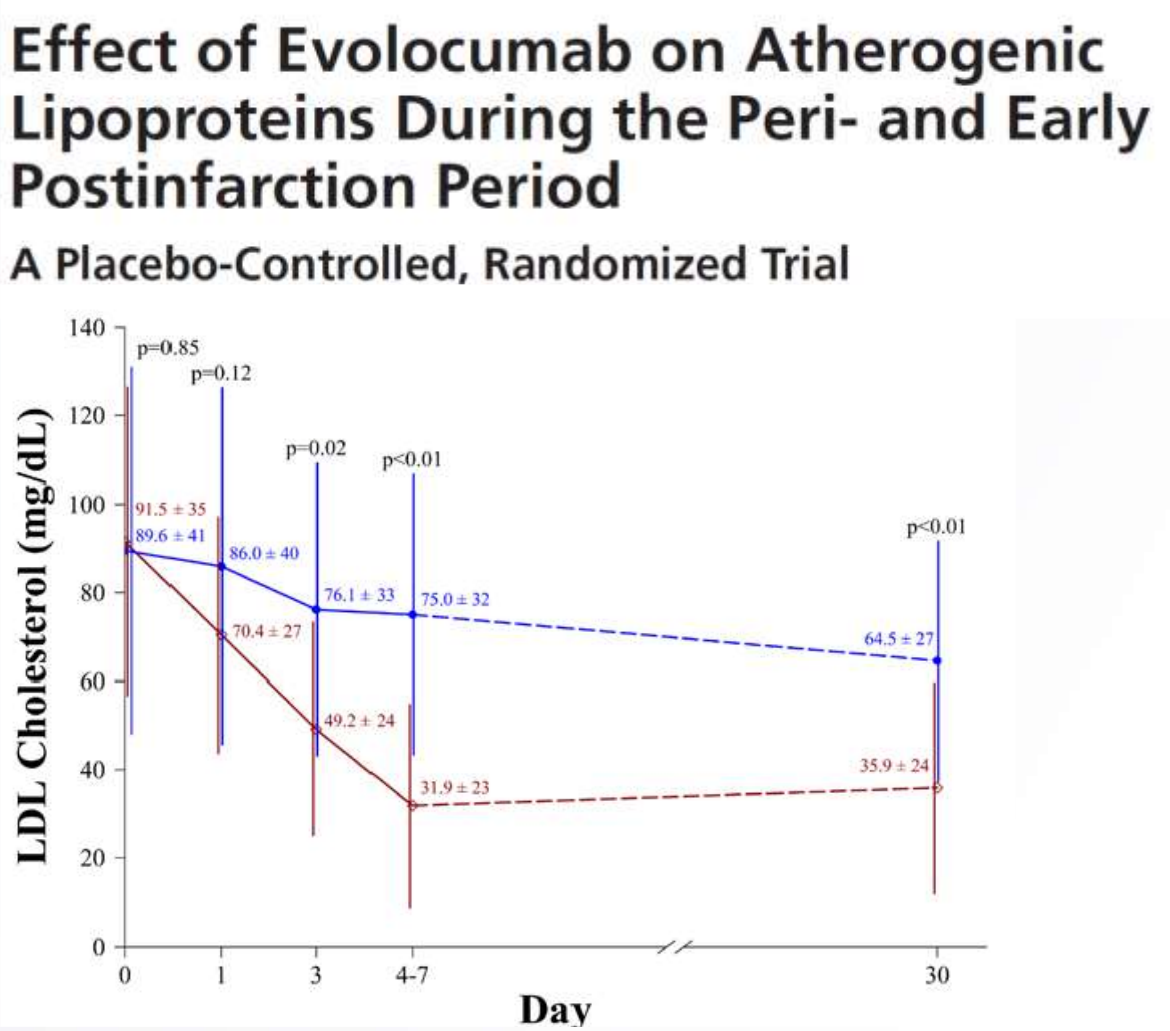
Evolocumab for Early Reduction of LDL-Cholesterol Levels in Patients with Acute Coronary Syndromes (EVOPACS)

Konstantinos C. Koskinas, MD, MSc, Stephan Windecker, MD, Giovanni Pedrazzini, MD, Christian Mueller, MD, Stéphane Cook, MD, Christian M. Matter, MD, Olivier Muller, MD, Jonas Häner, MD, Baris Gencer, MD, Carmela Crljenica, MD, Poorya Amini, PhD, Olga Deckarm, MD, Juan F. Iglesias, MD, Lorenz Räber, MD, PhD, Dik Heg, PhD, François Mach, MD



J Am Coll Cardiol. 2019 Nov 19;74(20):2452-2462.

EVACS: NSTEMI 24 hour



Circulation. 2020;142:419–421.

1

Case 1

Case 1

Male 35y

CC: Chest pain for 8 hours.

