Prof.dr Simon Nikolić
zdravstvena nega

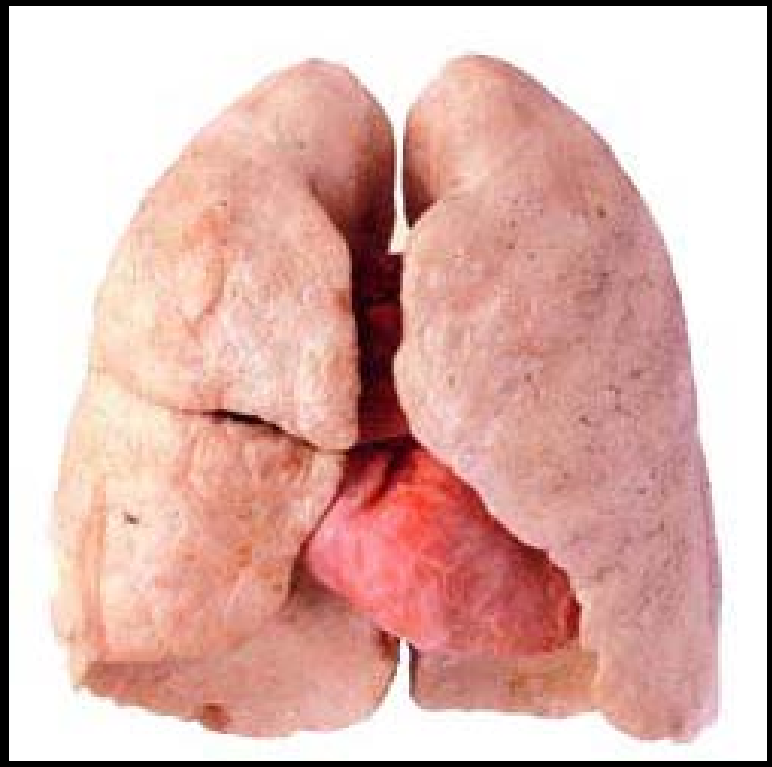
Radiološka dijagnostika respiratornog sistema



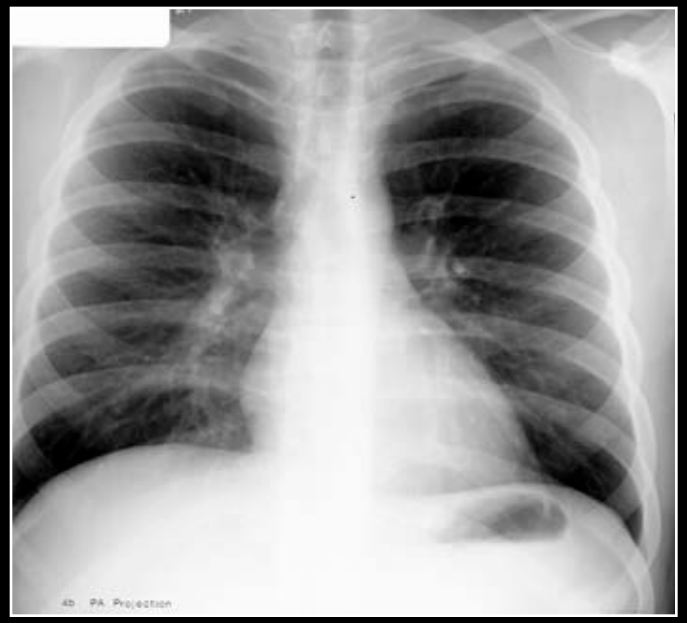
MMXV

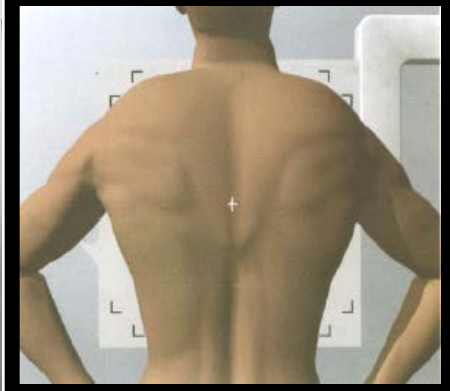
Metode pregleda

- Rendgengrafija
- Rendgenskopija
- Bronhografija
- Angiopulmografija
- UZ
- CT - MSCT
- MR
- Perfuziona scintigrafija

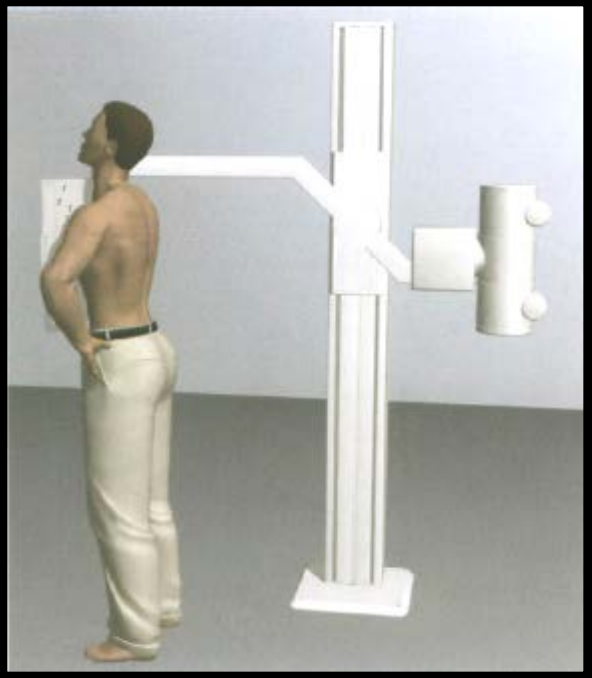


- Rendgengrafija pluća





Fo – Fi 180 cm



Indikacije

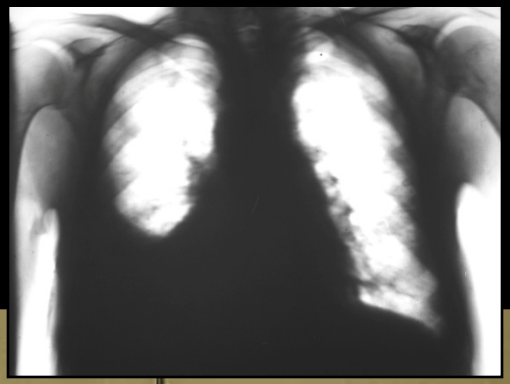
- Postojanje akutnih znakova nespecifičnih zapaljenskih procesa
- Akutne TBC i praćenje evolucije
- Sumnja na postojanje malignoma
- Metastaza (razvoj i regresija u toku Th)
- Bronhiektazije
- Emfizem
- Oboljenja pleure
- Oboljenja medijastinuma
- Periodični pregledi radnika na određenim radnim mestima

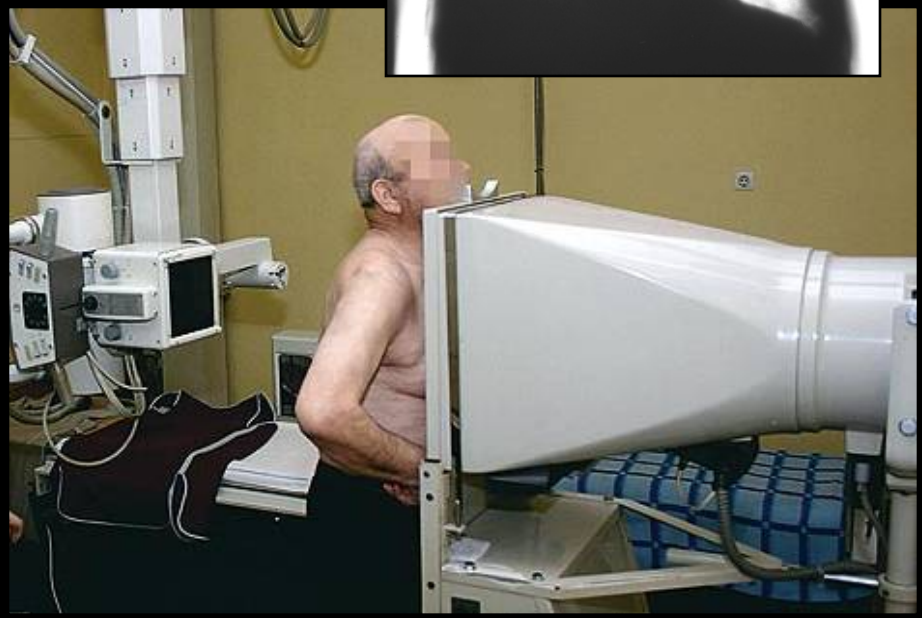


• Radioskopija

fluoroskopija

Dopunski dijagnostički postupak
indikuje radiolog





Indikacije

- Prostorna lokalizacija pat. promene i njen odnos sa okolinom
- Praćenje respiratornih pokreta dijafragme
- Uvid u dinamiku pulzirajućih intratorakalnih struktura

Grafija - Skopija

TABLE 1. Suggested Exposure Ranges[6] and the Mayo Clinic Exposures*

	Suggested Exposure[1] Range (mR)	Mayo Clinic Exposure (mR
PA chest	8-30	24
AP lumbar spine	500-750	280
Lateral skull	100-300	82
PA hand	5-30	9
Head CT	2,200-6,850†	6,500
Abdomen CT		6,000
Fluoroscopic exposure rate‡		2,300 mR/minute
Cine exposure rate§		25,000 mR/minute
CC mammogram	200-1,200	540‖
Dental bitewing£	270-415* 145-190††	256**

