

V. N. KARAZIN KHARKIV NATIONAL UNIVERSITY

INTERNAL MEDICINE DEPARTMENT

WHAT WAS HIDDEN BEHIND THE MASK?

Performed: student of VI course, gr. 622 Rahul Mandal

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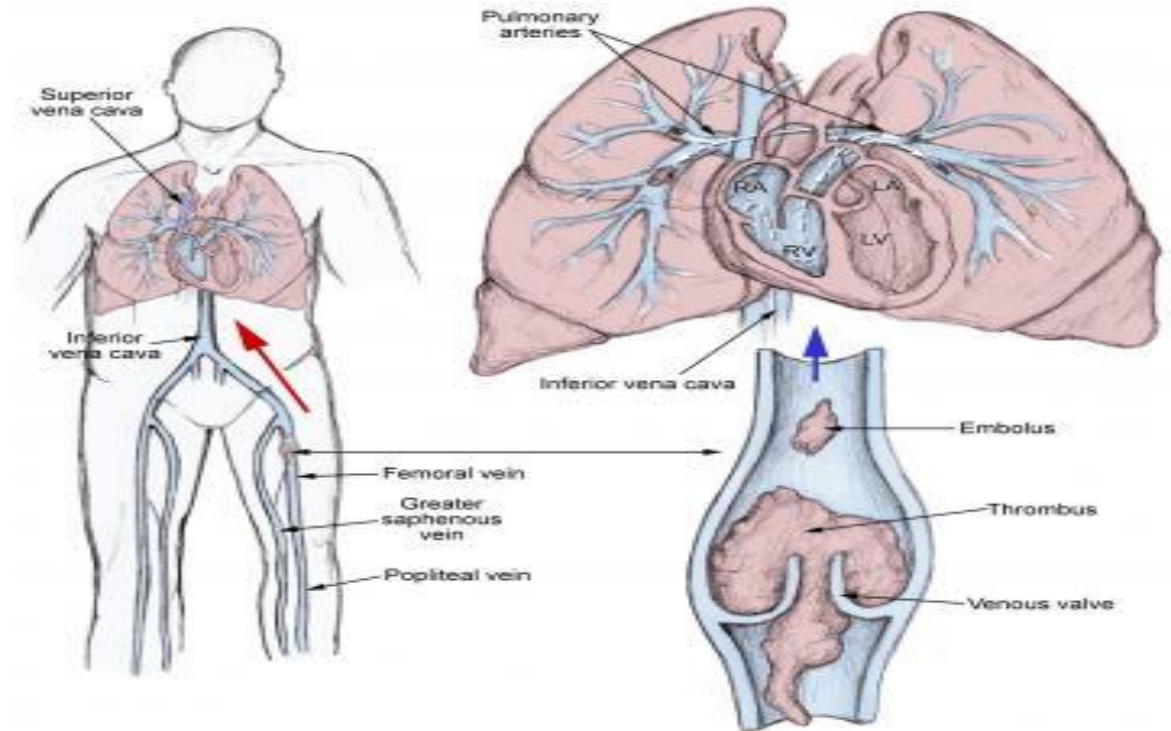


WHAT IS PULMONARY EMBOLISM?

Pulmonary embolism (PE) is a blockage of the main artery of the lung or one of its branches by a substance that has travelled from elsewhere in the body through the bloodstream (embolism).

PE most commonly results from deep vein thrombosis (a blood clot in the deep veins of the legs or pelvis) that breaks off and migrates to the lung, a process termed venous thromboembolism.

A small proportion of cases are caused by the embolization of air, fat, or talc in drugs of intravenous drug abusers or amniotic fluid.



OUR PATIENT

- Patient A.V.S., man
- 73 y. old
- unemployed
- city resident

COMPLAINTS

- Dyspnea in the slightest physical exertion
- Periodical burning pain in the heart area without clear connection with physical exertion ~ 15 min duration

ANAMNESIS MORBI

- was delivered by ambulance in the cardiology department 02 – sept – 2016 because all complains, listed above, suddenly appeared 01 -sept -2016
- ECG was made
- CAD, AH – many years, bisoprolol and aspirin were taken from time to time
- 2009 – acute myocardial infarction
- January 2016 - TIA

ANAMNESIS VITAE

- Hereditary diseases are not identified
- Allergic history is not burdened
- Childhood infections, injuries, tuberculosis, sexually transmitted diseases were denied
- Smoker - no, do not abuse alcohol