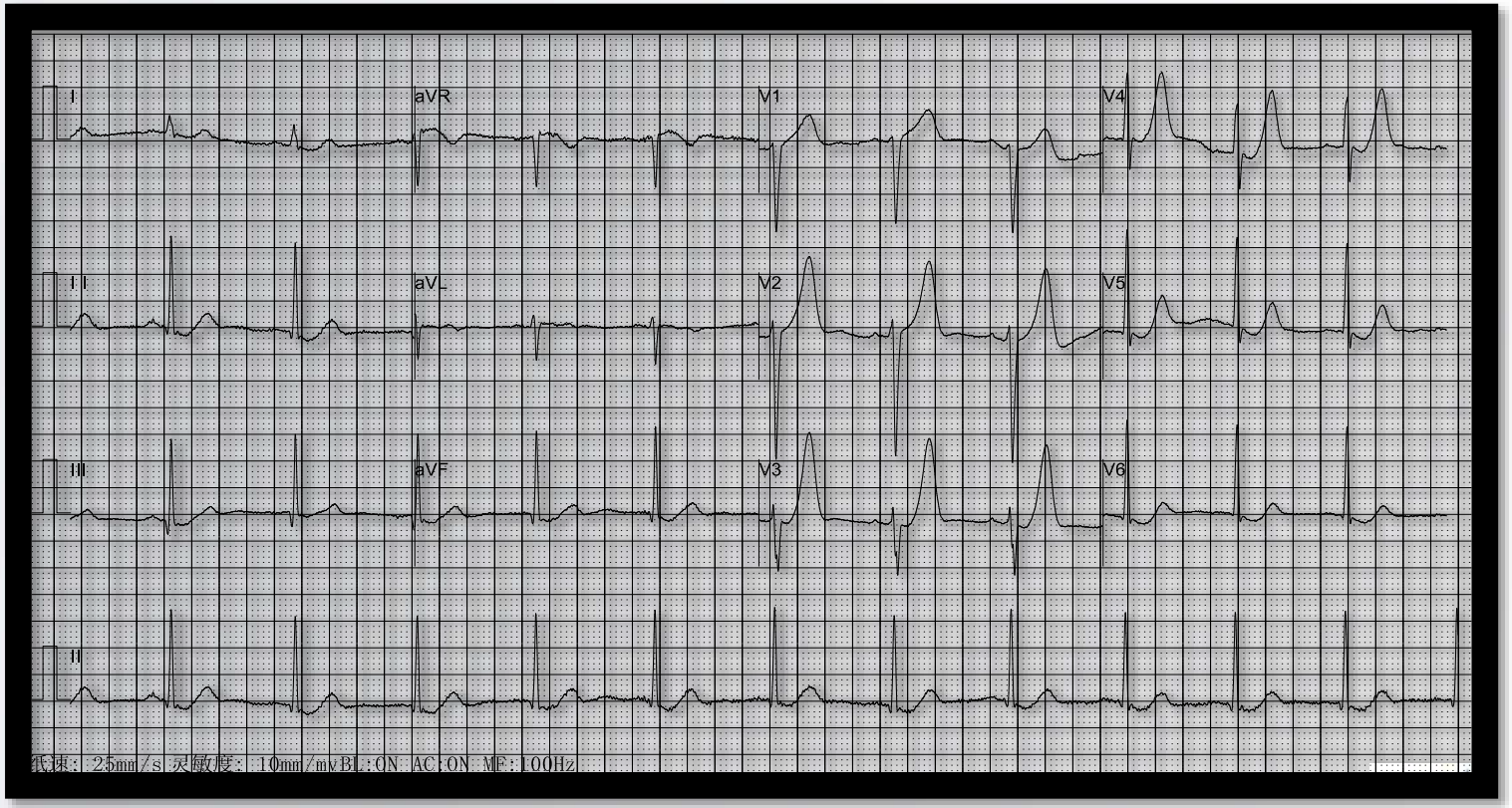
CV risk factors: Smoking.

Diagnosis:
#1 Acute Coronary Syndrome (STEMI, Killip Class I)

Treatment:
None.

Case 1

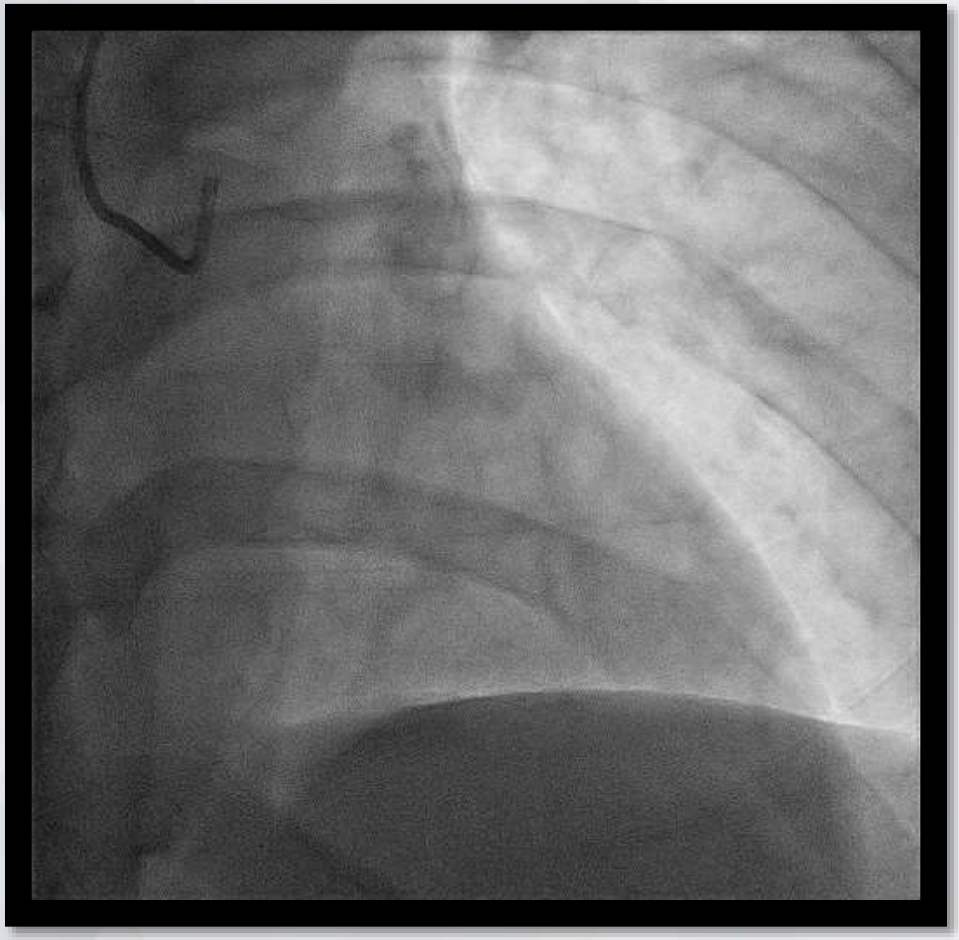
	2019.5.13
cTNI, ng/mL	9.33
MYO, ng/mL	92.3
CK-MB, ng/mL	136.8
Pro-BNP, pg/mL	449
TC, mmol/L	7.80
LDL-C, mmol/L	6.78
ALT, U/L	25
AST, U/L	33
Creatinine, umol/L	72