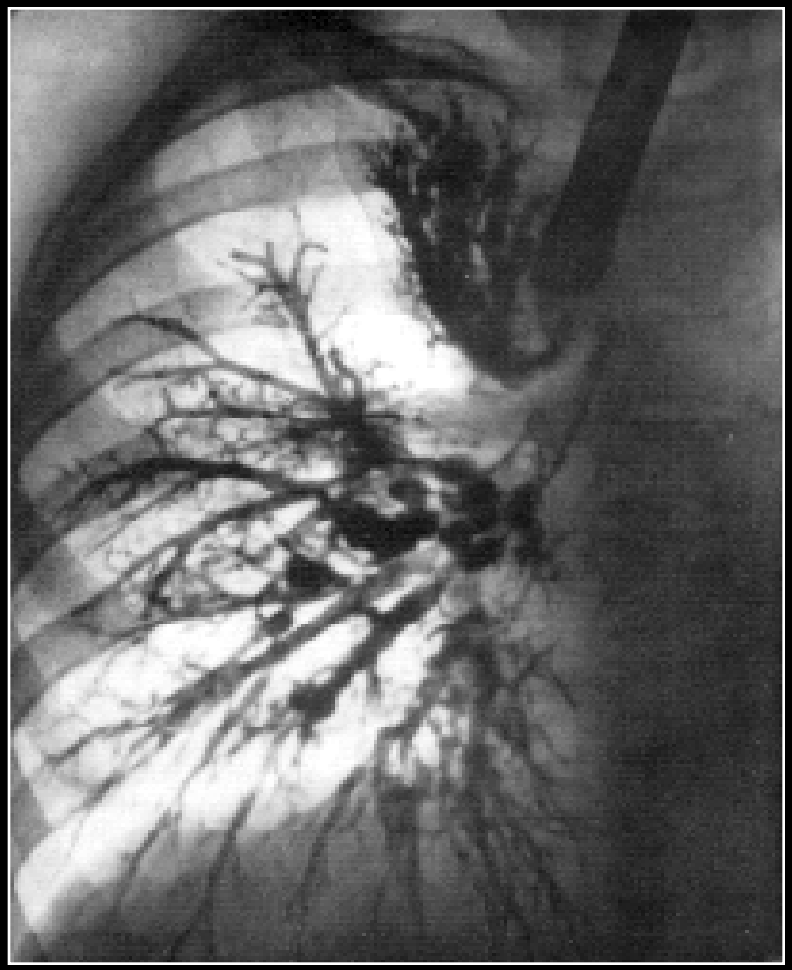
95 grafija

za 1 min. skopije

- **Bronhografija**
  Angiopulmografija

Specijalne metode

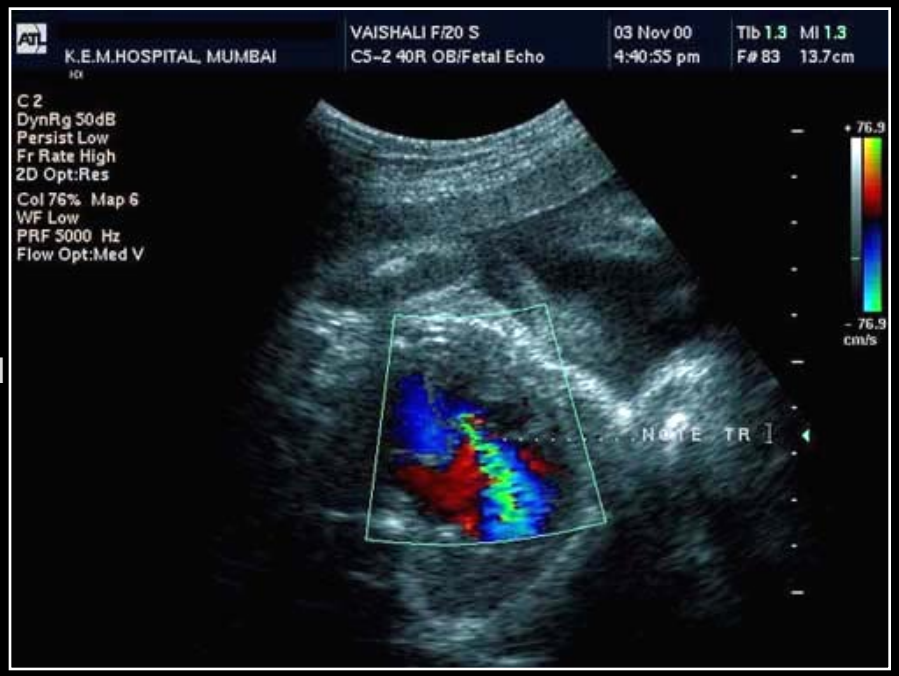




- **UZ**

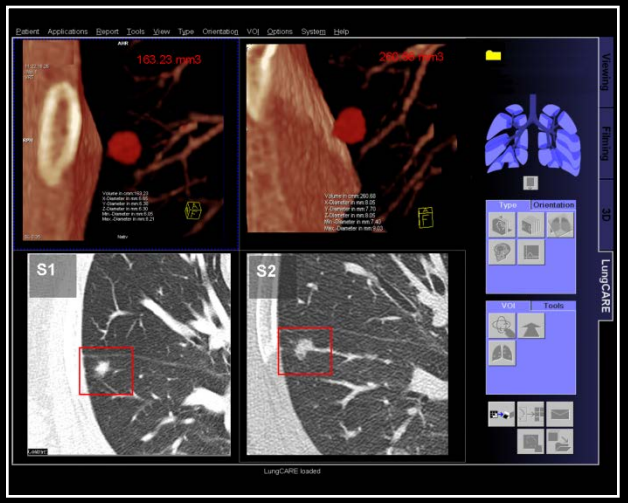
Ima ograničenu dijagnostičku vrednost

- Oboljenja torakalnog zida
- Oboljenja pleure (transudat, eksudat, empiem)
- Lezije lokalizovane periferno u plućnom parenhimu
- Diferenciranje solidnih od zapaljenskih promena
- Vođenje biopsije i troakar drenaže



• CT - MSCT





<u>Standardni CT</u> pregled aksijalni preseci od vrhova pluća do završetka fc sinusa. U apneji.

Bez i sa ks.

Post procesing – virtuelna bronhoskopija.

Indikacije:

- Procena uznapredovanosti Ca bronha
- “neme zone”
- Pleuralne promene
- Patologija mekih tkiva i košt.-zgl. Sistema
- Diferencijacija promena u medijastinumu
- Ciljana biopsija

- **Magnetna rezonancija**

Prikaz bez upotrebe jonizujućeg zračenja.

Povoljnost u oštrini slike pri velikom mekotkivnom kontrastu.

Odabir željenog preseka bez pomeranja pacijenta.

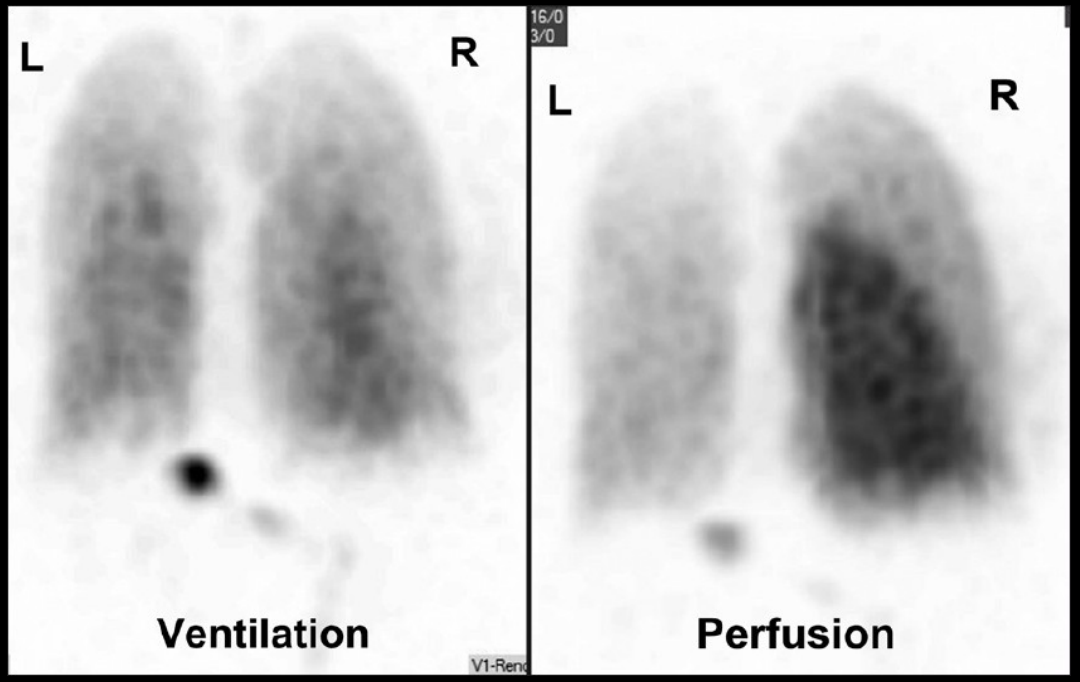




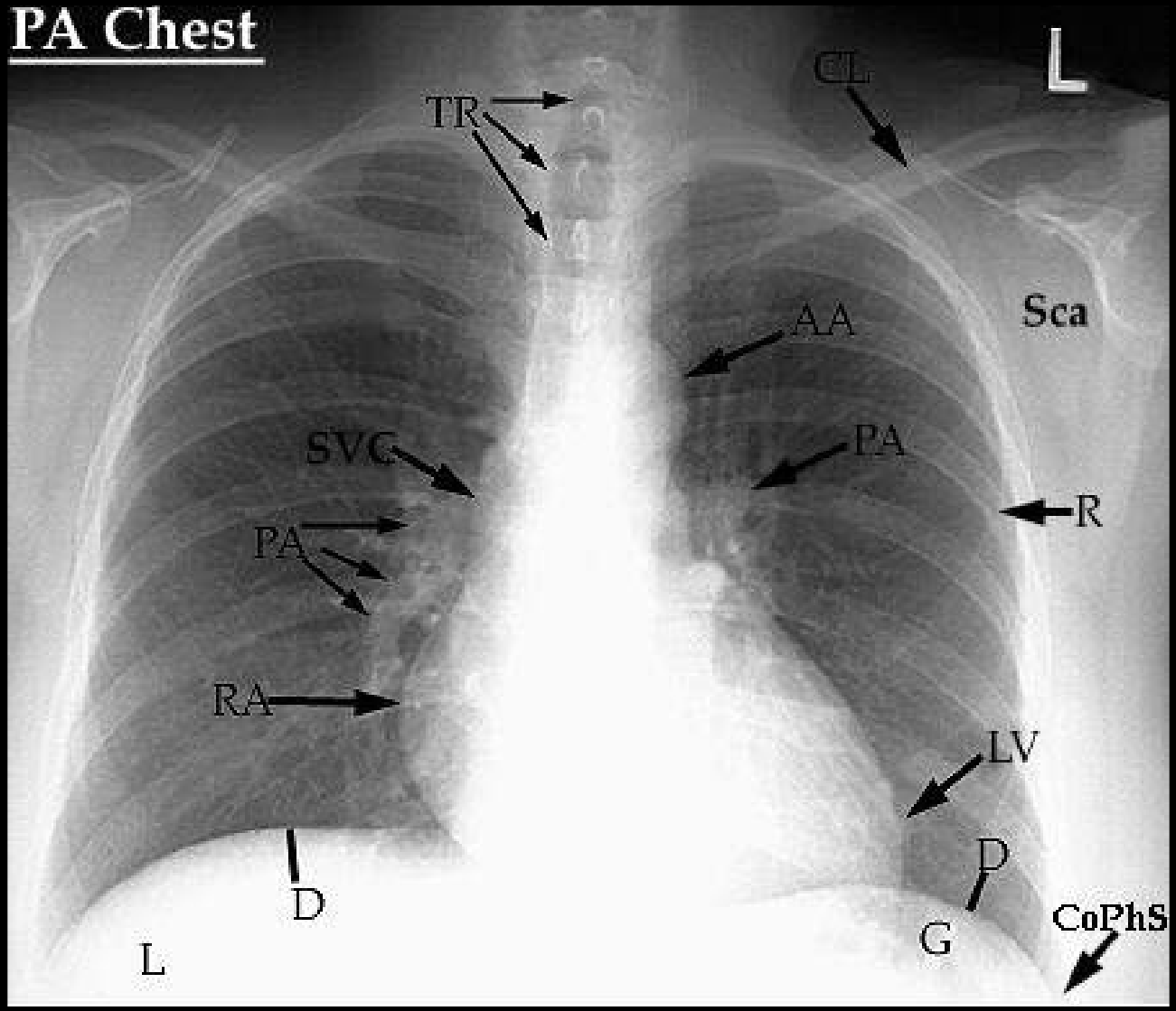
• Perfuziona i ventilaciona scintigrafija