OBJECTIVE STATUS

- Conciseness - clear, state - severe, body position - active
- Patient can orientate himself in place, time, his personality
- Pale skin and mucosae, cyanosis
- Thyroid: no pathological changes
- Musculoskeletal system - no pathological changes
- BR – 22-24 /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: rhythmic, heart tones – muffled
- Pulse – rhythmic, 120 bts/min
- BP 110 / 90 mm Hg
- Abdomen: normal size, symmetric, unpainful
- Liver: liver margin is 5 cm below right rib cage, solid, no pain during palpation in right hypochondrium
- Spleen: normal
- Pasternatsky symptom – negative from both sides
- Edemas: right leg was edematous below knee joint comparing with left one, leg slightly painful in edematous area during palpation

WHAT WOULD BE YOUR PRELIMINARY DIAGNOSIS IN THIS CASE?

- ACS: Myocardial infarction
- ACS: Unstable angina
- Musculoskeletal pain
- Pleurisy or Pneumonia in older patients without ↑ temperature
- Pericarditis
- Salicylate intoxication
- Lung trauma
- Acute Mediastinitis
- Sickle cell disease

BLOOD COUNT

	02/09/16	03 / 09 / 2016	07 / 09 / 2016	Normal Range
Hemoglobin, g/l	124	142	129	130 – 160
Red blood cells, 10 ¹²	4.6	4.4	4.3	4.0 – 5.0
Color index of blood	0.9	0.89	0.89	0.85 – 1.15
White blood cells, 10 ⁹	19,5	13,8	7,6	4 - 9
ESR, mm/h	37	15	23	1 -10
Bands	6%	some	1%	1.06 – 6%
Segments	76%	85%	66%	47 – 72%
Eosinophils	1%	1%	1%	0.5 – 5%
Monocytes	3%	2%	10%	0.1 – 3%
Lymphocytes	14%	12%	31%	19 – 37 %

Conclusion: leucocytosis with stab shift on the left

URINE TEST from 06/09/16

	Patient's ranges	N
ρ	1.009	1.001 – 1.040
glucose	-	-
protein	0.216 g/l	-
leukocytes	4-5	1-2
hyaline casts	1-2	-
granular casts	1-2	-
pH	6,0	5-7

Conclusion: proteinurea

BIOCHEMISTRY TEST DATA

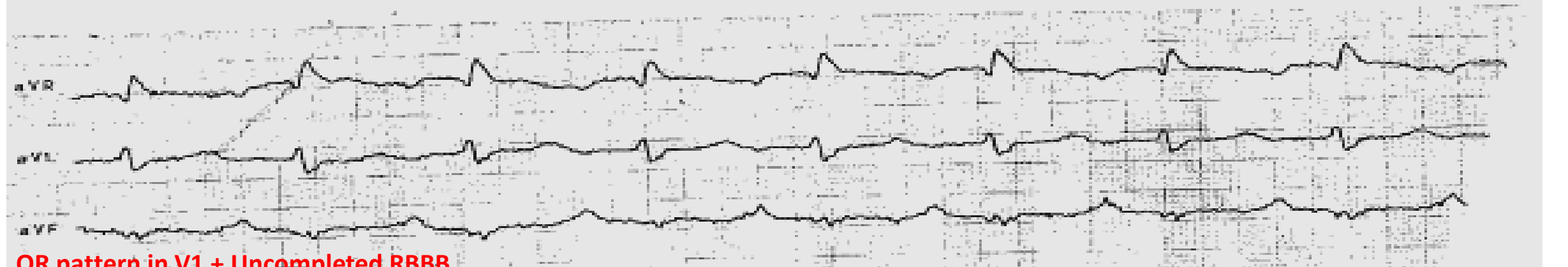
		Patient's ranges,	N
Prothrombin time	03.09.16	83	85 – 105%
Prothrombin time	14.09.16	73,2	75 - 105%
INR	14.09.16	1.24	0.85 – 1.5
Troponin I	05.09.16	<0,02	less 0,06 ng/ml
Glucose, mmol/l	02.09.16	8.9	4.22 – 5.5
Glucose, mmol/l	03.09.16	8,2	4.22 – 5.5
Cancer-embrio antigen		2,6	less 5,8 pmol\l

Conclusion: hyperglycemia, decreased prothrombin time under therapy with enoxaparinum natrium

ECG

Код пациента: 4559 0024
Дата: 02.09.2016
Время: 15:44:13
Пациент: [illegible]
Скор.: 50mm/s

S1Q3T3 pattern (McGinn-White sign)