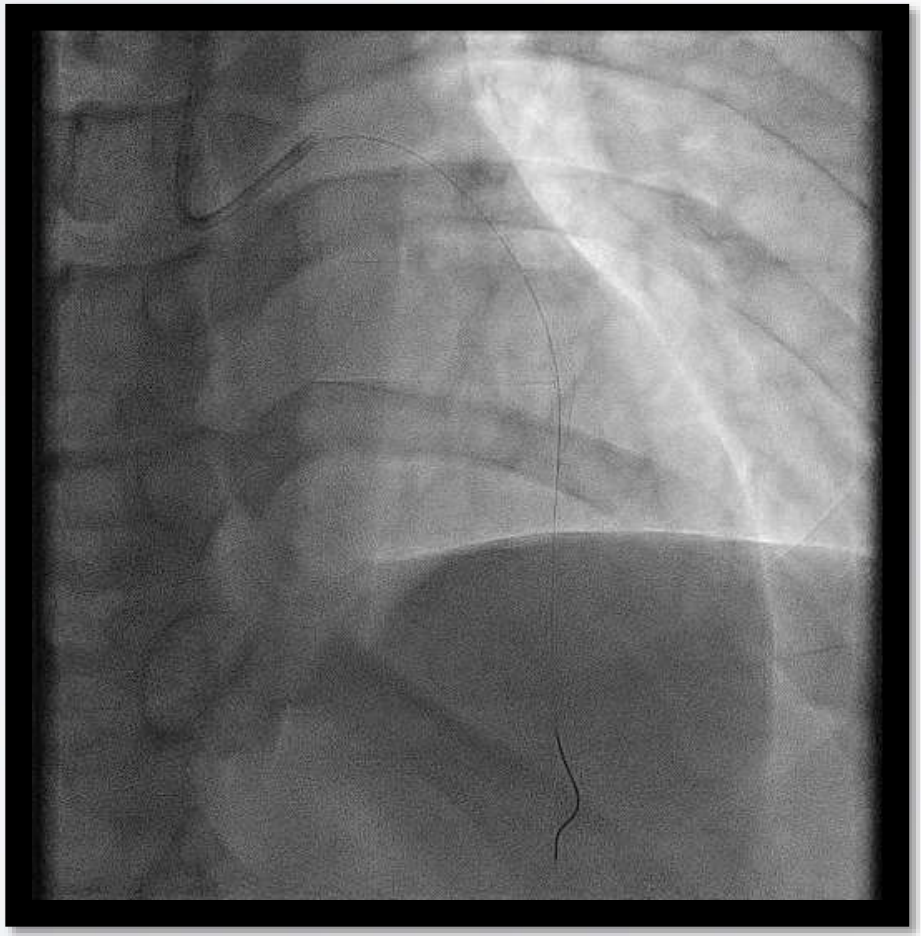


EKG（2019.5.13）：V1-V3 ST-segment elevation and peaked T wave； II,III,aVF,V4-V6 ST-segment depression

Case 1

CAG+PCI（2019.5.13）：LAD acute total occlusion, RCA/LCX normal. Thrombectomy and primary PCI for LAD.