1. Iv ubrizga radiofarmak (MAA+Tc^{99})
2. Udiše uz zadržavanje daha Xe^{127} - ^{133}

- plućna embolija
- opstruktivne bolesti pluća
- karcinom bronha
- sarkoidoza



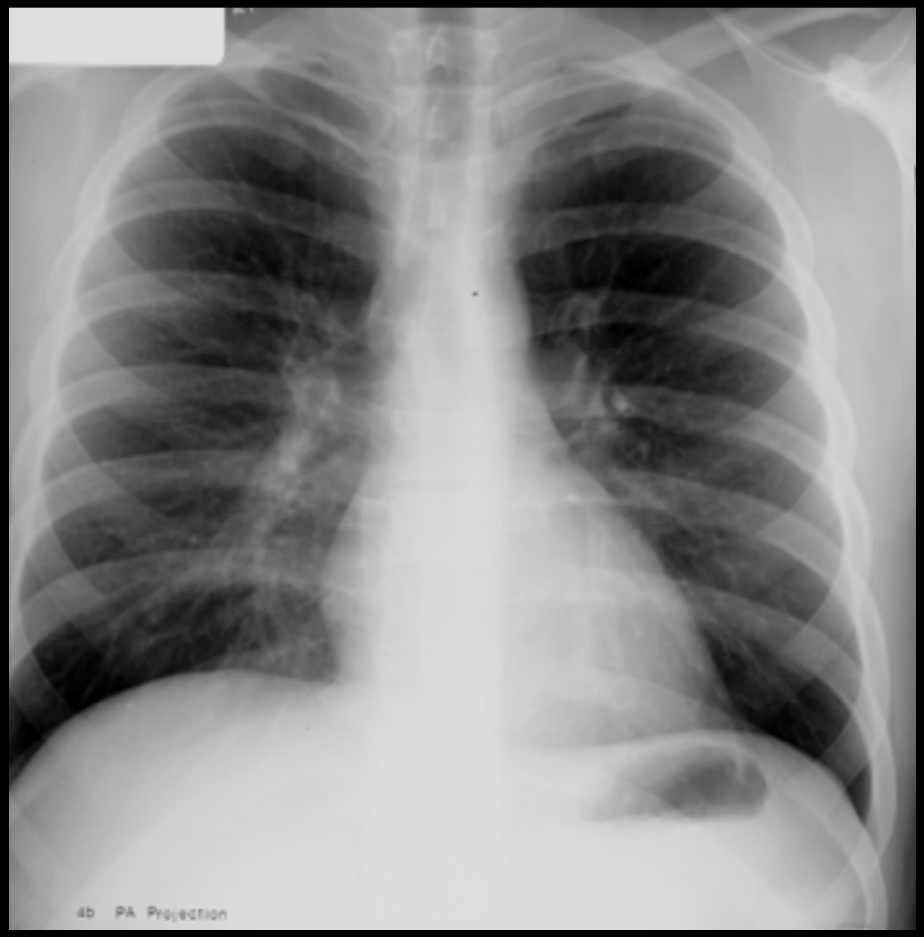
Rendgenanatomija pluća



LV=Left Ventricle
D=Diaphragm
G=Gastric Air Bubble
L=Liver
Sca=Scapula
R=Rib

PA=Pulmonary Artery
TR=Trachea
CL=Clavicle
AA=Aortic Arch
SVC=Superior Vena Cava
RA=Right Atrium
CoPhS=Costophrenic Sulcus

Opis snimka



Postavljanje filma na negatoskop

kao da se bolesnik nalazi naspram nas

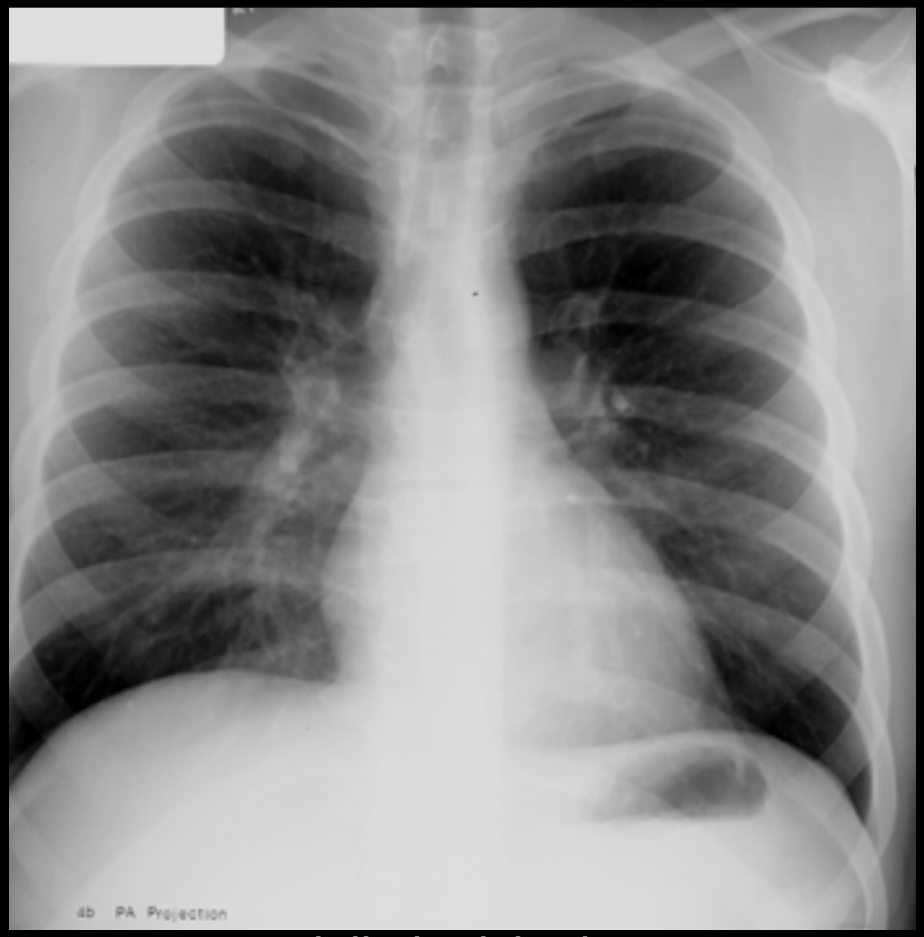
- **Provera tehničkih parametara**

  Doza

  Pozicija pacijenta

- **Naslov**

  snimak srca i pluća sa dominantnom patologijom na plućima
- **Meka tkiva**
- **Koštano-zglobni sistem**



*prednji okrajci rebara

- **Dijafragma**

  položaj: desna hemidijafragma gornja ivica 5 do donje ivice 6 *

  leva hemidijafragma jedan međurebarni prostor niže

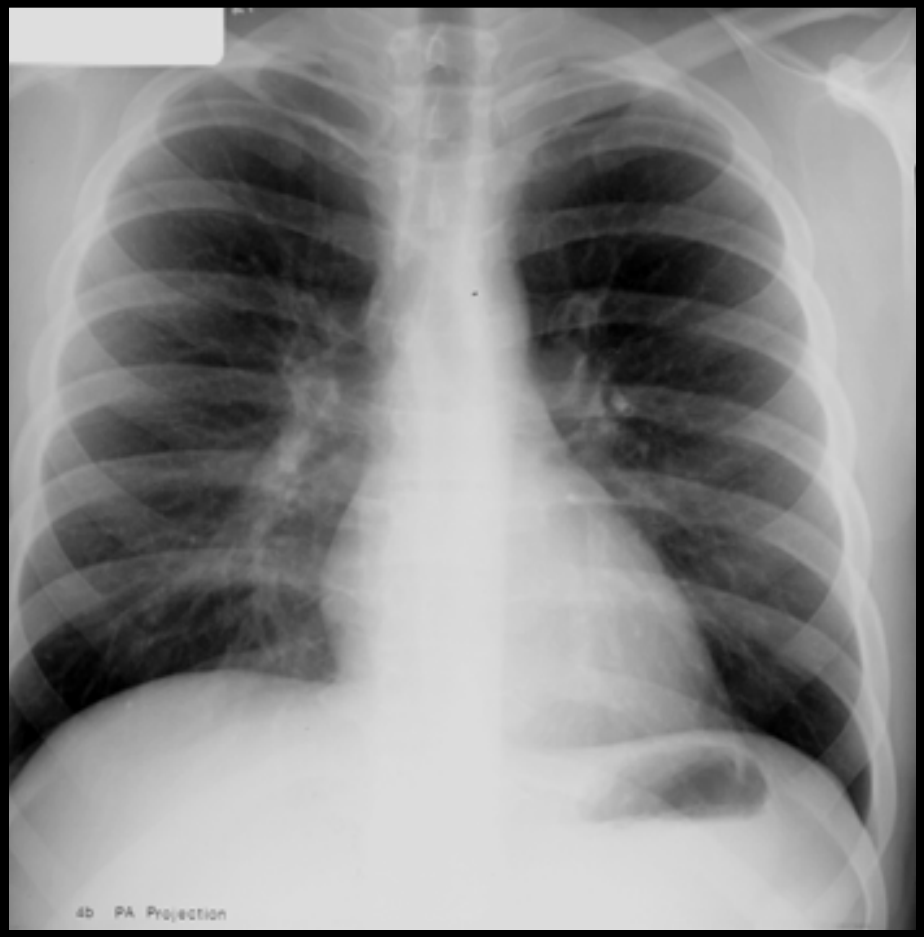
  oblik: kupole

  konture: jasne i oštre

- **FC sinusi**

  oblik: oštrougaoni

  intenzitet: transparentni



- **Hilusi**

  položaj: desni hilus od 2 do 4 *
  levi hilus u nivou 2 *

  oblik: desni - “šargarepe”
  levi - “gužva vate”