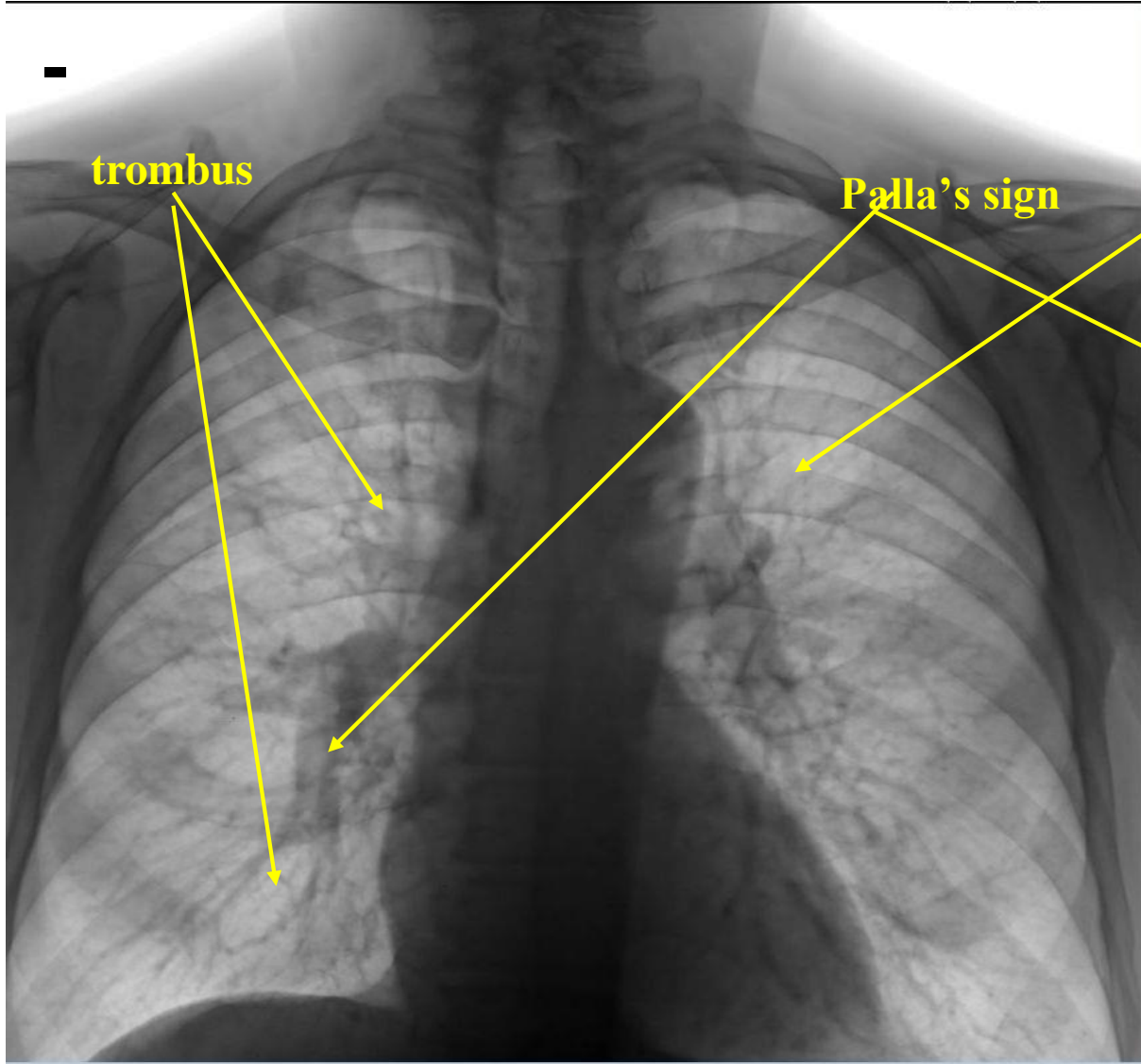
QR pattern in V1 + Uncompleted RBBB



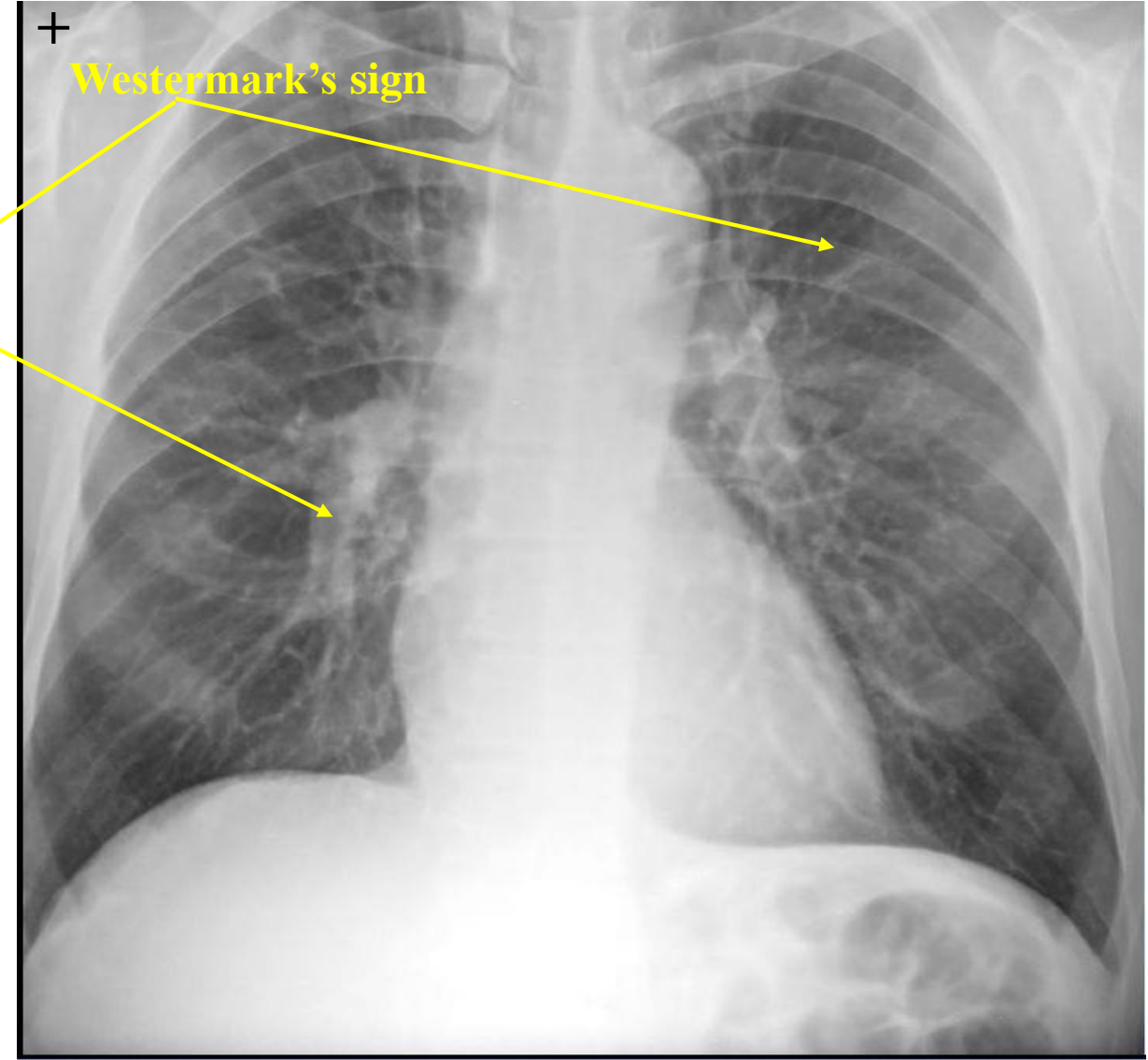
S wave on lead I Q waves with T-wave inversion on lead III (S1Q3T3).

new incomplete right bundle-branch block (RBBB) QR pattern in V1

CHEST X-RAY 07/09/16 #3621



Palla's sign - enlarged right descending pulmonary artery



Westermark sign -a focus of [oligemia](#) (hypovolemia) (leading to collapse of vessel) seen distal to a [pulmonary embolism](#)

HEART and KIDNEY ULTRASOUND from 05/09/16

EF – 60% (N - 55 – 78%).

Normal wall movement, myocardium structure with pointed cardiosclerotic changes

Contractility function – not changed.

Left Ventricle:

FDD – 48 mm (N – 25 – 35mm) – **enlarged**

FSD – 39 mm (N – 23 – 38 mm)

Posterior wall thickness – 13 mm (N – 6 – 13mm).