Case 1

Very high-risk patient

Baseline LDL-C	Estimated drop	Target LDL-C
6.78	79.4%	1.4

Atorvastatin 20mg qn
Ezetemib 10mg qd
Evolocumab 140mg sc q2w

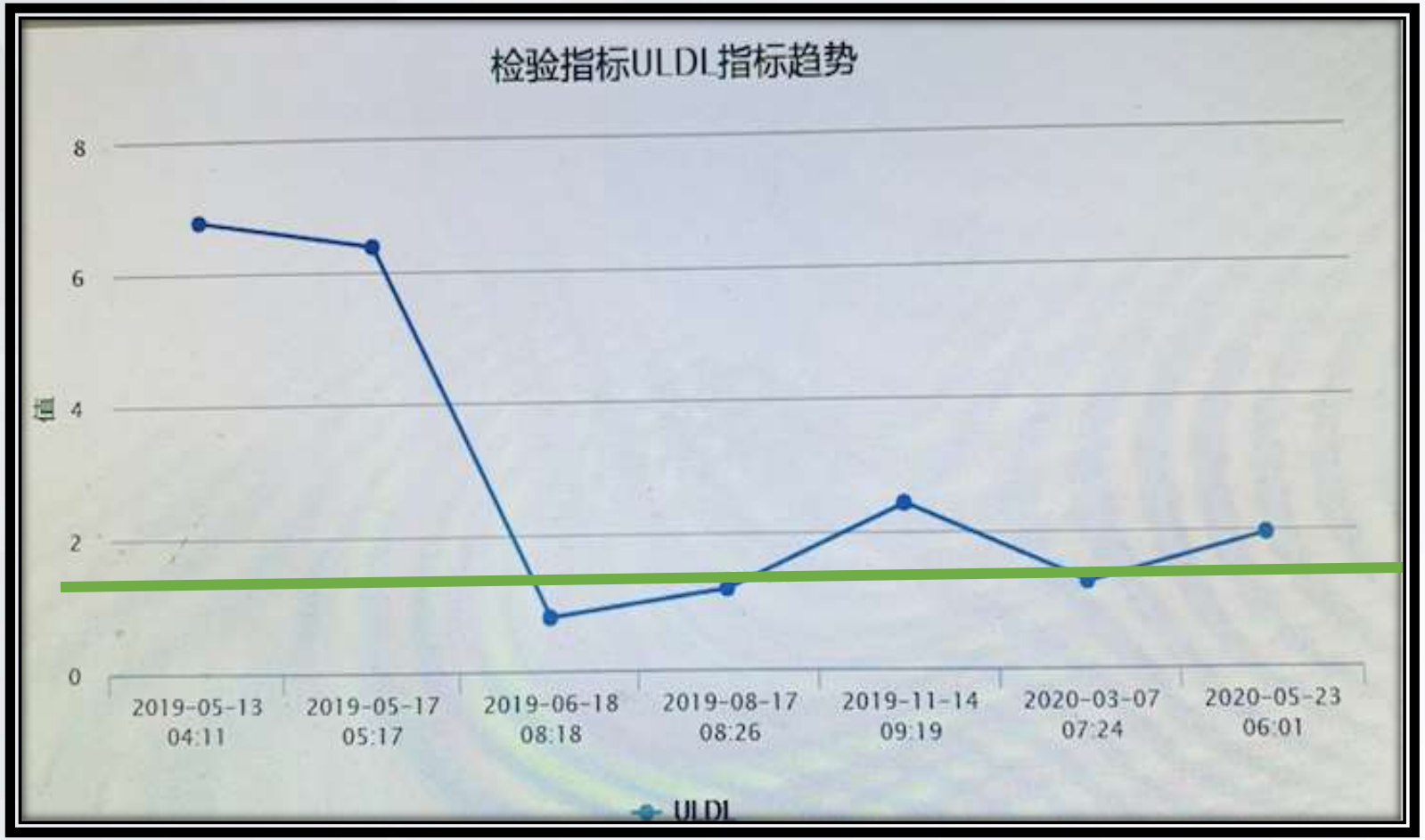
Intensity of lipid lowering treatment

Treatment	Average LDL-C reduction
Moderate intensity statin	≈ 30%
High intensity statin	≈ 50%
High intensity statin plus ezetimibe	≈ 65%
PCSK9 inhibitor	≈ 60%
PCSK9 inhibitor plus high intensity statin	≈ 75%
PCSK9 inhibitor plus high intensity statin plus ezetimibe	≈ 85%

PCSK9 first shot was given within 24-hour from the onset of STEMI.

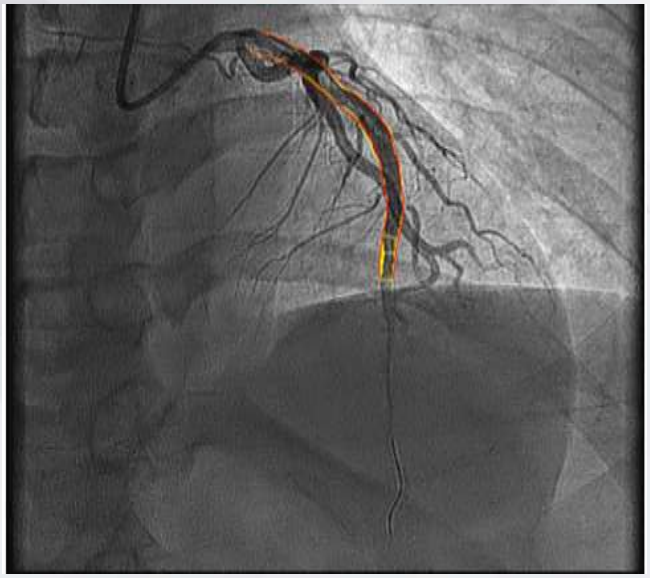
Eur Heart J. 2020 Jan 1;41(1):111-188. doi: 10.1093/eurheartj/ehz455.

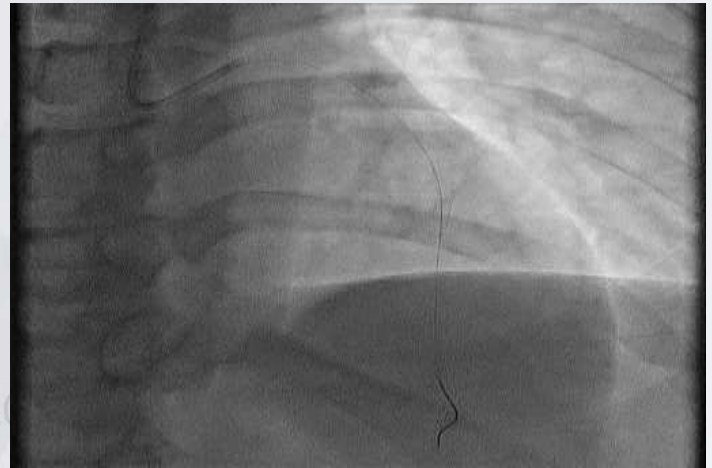
Case 1


检验指标ULDL指标趋势
8
6
4
2
0
值
2019-05-13 04:11
2019-05-17 05:17
2019-06-18 08:18
2019-08-17 08:26
2019-11-14 09:19
2020-03-07 07:24
2020-05-23 06:01
ULDL

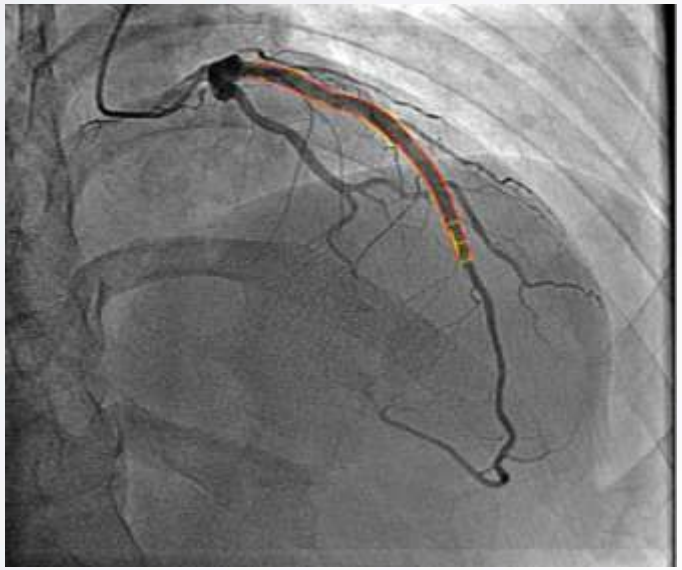
Case 1

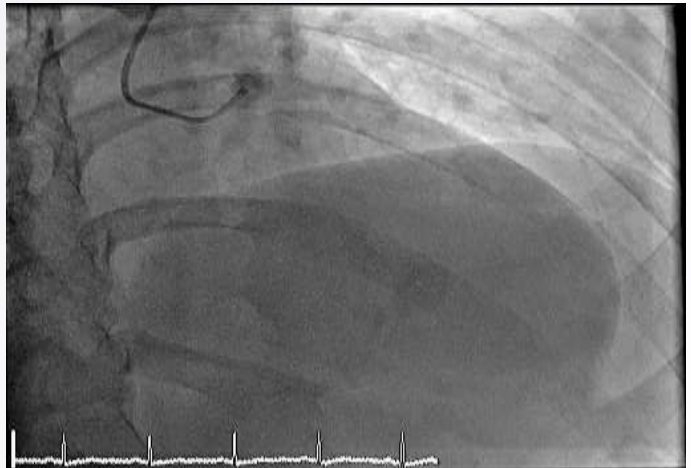
2019.5.13 QCA analysis after pPCI
mLAD stenosis rate 32.14%





2020.6.12 QCA analysis
mLAD stenosis rate 16.68%





2

病例2

Case 2

Male 55y

Height: 180cm, Weight: 103 kg, BMI: 31.8 kg/m^2

CC: Chest pain for 6 hours.