- **Plućna šara**

  do na 1 cm od lateralnog zida toraksa i do donje ivice klavikule

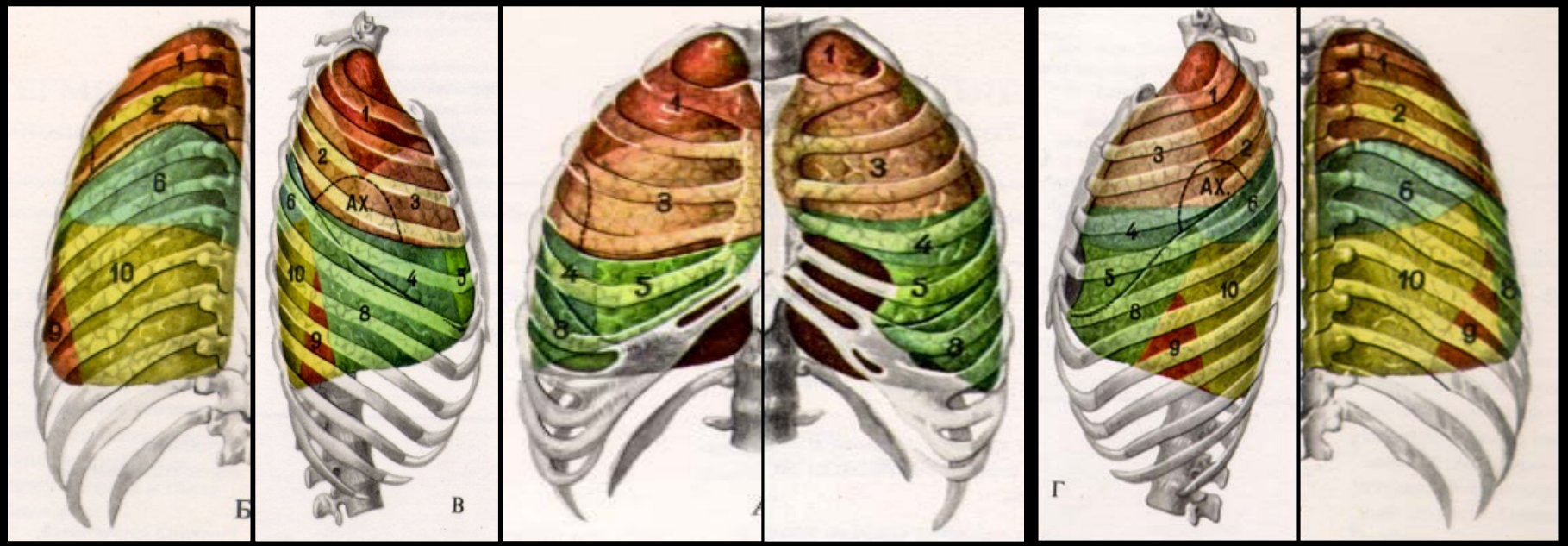
  - hiloapikalna ++
  - hilolateralna
  - hilobazalna +++

Opis promena u plućima



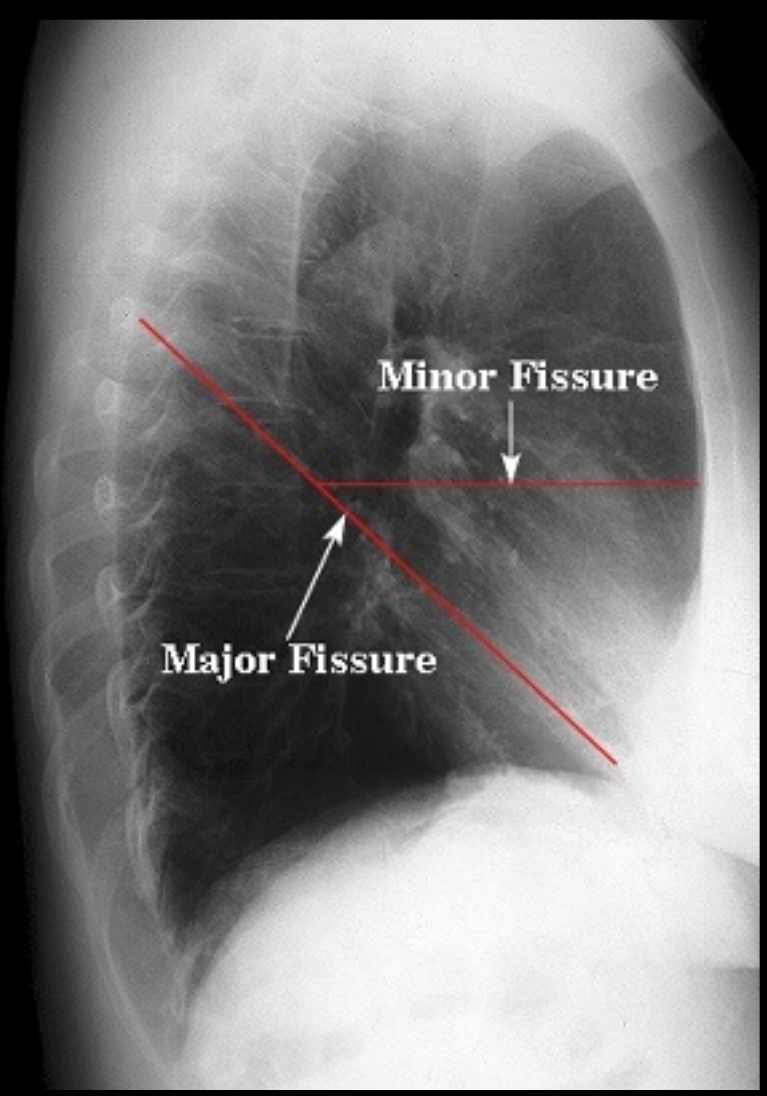
L okalizacija
O blik
V eličina
I ntenzitet
H omogenost
O graničenost

