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Newly diagnosed ventricular mural thrombus in patient with chronic left ventricular aneurysm after myocardial infarction

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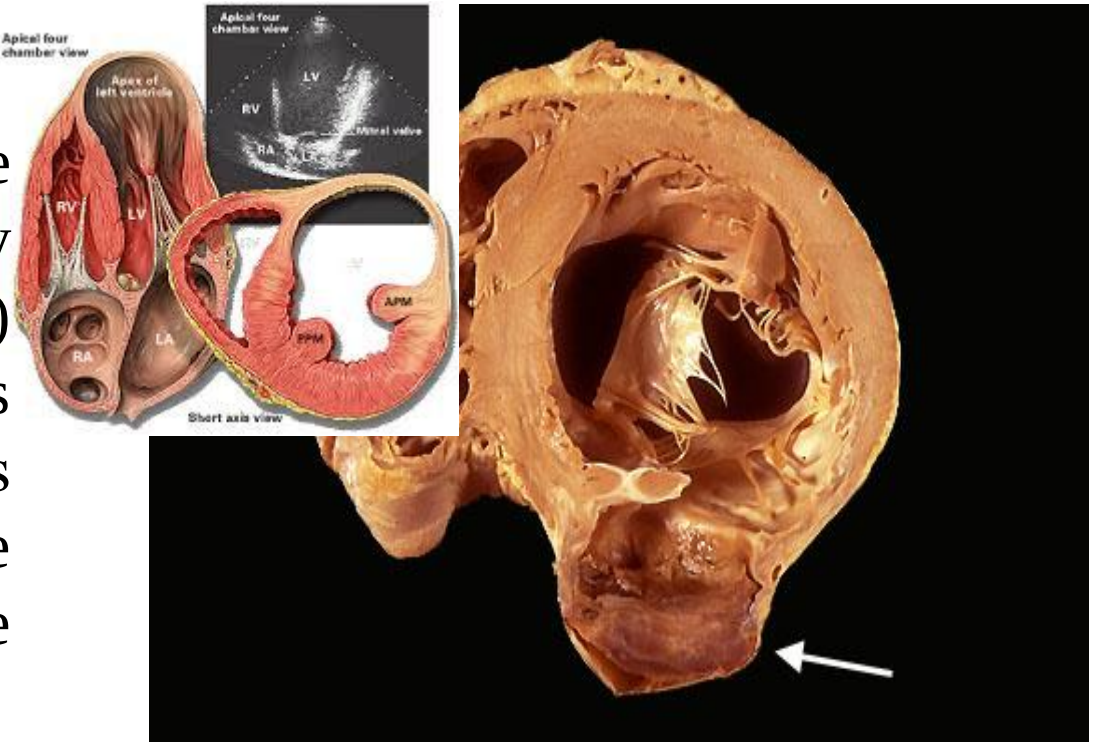
Left ventricular aneurysm (LVA) is defined as a localized area of myocardium with abnormal outward bulging and deformation during both systole and diastole. The rate of LVAs after AMI is approximately 3-15%.

LV thrombi are predominantly a complication of nonreperfused anterior wall STEMI, usually associated with prominent Q waves in the anterior electrocardiographic leads and anterior wall akinesia or dyskinesia on echocardiography.

One of the most feared complications is the occurrence of thromboembolic events (mostly cerebrovascular accidents) due to left ventricular (LV) thrombus formation. The risk of LV thrombus formation is highest during the first 3 months following acute myocardial infarction, but the potential for cerebral emboli persists in the large population of patients with chronic LV dysfunction.



https://emedicine.medscape.com/article/164924-overview#a10

OUR PATIENT

- Patient K.V.S.
- male
- 72 y. old
- on pension
- city resident

COMPLAINTS

- Anxiety
- General weakness
- Trembling inside
- Palpitation periodically
- Dyspnea and chest pain exertional in nature (mild activity)