Intraventricular septum size – 13 mm (6 – 11 mm) – enlarged

Right Ventricle:

Diameter – 36 mm (N – 9 – 20 mm) – **enlarged**

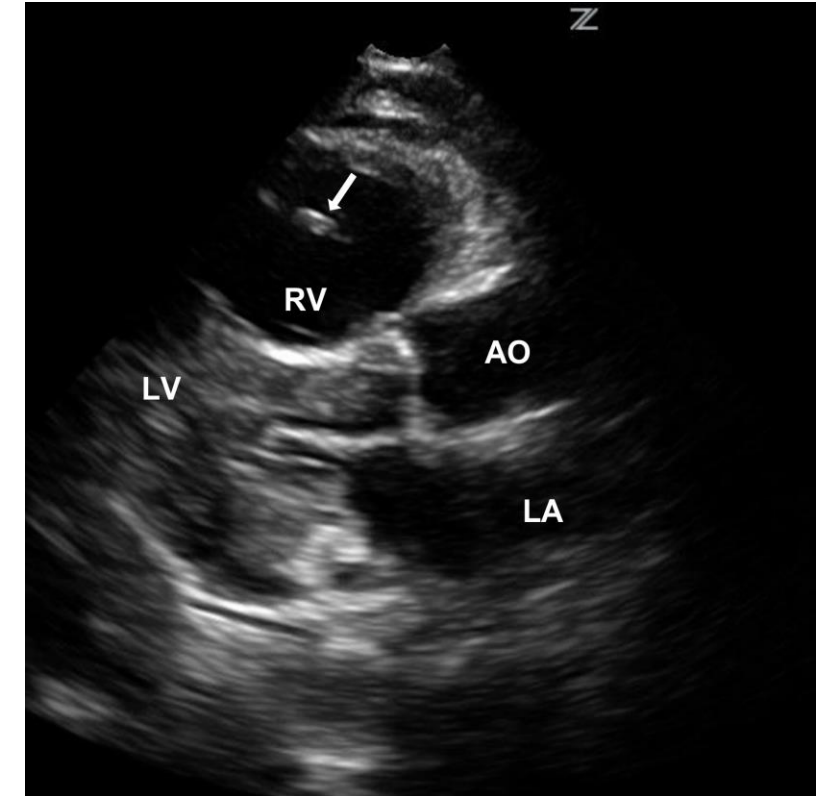
Wall thickness – 5,0 mm (N – 2 - 4 mm) - **enlarged**

Left atrium – not enlarged – 36 mm in diameter (N – till 38 mm)

***Right atrium* –enlarged – 50 mm in diameter.** Interatrial septum – not changed

Valvular apparatus is not changed, except tricuspid valve – regurgitation I degree. **In the cavity of the right ventricle clearly seen hyperechogenic formations – clots.**

Conclusion: Diffuse cardiosclerosis. Aortic atherosclerosis. Hypertrophy of the left ventricle I degree. **Dilation of the right heart chambers.** Tricuspid regurgitation Ist degree. **Clots in the cavity of the right ventricle.** Ultrasound signs of cystitis, chronic prostatitis



CLINICAL PROBABILITY OF PULMONARY EMBOLISM

American Academy of Family Physicians (AAFP) and the American College of Physicians (ACP) Score

Revised Geneva score		Original version ⁹³	Simplified version ¹⁰⁸
Previous PE or DVT		3	1
Heart rate 75–94 b.p.m. ≥95 b.p.m.	V	3 5	1 2
Surgery or fracture within the past month		2	1
Haemoptysis		2	1
Active cancer		2	1
Unilateral lower limb pain	V	3	1
Pain on lower limb deep venous palpation and unilateral oedema	V	4	1
Age >65 years	V	1	1
Clinical probability			
<i>Three-level score</i>			
Low		0–3	0–1
Intermediate		4–10	2–4
High	V	≥11	≥5
<i>Two-level score</i>			
PE unlikely		0–5	0–2
PE likely	V	≥6	≥3

Patient's final score is 13 – PE high probability (PE likely)