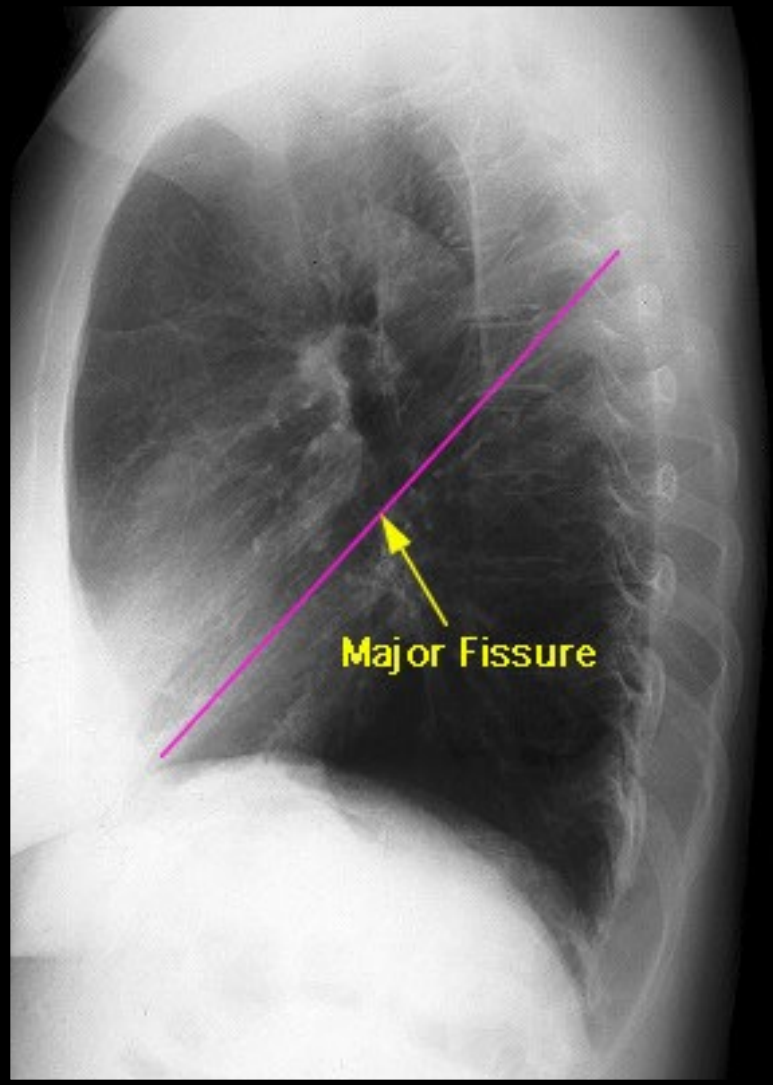
Segmenti pluća



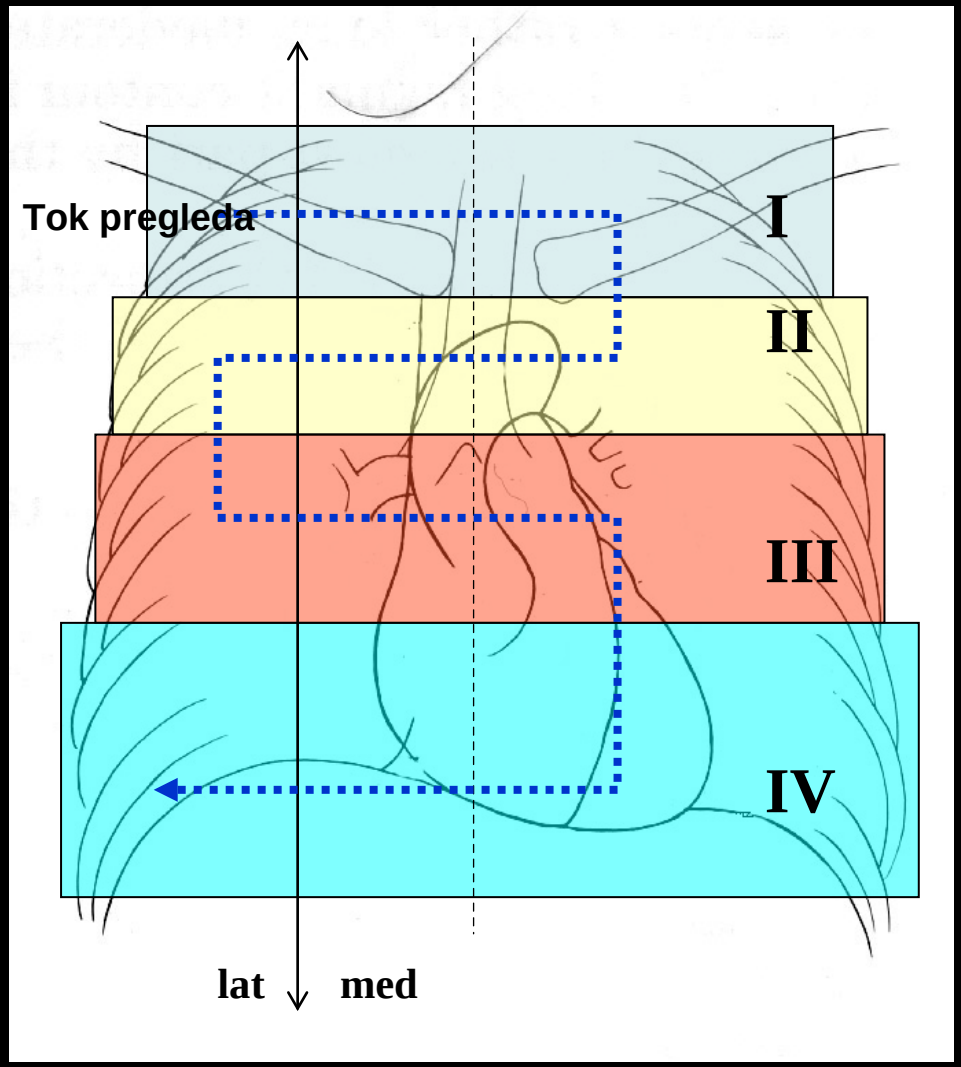
desno plućno krilo

levo plućno krilo


Minor Fissure
Major Fissure


Major Fissure

L okalizacija

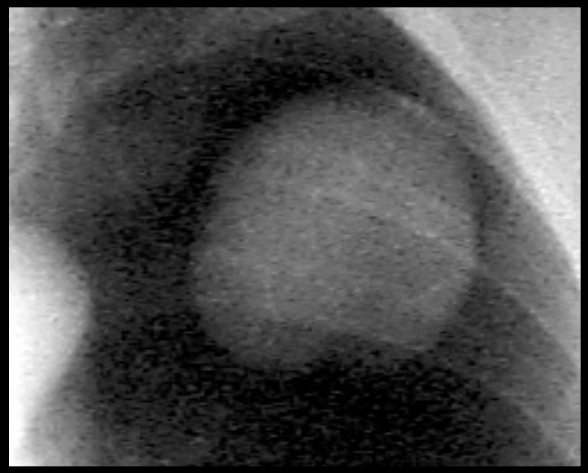


- **I. Vrh pluća**
  (tuber.costae II rebra - d.rub clv)
- **II. Gornje plućno polje**
  (d.rub clv - d.rub p.okrajka II r.)
- **III. Srednje plućno polje**
  (d.rub p.okrajka II r.
  d.rub p.okrajka IV r.)
- **IV. Donje plućno polje**
  (ispod d.ruba p.okrajka IV r.
  do dijafragme)