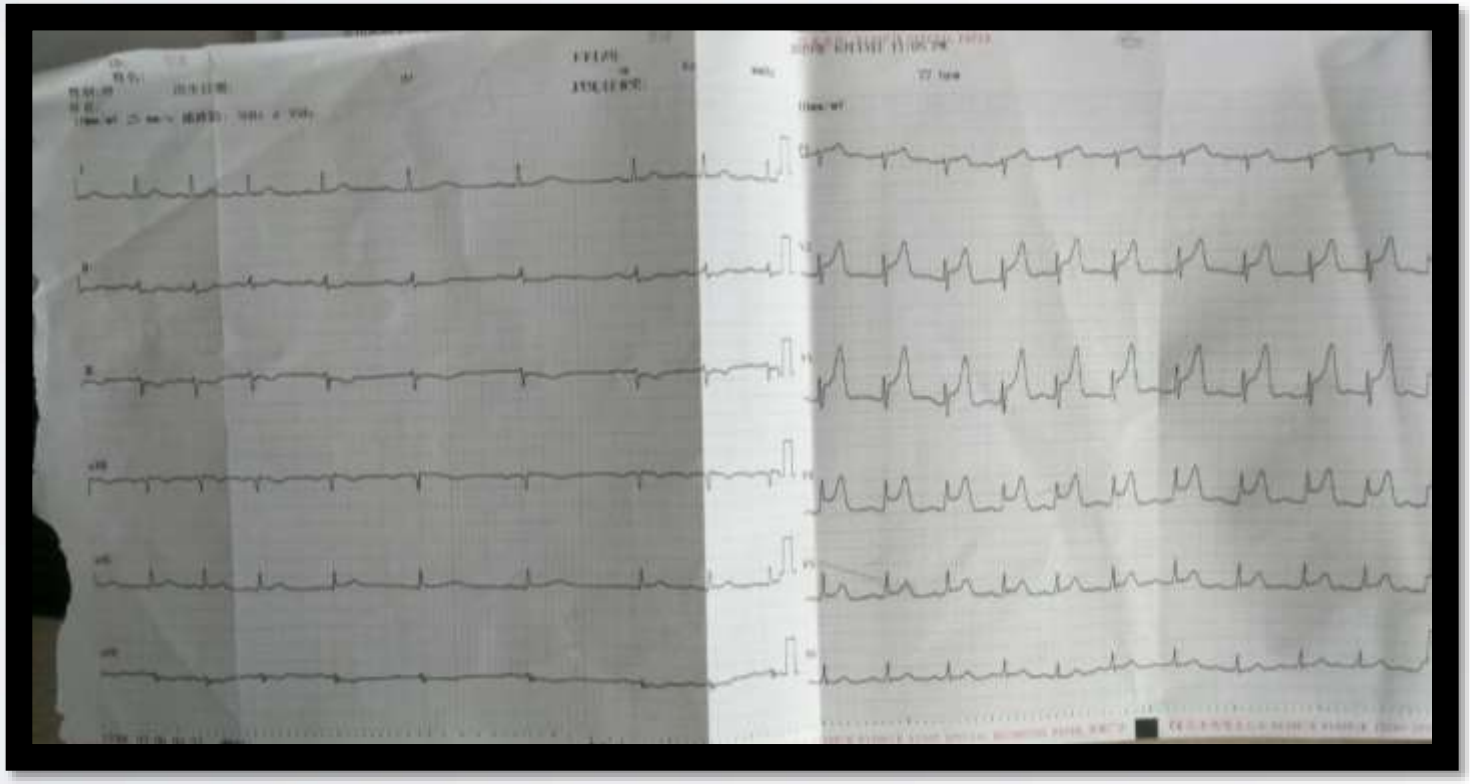
CV risk factors: Smoking, Obesity, Hypertension, Family history of CVD

Diagnosis:
#1 Acute Coronary Syndrome (STEMI, Killip Class I)
#2 Hypertension (Grade 3, very high risk)
#3 Previous Ischemic Stroke