ANAMNESIS MORBI

- Arterial hypertension and CAD diagnosis were established 20 years ago.
- Blood pressure levels usual are 170/90-100, receives constant therapy with ACE inhibitors
- 1993 – history of MI.
- Constant therapy with aspirin 75 mg/day around 5 years long
- Felt worse 3 days before hospitalization, when appeared palpitation, trembling inside and anxiety, increased general weakness
- Was administered by ambulance in cardiology department of 25 city hospital

ANAMNESIS VITAE

- Hereditary diseases are not identified
- Allergic history is burdened: penicillin reaction
- Childhood infections - no
- Sexually transmitted diseases were denied
- Smoker - no, do not abuse alcohol
- CV disease family history: nothing

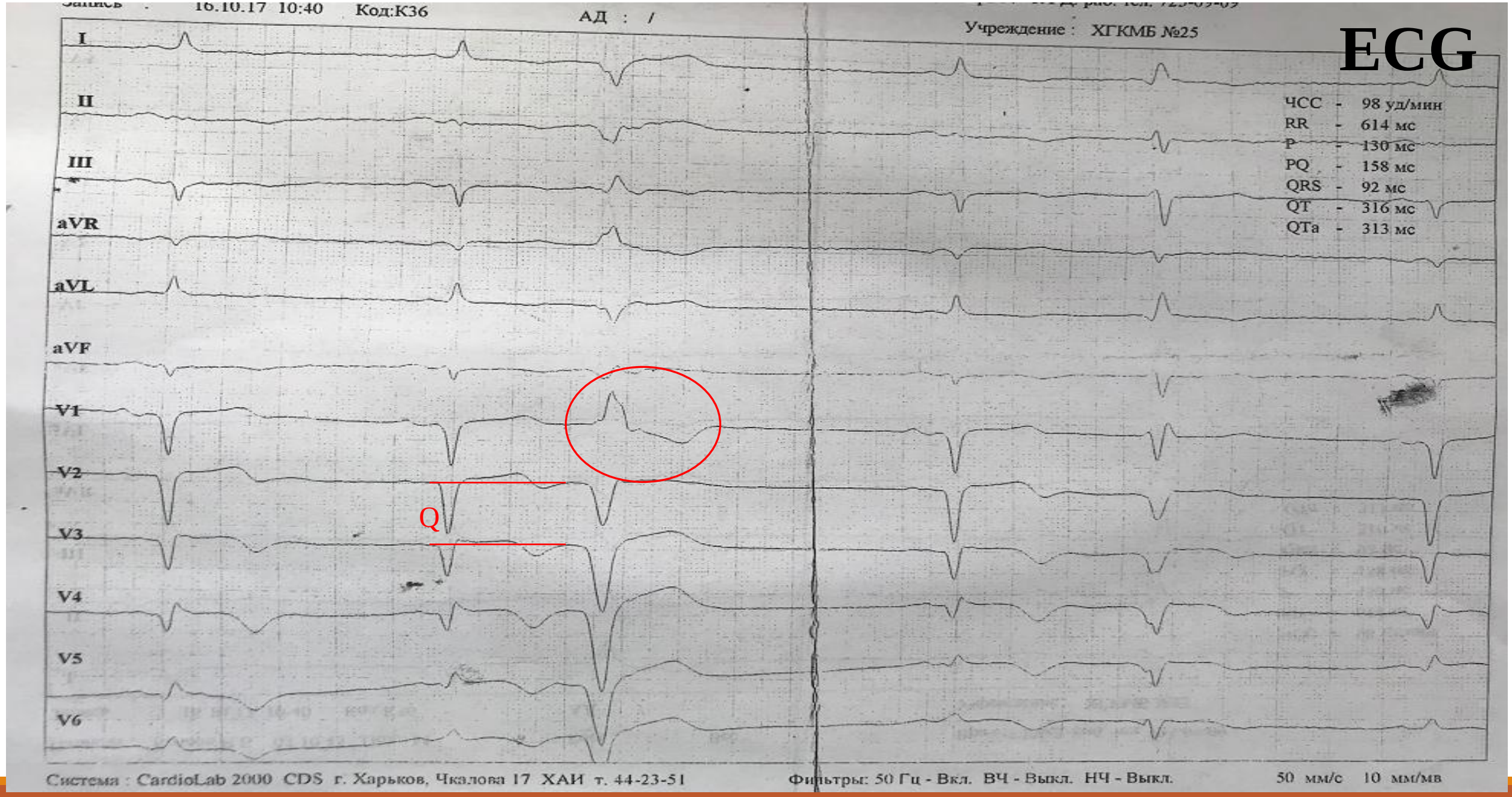
OBJECTIVE STATUS

- Conciseness - clear, state – moderate severe, body position - active
- Patient can orientate himself in place, time, his personality
- Pale skin and mucosae
- Thyroid: not enlarged, soft
- Musculoskeletal system – no changes
- BR – 16-18 /min
- Lung percussion: no clinically significant changes
- Lung auscultation: hard breathing
- Borders of the heart: left border – outside of midclavicular left line on 2 cm
- Heart auscultation: arrhythmic, extrasystoles 2-3 in min, heart tones – muffled, diastolic soft murmur over apex.