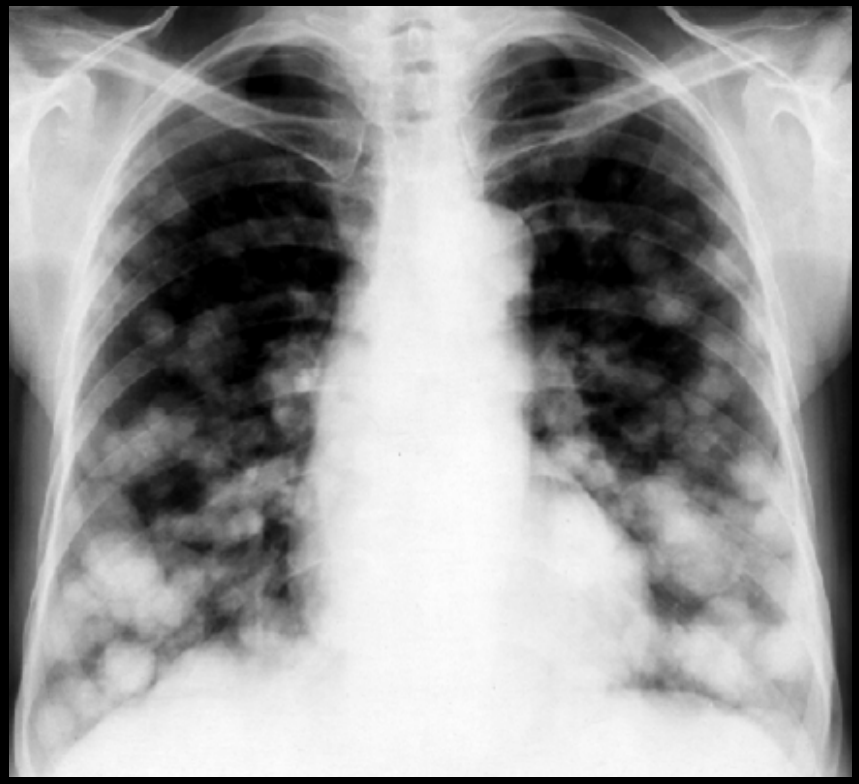
O blik

- **Kružne**

solitarne ili multiple



Ehinokok

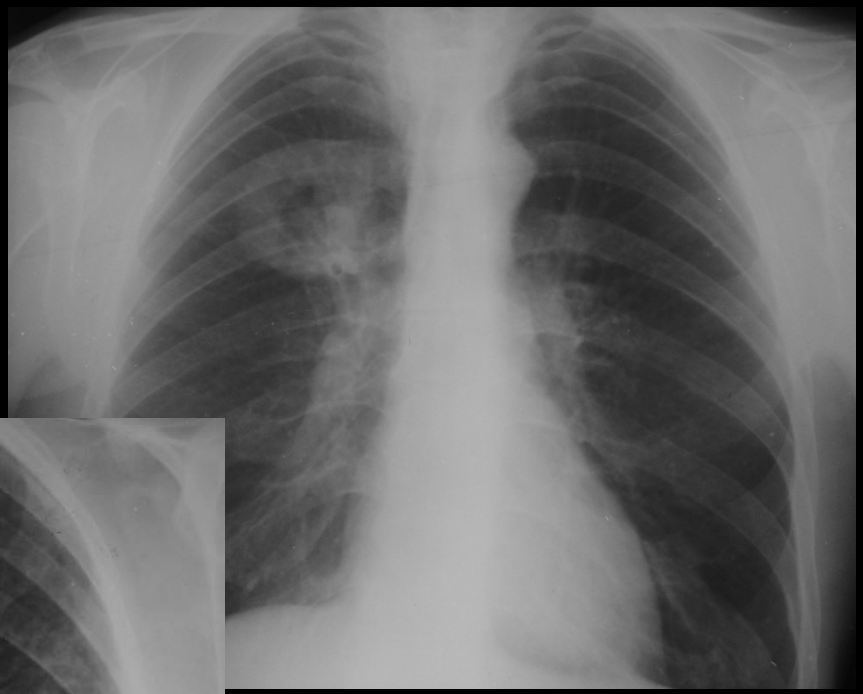


Meta



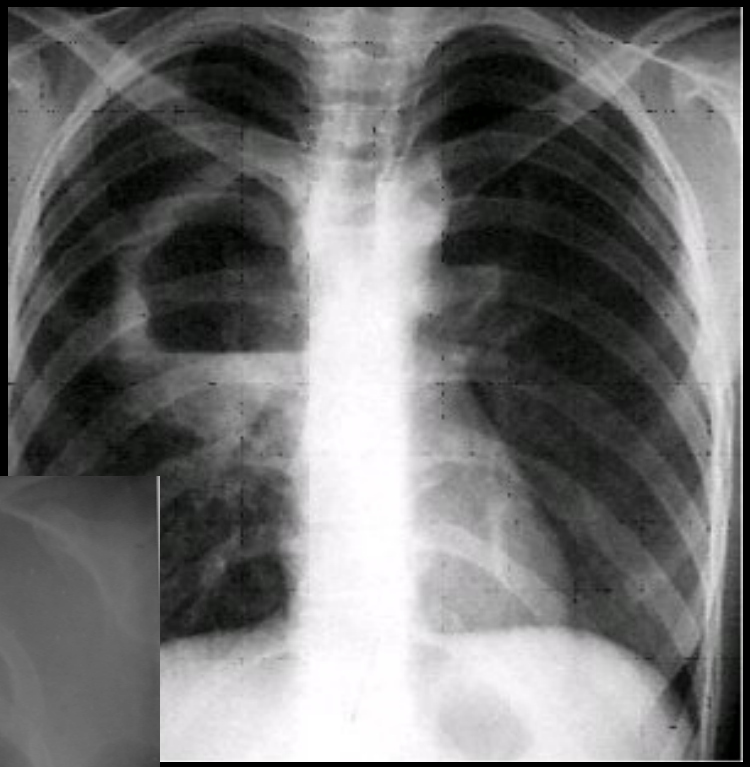
Ca bronha

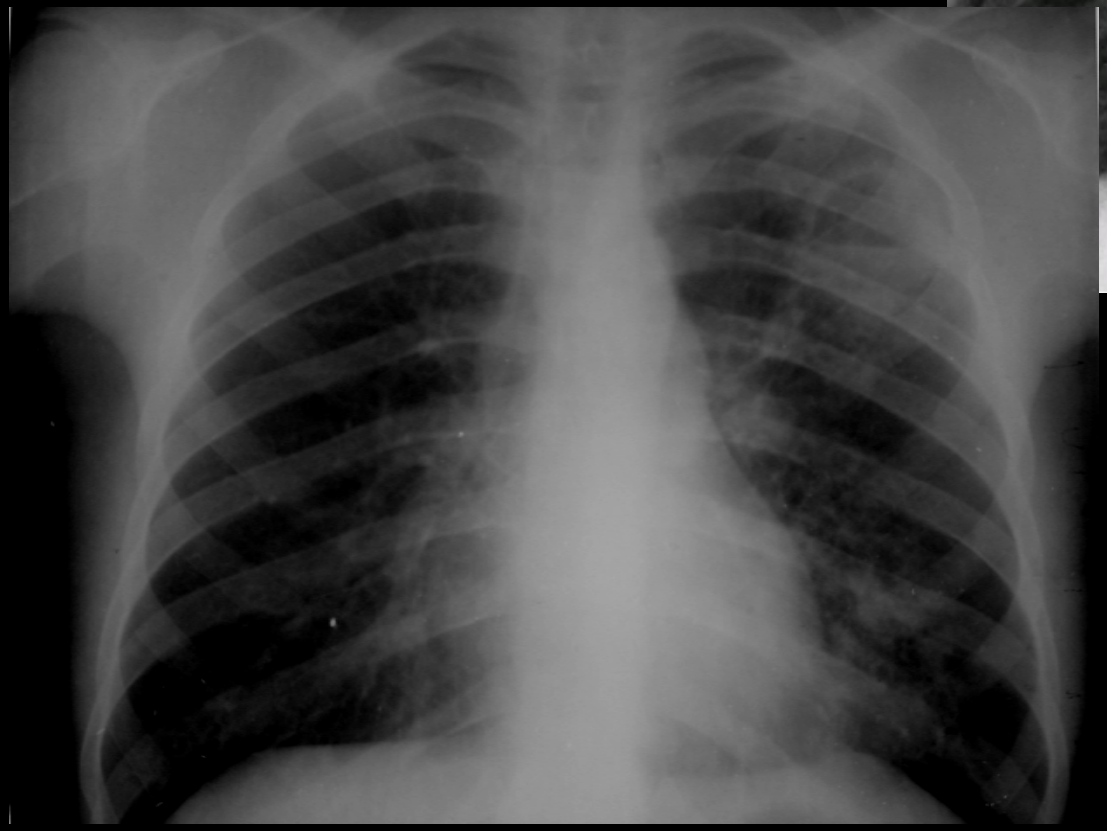
- **Prstenaste**





- **Prstenasta sa nivoom**



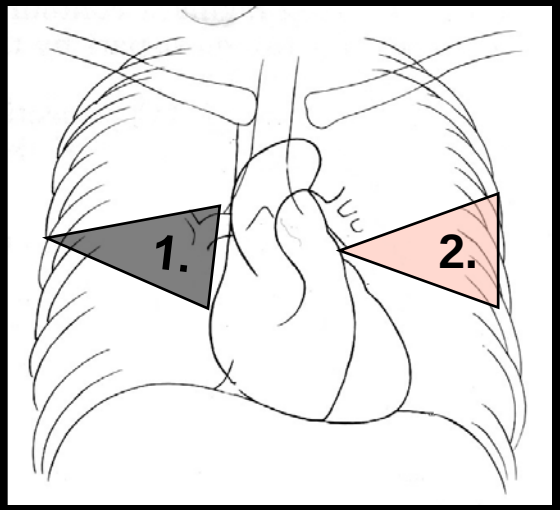


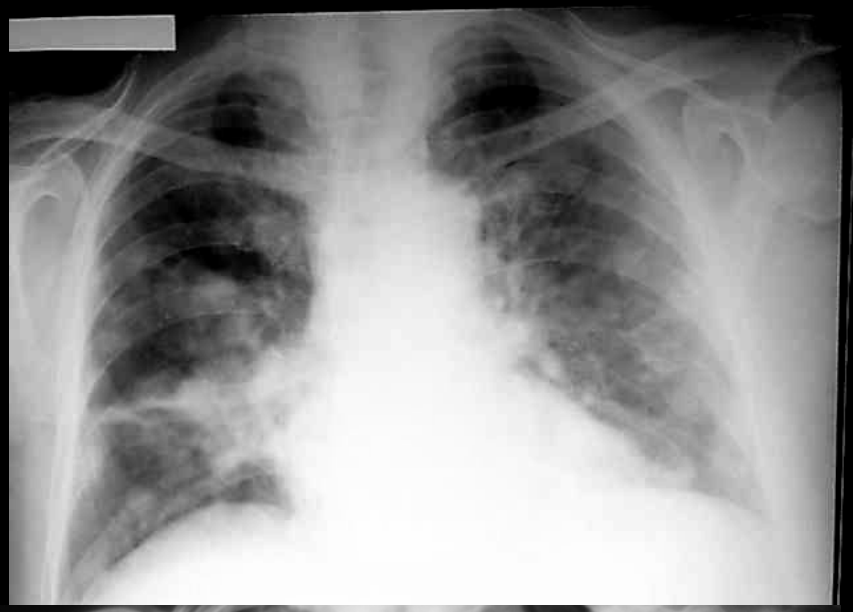
- **Trouglaste**

1. pleuralni trougao
(medijastino-interlobarni izliv)

2. parenhimski (plućni) trougao

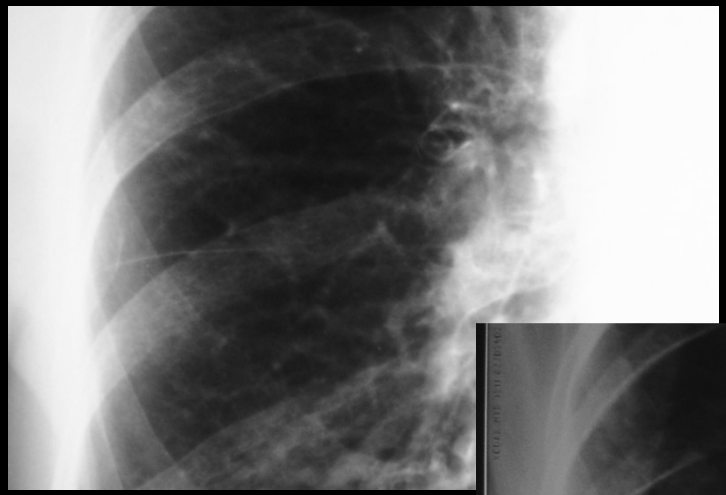
- (pneumonija, atelektaza,
- infarkt pluća)

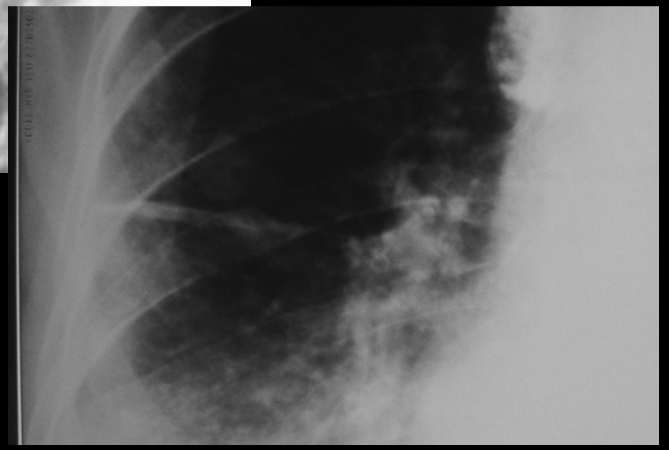






- **Linearne**
  debljine do 2 mm
- Horizontalne incizure
- Karley B
- Subpleuralnog edema
- Cilindričnih bronhiektazija



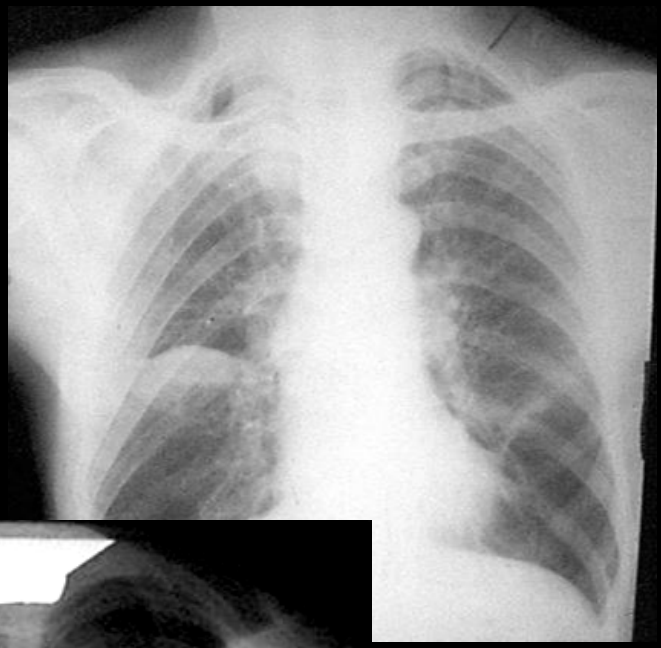


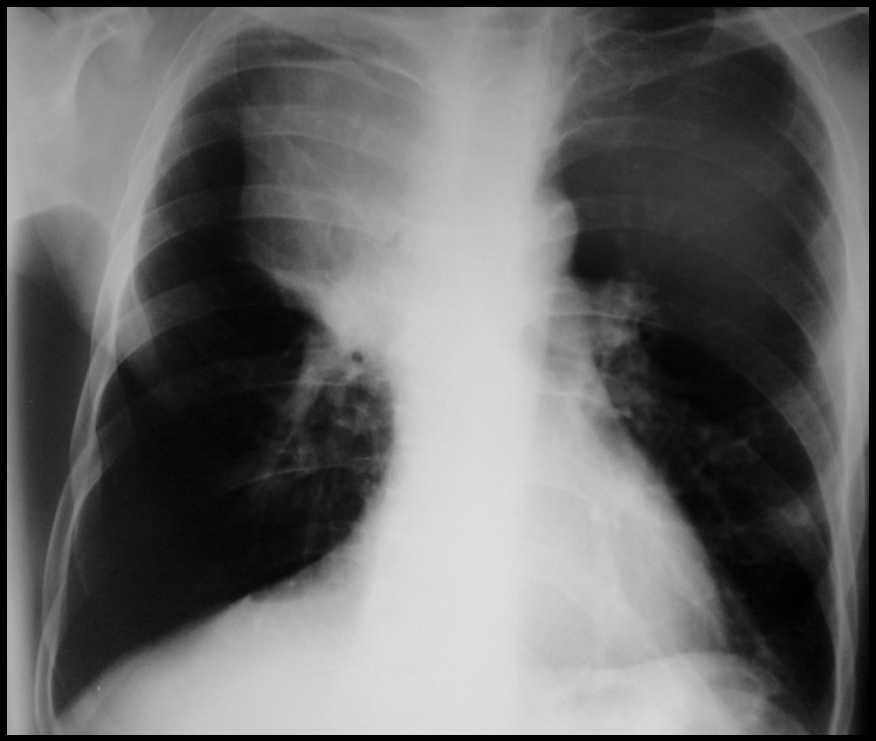
- **Trakaste**
  debljina 2-20 mm,
- Pločaste atelektaze
- Pleuralne efuzije
- Švarte
- Aspergiloze



- **Vretenaste**

- Nakupljanje tečnosti u incizurama
- Atelektaze
- Lokalizovani pleuralni izlivi







V eličina

do 3 mm - *mikronodusne ili milijarne*

3-5 mm - *makronodusne*

5 mm - 3 cm - *kružne (coin lesion)*

> 3 cm - *tumorske*

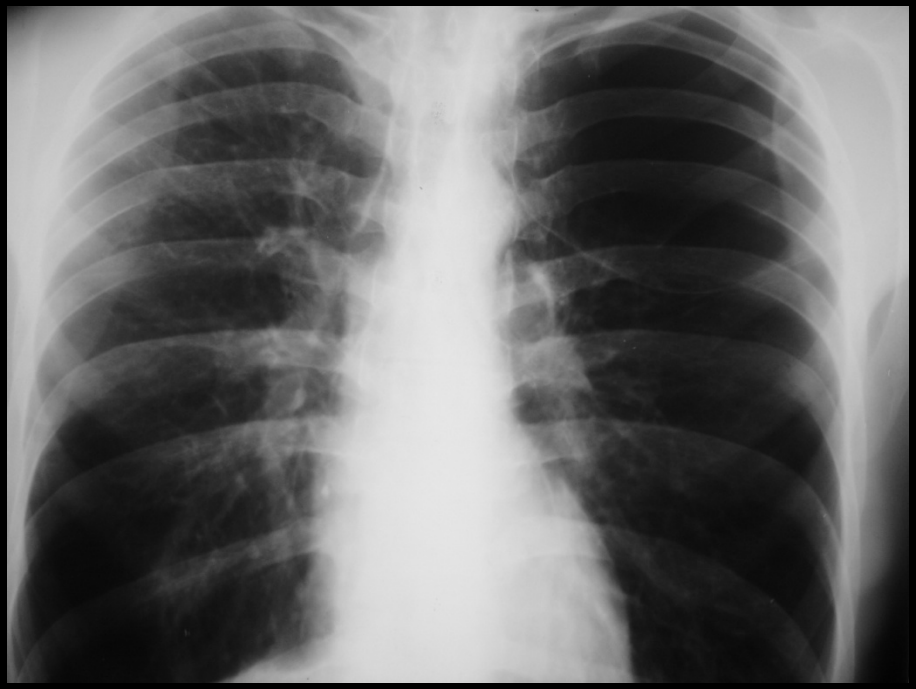


I ntenzitet

MRLJE poredi se sa mekim tkivima, neoštro ograničena. Znak acc. ili aktivnog procesa u pl. parenhimu.