Treatment:
Aspirin 100mg qd; Amlodipine 5mg qd; Statin only for a short period

Case 2

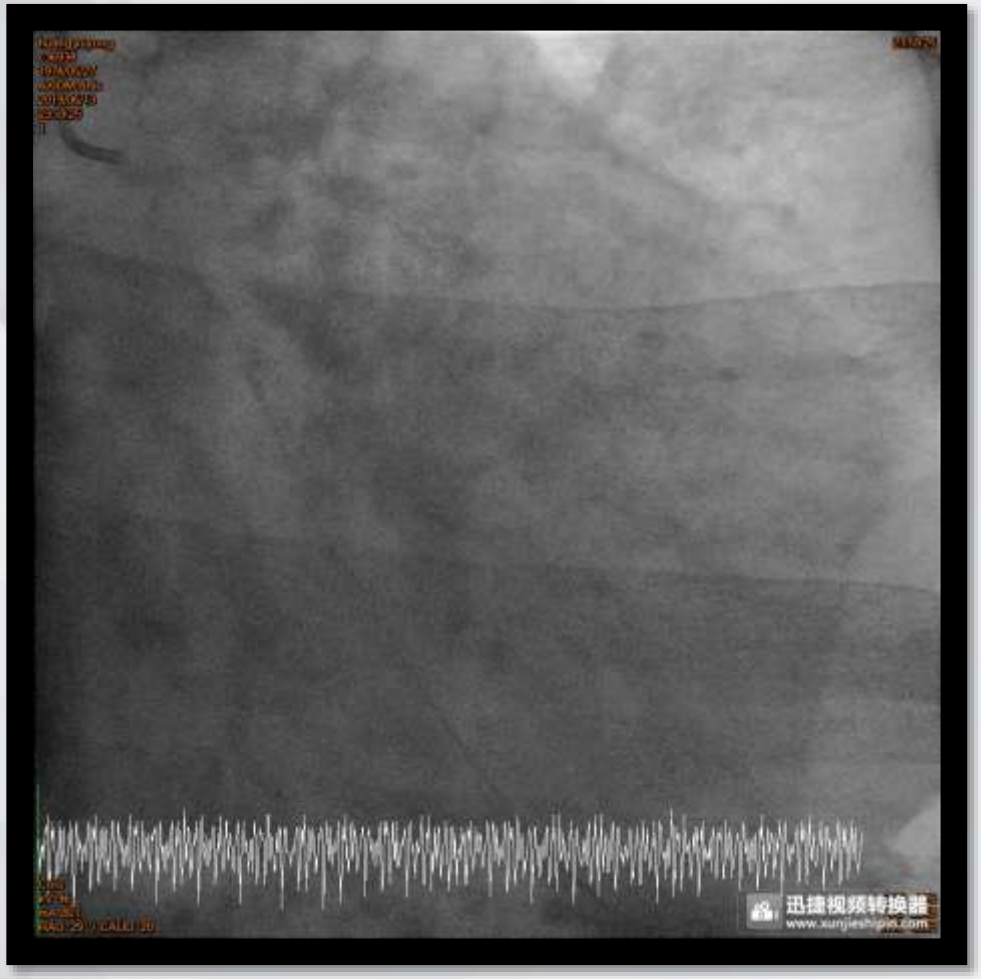
	2019.6.13
cTNT, ng/mL	0.045
MYO, ng/mL	84.2
CK-MB, ng/mL	6.5
Pro-BNP, pg/mL	289
TC, mmol/L	4.78
LDL-C, mmol/L	2.86
ALT, U/L	26
AST, U/L	34
Creatinine, umol/L	79



EKG（2019.6.13）：V1-V5 ST-segment elevation and peaked T wave； II,III,aVF ST-segment depression

Case 2

CAG+PCI（2019.6.13）：LAD acute total occlusion, RCA/LCX CTO with collateral branch. Primary PCI for LAD.



Case 2

Very high-risk patient

Baseline LDL-C	Estimated drop	Target LDL-C
2.86	65.0%	1.0

Atorvastatin 20mg qn

Evolocumab 140mg sc q2w

Intensity of lipid lowering treatment

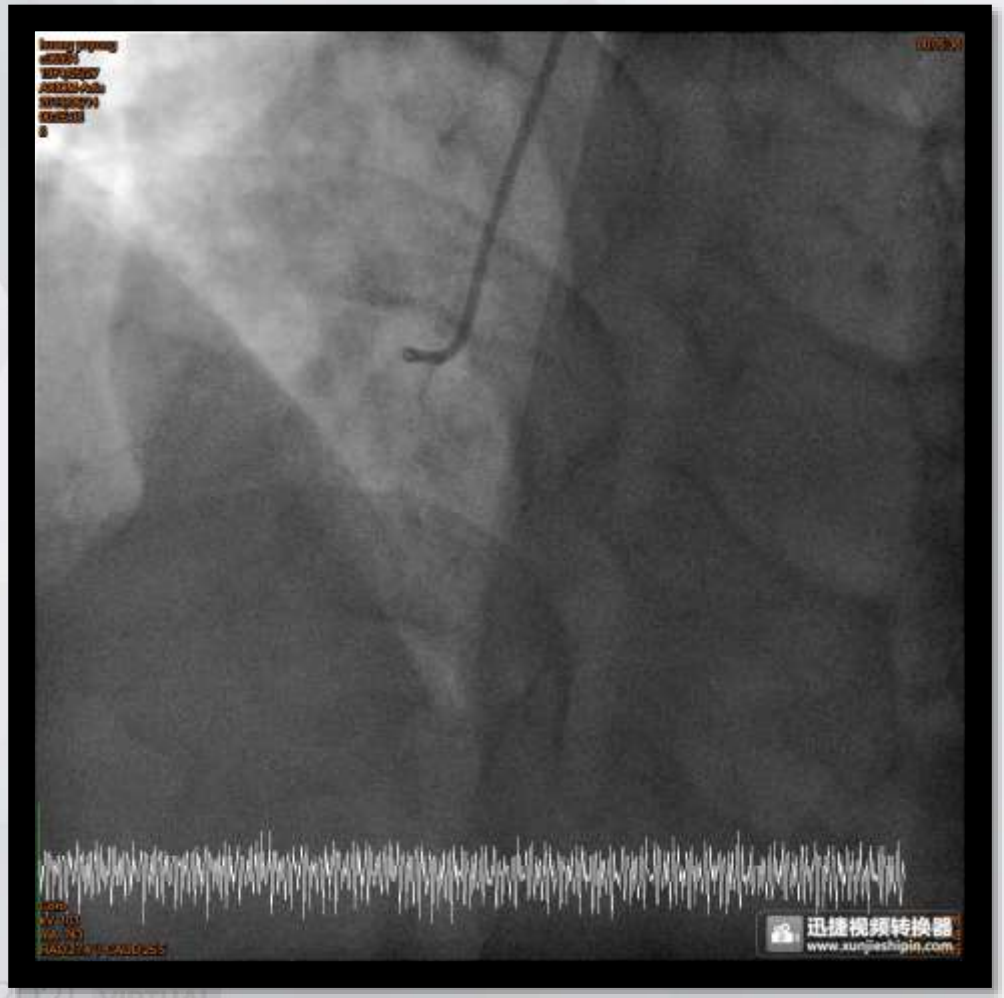
Treatment	Average LDL-C reduction
Moderate intensity statin	≈ 30%
High intensity statin	≈ 50%
High intensity statin plus ezetimibe	≈ 65%
PCSK9 inhibitor	≈ 60%
PCSK9 inhibitor plus high intensity statin	≈ 75%
PCSK9 inhibitor plus high intensity statin plus ezetimibe	≈ 85%