- Pulse – arrhythmic, 76 bts/min
- BP 145 / 80 mm Hg
- Abdomen: normal size, symmetric, unpainful
- Liver: normal size, no pain during palpation in right hypochondrium
- Spleen: normal
- Pasternatsky symptom – negative from both sides
- Edemas: absent

BLOOD COUNT

	09/10/17	Normal Range
Hemoglobin, g/l	164	130 – 160
Red blood cells, 1012	4.81	4.0 – 5.0
Ht	47%	40-48%
White blood cells, 109	4,4	4 - 9
ESR, mm/h	8	1 -10
Bands	3%	1.06 – 6%
Segments	71%	47 – 72%
Eosinophils	2%	0.5 – 5%
Monocytes	3%	0.1 – 3%
Lymphocytes	21%	19 – 37 %
Platelets	264,6	180-320

Conclusion: no clinically important changes



Conclusion: sinus rhythm, HR 98 bts, ventricular extrasystolic arrhythmia, ST-elevation in antero-lateral leads without dynamics

BIOCHEMISTRY TEST DATA

	Patient's ranges,	N
Glucose, mmol/l	6.1	3.38 – 5.55
Total bilirubin, mkmol/l	21,4	8,6 – 25,5
AST, mkmol/h*ml	0,80	0,1-0,445
ALT, mkmol/h*ml	0,98	0,1-0,68
Protrombin index, %	91	85-105
Creatinine, mkmol/l	92	80 – 115
K, mmol/l	5	3,5-5,1
Mg, mmol/l	0,9	0,7-0,99
Na, mmol/l	142	135-145

Conclusion: liver cytolysis as long term aspirin treatment side-effect

LIPID PROFILE

	Patient's ranges,	N
Total cholesterol, mmol/l	6.03	< 5.2
VLDL, mmol/l	0.12	< 1.0
LDL, mmol/l	4,19	< 3.5
TAG, mmol/l	0,77	< 2.3
HDL, mmol/l	1,49	≥ 0.9
Index of atherogenicity	3.37	< 3.0