PEGE poredi se sa kalcijumskom gustinom, oštro ograničena. Znak inaktivnog procesa u plućima ili pleuri.

Patološke svetline



Daju transparenciju

Jednostrane – Obostrane
Lokalizovane – Difuzne

Agenezija-hipoplazija grana pl.arterije
Atrezije, stenoze bronha
Emfizem
Pneumatocela
Gasni sadržaji
Terapijske procedure

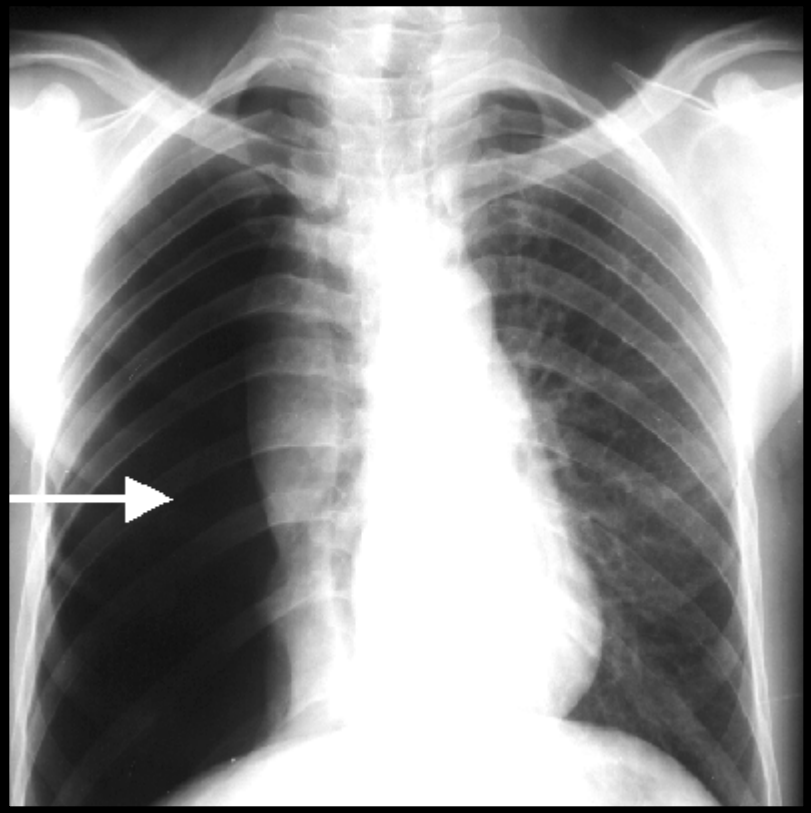
Rtg:

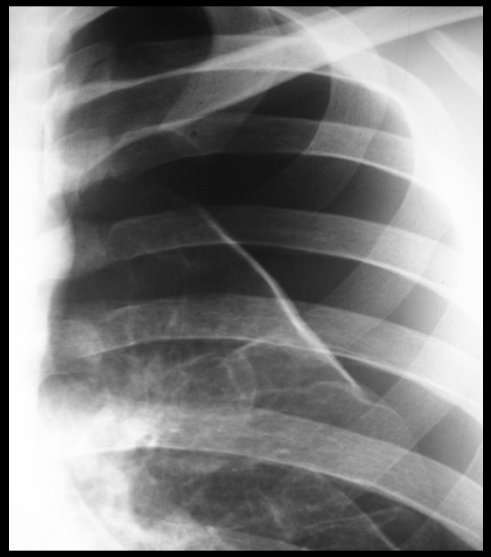
avaskularna svetlina,

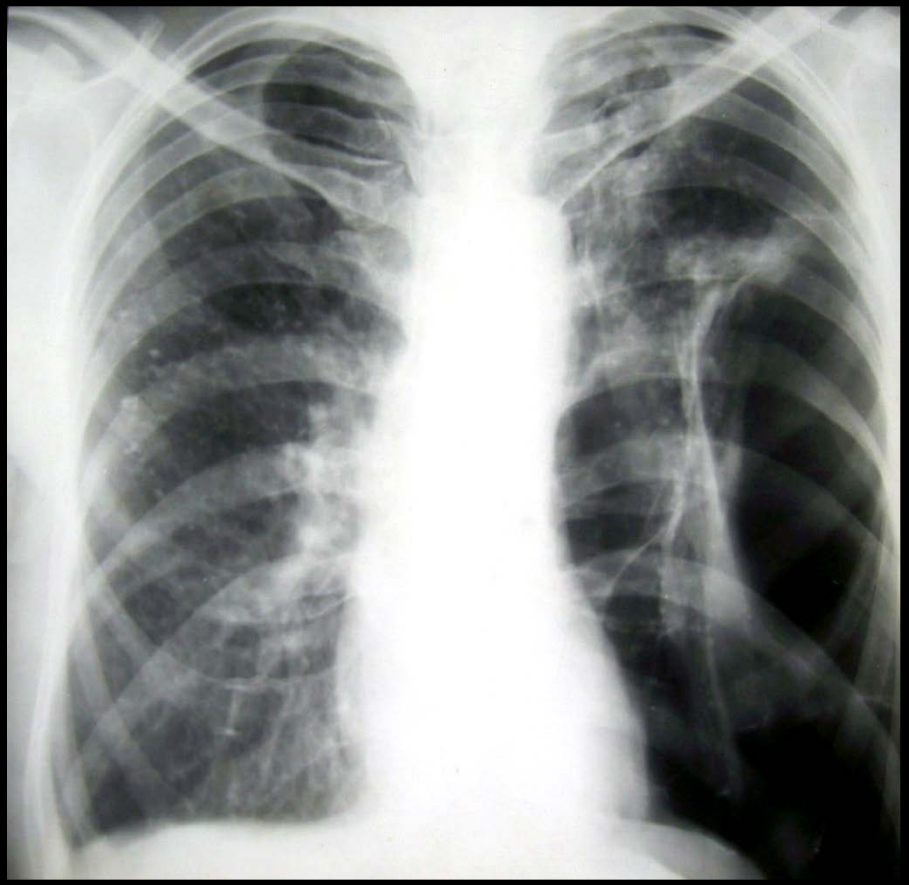
hemitorax proširen, međurebarni prostori prošireni,

hemidijafragma spuštena,

medijastinum na zdravu stranu

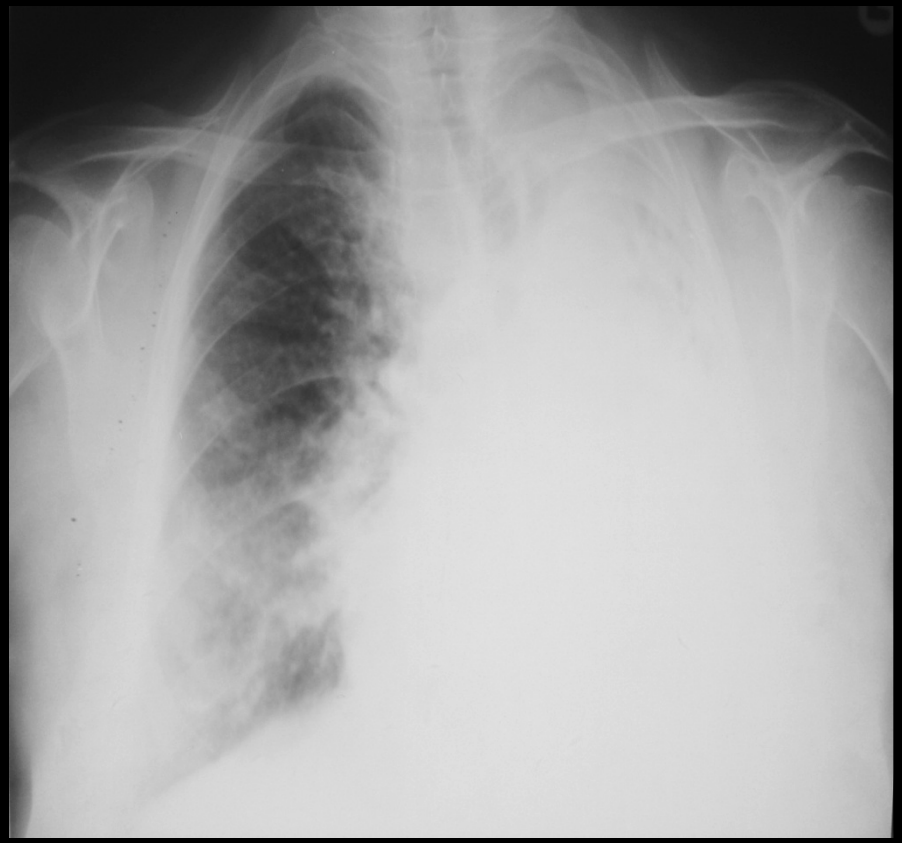







L

Patološke tamnine



Vide se kao senke

Atelektaza

sy karakteriše nestanak vazduha iz određenog dela pluća

Rtg: "mlečno staklo"