Suspected PE without shock or hypotension

Assess clinical probability of PE
Clinical judgment or prediction rule^a

Low/intermediate clinical probability
or PE unlikely

D-dimer

negative

positive

CT angiography

no PE

PE confirmed^c

No treatment^b

Treatment^b

High clinical probability
or PE likely

CT angiography

no PE

PE confirmed^c

**No treatment^b
or investigate further^d**

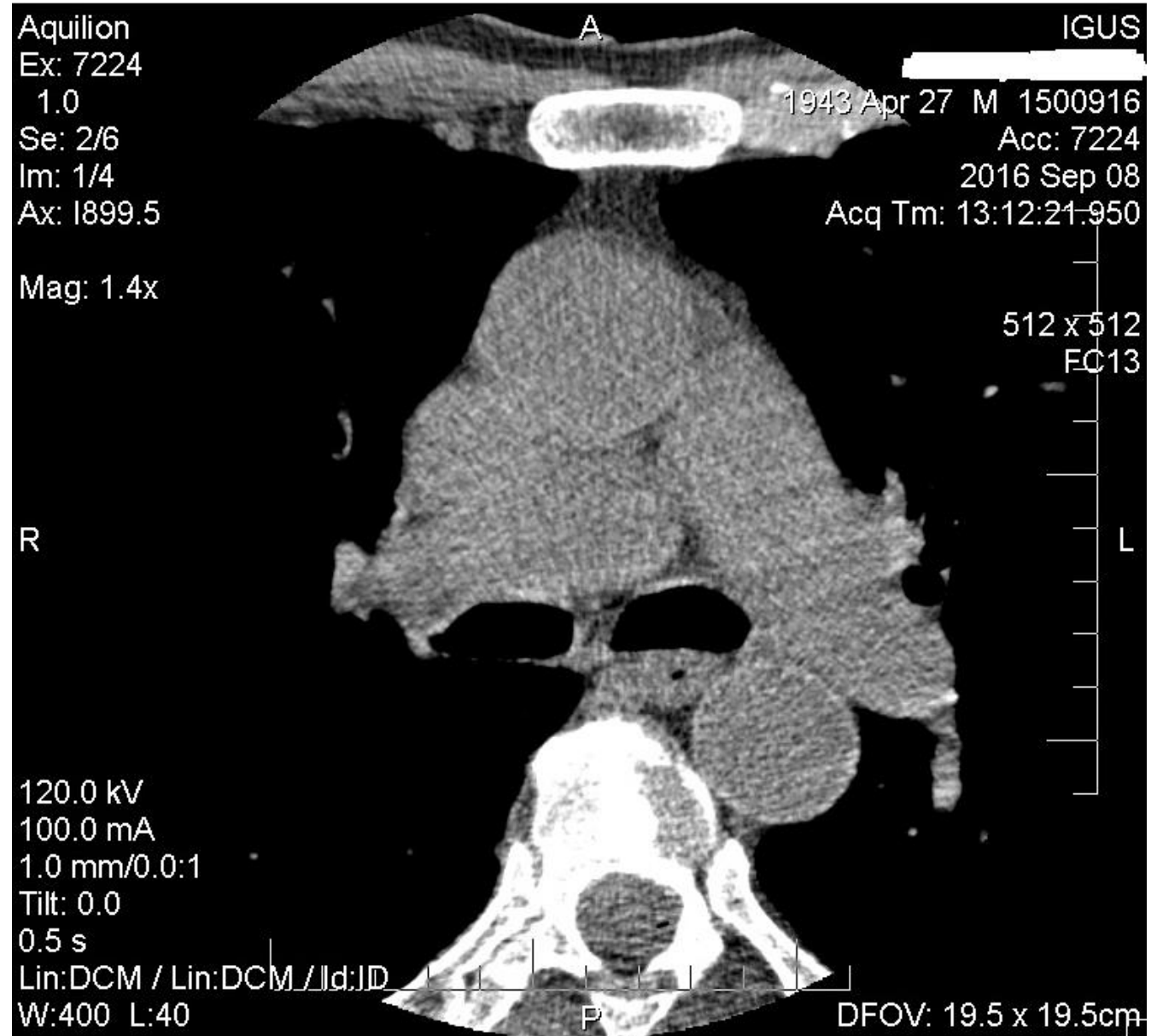
Treatment^b

CT = computed tomographic; PE = pulmonary embolism.