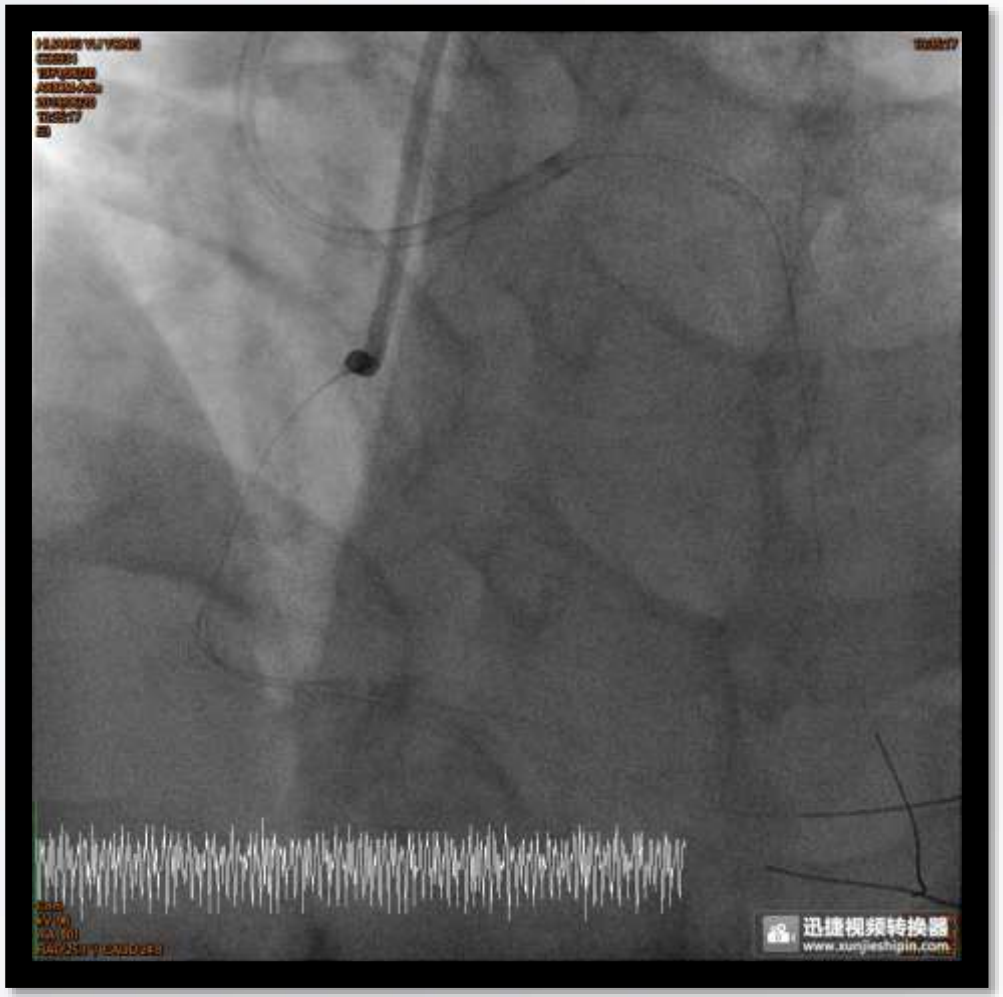
PCSK9 first shot was given within 24-hour from the onset of STEMI.

Eur Heart J. 2020 Jan 1;41(1):111-188. doi: 10.1093/eurheartj/ehz455.