poštuje anatomske granice, privlači incizure, privlačenje hilusa,

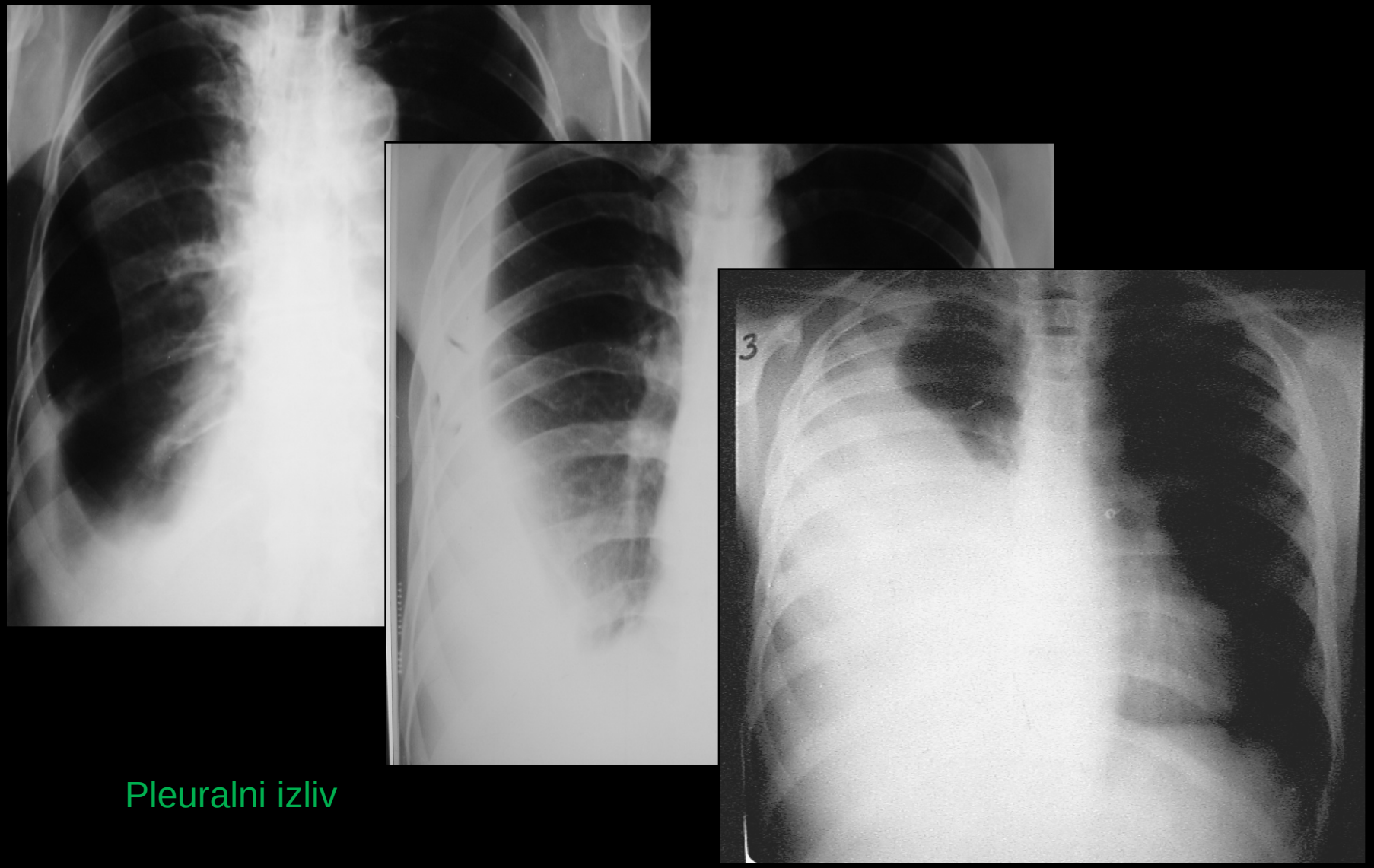
sužen hemitorax,

medijastinum na bolesnu stranu,

elevirama hemidijafragma,

odsustvo vazdušnog bronhograma,

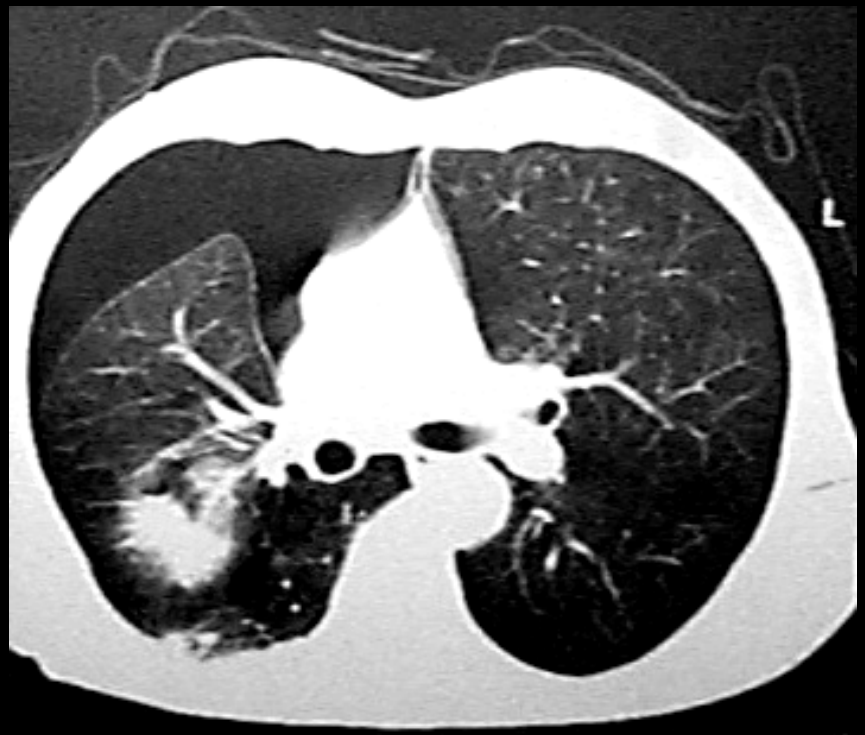
kompenzatorna hiperinflacija



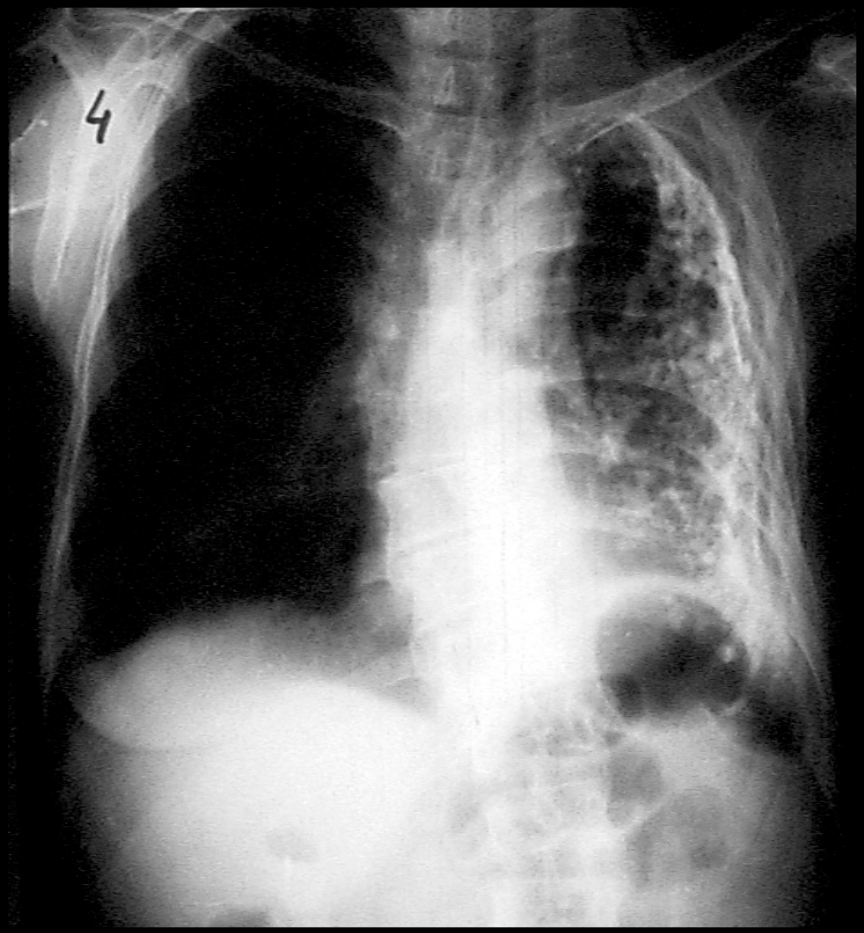
Pleuralni izliv

masivni Likvidopneumotoraks



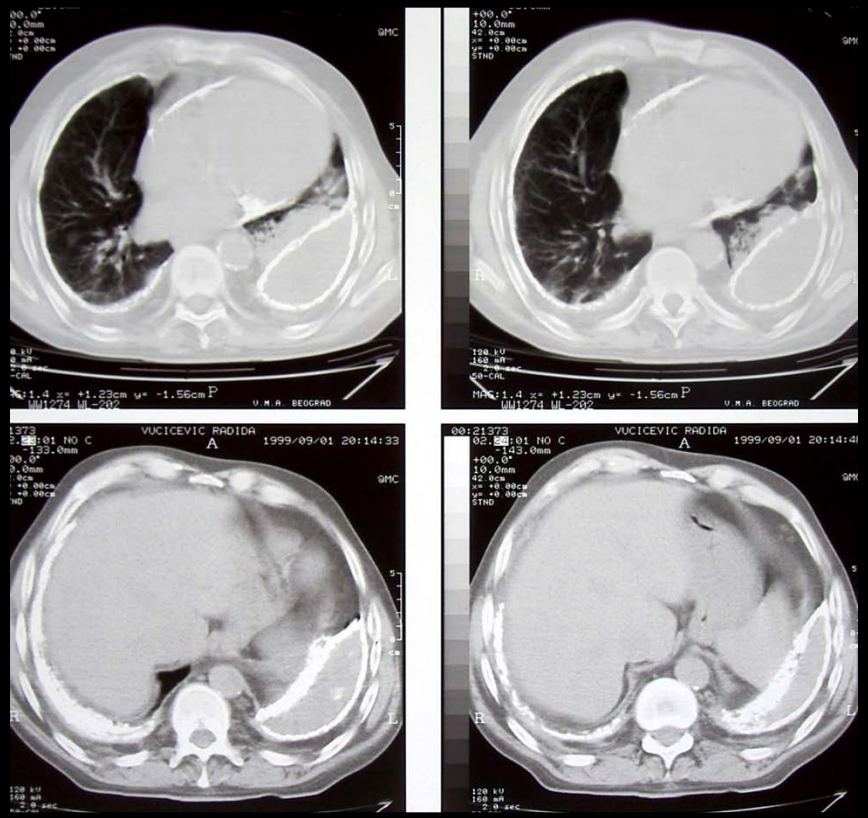


Fibrothorax



kalcifikovana pleura

Polyserositis



kalcifikovana pleura i perikard

Univerzitet Priština - Kos.Mitrovica
Medicinski fakultet

Predmet **Radiologija**

http://www.med.pr.ac/katedra/interna-medicina.php