CT PULMONARY ANGIOGRAPHY # 1500916

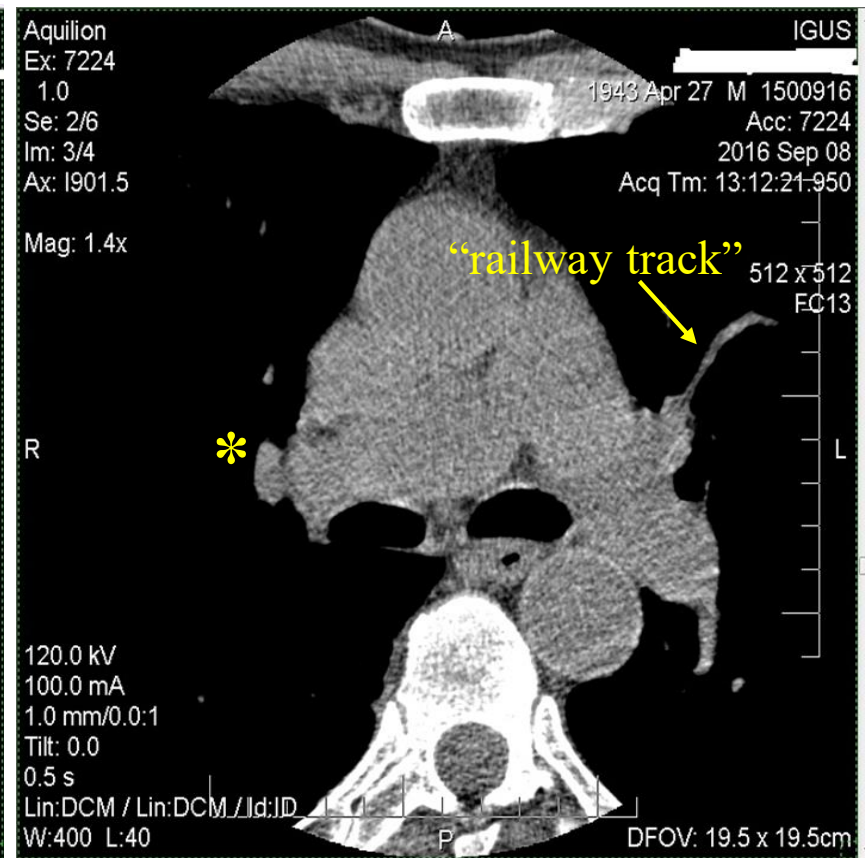
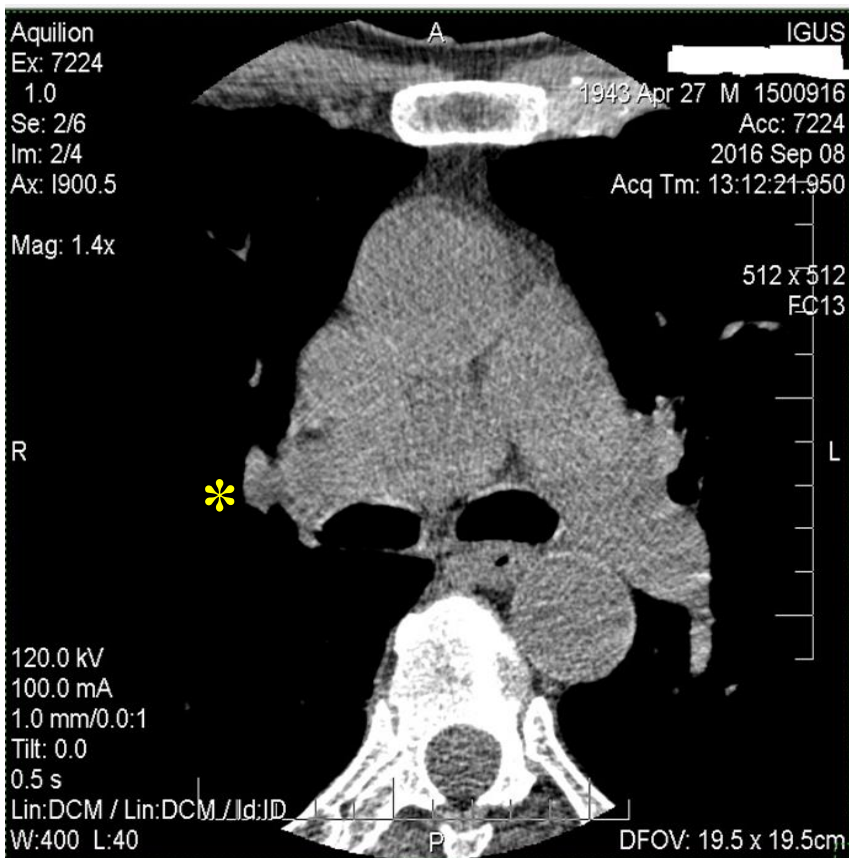
In the main branches of the pulmonary artery clearly seen defects of contrasting thicknesses up to 15 mm on the right and 11 mm on the left, which is spread on all lobular and segmental branches of the pulmonary artery with subtotal or partial occlusion of the lumen. In both lungs are visualized subpleural areas of lung parenchyma lightening by the type of “frosted glass”. The diameter of the pulmonary artery on both sides is increased (26 mm – pulmonary truncus, 27mm –right pulmonary artery). In the right atrium are visualized defects of contrasting with dimensions of 35 * 22 mm (trombus).

Conclusion: **CT picture of bilateral massive pulmonary embolism**



IMAGINE OF PULMONARY EMBOLISM (1)

CT pulmonary angiogram(CT-PA) is the gold standard procedure for diagnosis of PE and the most frequently performed initial test for the diagnosis of pulmonary embolism. It allows direct visualization of pulmonary embolus, and it allows for diagnosis of alternative diseases involving the lung parenchyma(pneumonia, pneumothorax).