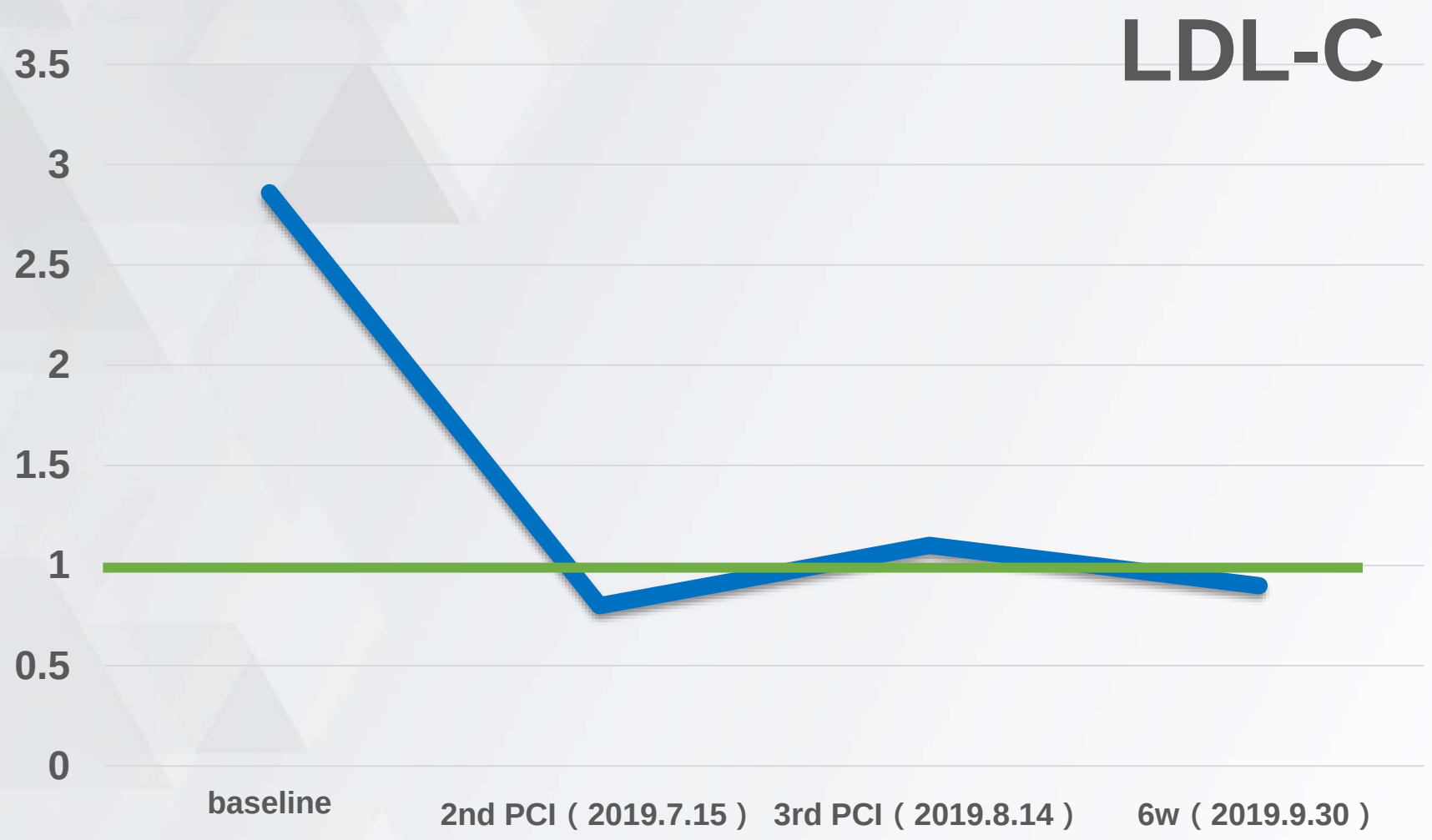
Case 2

2019.7.15 RCA CTO, Antegrade; 2019.8.14 LCX CTO Antegrade;





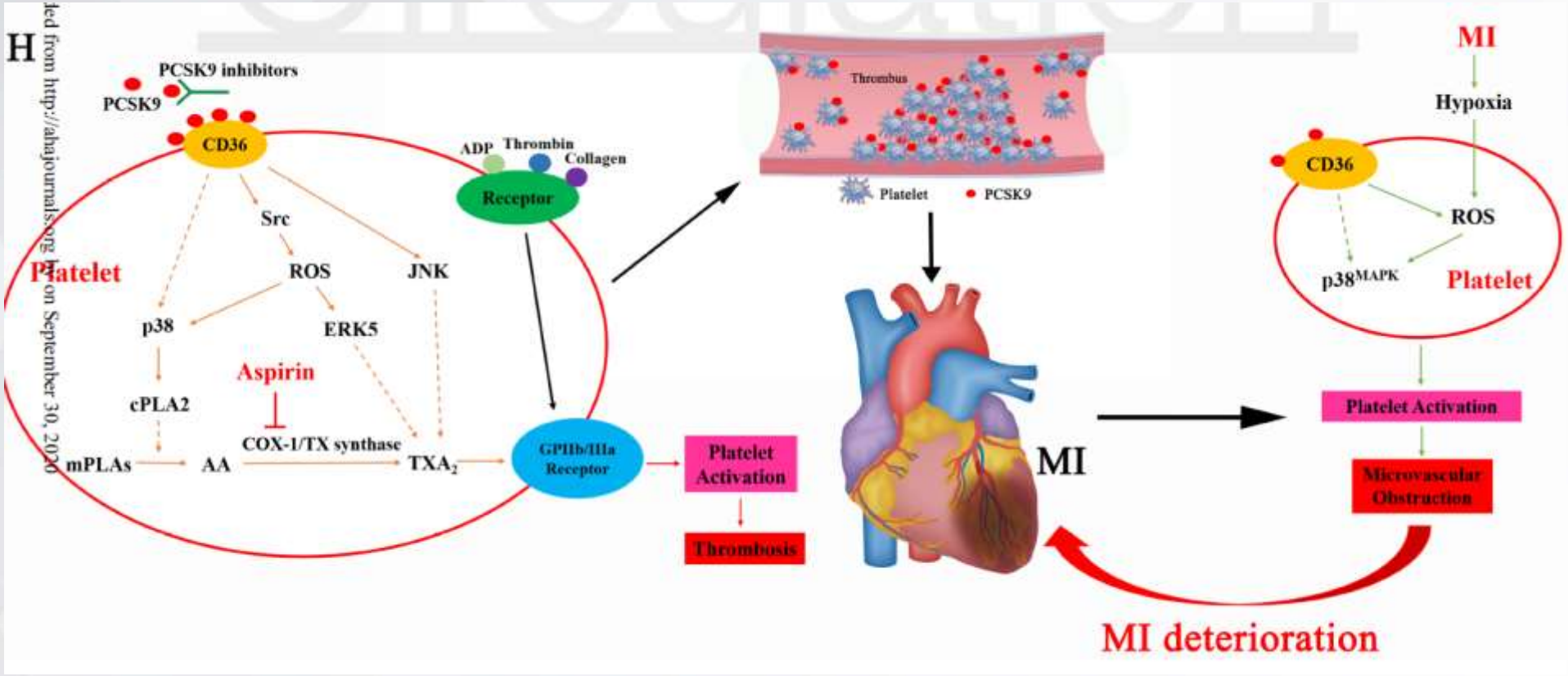
Case 2


LDL-C
3.5
3
2.5
2
1.5
1
0.5
0
baseline
2nd PCI (2019.7.15)
3rd PCI (2019.8.14)
6w (2019.9.30)

PCSK9 Enhances Platelet Activation, Thrombosis, and Myocardial Infarct Expansion by Binding to Platelet CD36

Running Title: *Qi et al.; PCSK9 Enhances Platelet Activation*

Zhiyong Qi, MD[1]; Liang Hu, PhD[2]; Jianjun Zhang, MD, PhD[3]; Wenlong Yang, MD[1]; Xin Liu, MD[4]; Daile Jia, MD[1]; Zhifeng Yao, MD[1]; Lin Chang, PhD[3]; Guanxing Pan, BS[3]; Haoxuan Zhong, MD[5]; Xinping Luo, MD, PhD[5]; Kang Yao, MD[1]; Aijun Sun, MD[1]; Juying Qian, MD[1]; Zhongren Ding, MD, PhD[2,3*]; Junbo Ge, MD[1*]



Circulation. 2021 Jan 5;143(1):45-61.

Impact of Early PCSK inhibitor on Heart after Acute Myocardial Infarction: the PERFECT-AMI study (NCT04731155)

Patients: AMI patients (18~80y) with LAD as culprit vessel after successful PCI

Intervention: PCSK9 sc immediately after pPCI

Control: Standard therapy

Outcome: Myocardial salvage index and LVEF measured by MRI

Setting: a pilot study, prospective, randomized, single-blinded, multi-center

Time: 1-week and 3-month follow-up

THANKS FOR YOUR ATTENTION!