Conclusion: dyslipidaemia

HEART ULTRASOUND

Aorta: dilated, cuspids are thickened. Ascending aorta – d 38 (20-37mm). Aortic regurgitation I degree.
Tricuspid valve – no regurgitation. Pulmonary trunk valve – no regurgitation. Pressure in pulmonary trunk is 19,0 mm Hg (< 15). Mitral valve – cuspids are moderately thickened, movements of leaflets is in different direction, anterior cuspid in left atrium cavity during systole, regurgitation II degree.
EF – 36% (N - 55 – 78%). FS – 41% (N - 28 – 44%).
Left Ventricle:
FDD – 53 mm (N – 35 – 55mm)
FSD – 42 mm (N – 23 – 38 mm)
Posterior wall thickness in systole– 12,2 mm (N – 6 – 13mm).
Intraventricular septum size in diastole– 6,0 mm (6 – 11 mm)
Additional chorda in LV cavity. In LV cavity situated round shape parietal thrombus 27*29 mm.
Right Ventricle:
Diameter – 28,1 mm (N – 9 – 26 mm)
Wall thickness – 6,0 mm (N – 3 - 6 mm).
Left atrium – enlarged – 44,1 mm in diameter (N – till 38 mm)
Right atrium – not enlarged, 36 mm(N – 25-37). Interatrial septum – not changed, no defects.

Conclusion: Sclerotic changes of aorta. Aortic regurgitation I degree. Mitral regurgitation II degree. Akinesia of LV apical segments and intraventricular septum with systolic dysfunction of LV. Moderate dilation of left atrium. Chronic LV aneurism with mural thrombus (27*29 mm).

COMPLETE DIAGNOSIS of our patient is:

- Coronary Artery Disease: stable angina III functional class, postinfarction cardiosclerosis (1993). Chronic heart aneurism with mural thrombus.
- Mitral regurgitation II degree, aortic regurgitation I degree.
- Arterial Hypertension III degree, III stage, very high risk.
- Ventricular extrasystolic arrhythmia.
- HAS-BLED Score -3 points.
- Chronic Heart Failure IIIC stage with left ventricle systolic dysfunction (EF – 36%), III functional class by NYHA.

MEDICATIONS PRESCRIBED IN HOSPITAL

- perindopril 4 mg 1 time\day from admission
- nebivolol 2,5 mg 1 time/day from admission
- rosurvastatin 10 mg 1 time a day from admission
- aspirin 100 mg 1 time daily from admission
- fondaparinux 2,5 mg subcutaneously from admission
- tiotriazolin (metabolic) 4,0 ml IV 1 time\day from admission

OUR RECOMMENDATIONS:

- Lifestyle interventions and risk factor control (BP control, diet, alcohol, and weight control, adherence to treatment)
- An ACE-blockers is recommended and should be up-titrated to the maximum tolerated dose, in addition to a beta-blocker, for symptomatic patients with CHF with reduced ejection fraction (HFrEF) to reduce the risk of HF hospitalization and death.
- A beta-blocker is recommended initially at a low dose with gradually up-titration to the maximum tolerated dose, in addition an ACE-Id or ARB if ACEIb is not tolerated or contraindicated, for patients with stable, symptomatic HFrEF to reduce the risk of HF hospitalization and death. Beta-blockers are also effective agents for angina control in our patient's case.
- Continuous rosurvastatin 10 mg treatment as the benefits of statins in secondary prevention have been demonstrated.
- Our pt has moderate risk for major bleeding if aspirin therapy will not be continued, presence of LV protruding thrombus as the risk factor of systemic embolisation and the protective effect of mitral regurgitation present so aspirin therapy can be switched to warfarin therapy with INR control for better further thromboembolism prevention
- Mineralocorticoid/aldosterone receptor antagonists are recommended in all symptomatic patients (despite treatment with an ACEI and a beta-blocker) with HFrEF and LVEF ≤35%. Can be avoided in our patient case as EF is 36%, but used as AH treatment as needed.

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CONCLUSION

Ischemic LV Aneurysm and Anticoagulation: Is It the Clot or the Plot That Needs Thinning?

From one hand, for mural thrombi, once diagnosed, oral anticoagulant therapy is a matter of discussion with a low level of evidence and recommended being guided by repeated echocardiography and with consideration of bleeding risk and need for concomitant antiplatelet therapy. In other hand presence of LV protruding thrombus is a conditions that increase the risk of systemic embolisation in patients with LV thrombus. Decision about anticoagulant therapy should be taken individually based on each patient clinical situation and adjusted risk of bleeding vs possible thromboembolism.

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THANK
YOU