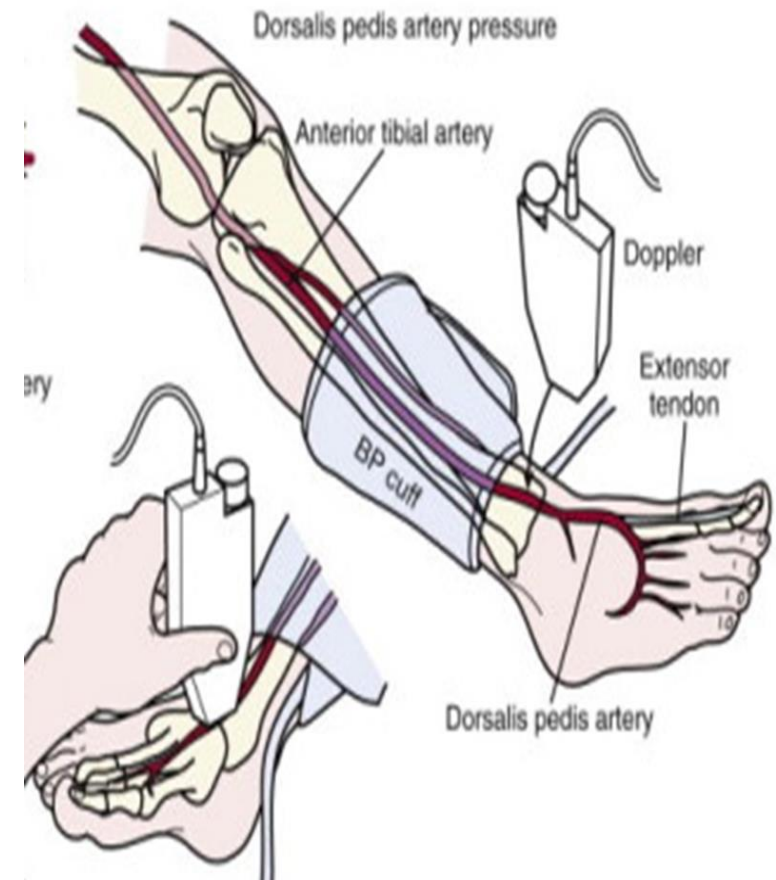
The diagnostic criteria for acute pulmonary embolism include the following:

- Arterial occlusion with failure to enhance the entire lumen due to a large filling defect (*); the artery may be enlarged compared with adjacent patent vessels
- A partial filling defect surrounded by contrast material, producing the “polo mint” sign on images acquired perpendicular to the long axis of a vessel and the “railway track” sign on longitudinal images of the vessel

Our patient CT angiography data

WHAT TYPES OF TESTS WEREN'T DONE?

- . D-dimer testing
- . Lung scintigraphy
- . Pulmonary angiography
- . Magnetic resonance angiography
- . Compression venous ultrasonography ✓



FINAL DIAGNOSIS

Acute pulmonary massive embolism, stable
CAD: stable angina III functional class, post infarction
(2009) and diffuse cardiosclerosis.

Arterial hypertension III stage, 1nd degree, very high risk
CHF 2 A stage with preserved function of LV (EF 59%),
IV D functional class by NYHA

Varicose vein disease of low extremities, right leg phlebitis

MEDICATIONS PRESCRIBED

- Zocardis (zofenoprilum - ACE) 7,5 mg 1 time\day at night from 02.09
- Nebivolol (b-blocker) 2,5 mg 1 time\day morning from 02.09
- Warfarin 2,5 mg 1 time\day from 13.09
- Ceftriaxone (b-lactam) 1,0 g 2 times\day IM from 02.09 till 07.09
- Clexan (enoxaparinum natrium) 0,4ml (40mg) 2 times a day subcutaneous from 02.09
- Ivabradinum 7,5 mg 2 times\day from 02.09
- Atoris 40mg (atorvastatin) 1 time\day at night from 02.09

Thank u words

I would like to take this opportunity to thank respected Dr. Helen on behalf of whole group for inspiring and outstanding teaching technique. I believe we all being benefited and will be more in near future from the knowledge and suggestion you shared with us. Your enthusiasm is contagious and we hope to use your blessings of knowledge in our path.

Thank you ! Thank you so much for your contribution **Dr.**

Thank you professor Yabluchansky M.I for your attention and participation for such ideological medical topics. I'm grateful for the time and efforts you gave to share my thoughts and knowledge.

Thank you Internal Medicine Department

Thank you my all the teachers (doctors) and my friends... **thank you !**

