HOSPITAL-ACQUIRED PNEUMONIA

LEC 4

د- مشتاق وتوت

()Definition: **refers to pneumonia that occurs ³48 hours after admission, which was not incubating at the time of admission.**

, post-operative pn., or nosocomial pn or ventilatory ass pn, health care ass pn.

Early-onset HAP within the first 4 days of hospitalization. Late-onset HAP and VAP: 5 days or more of hospitalization.

() incidence:

*** 2nd most common nosocomial infection**

***Rate 5-15 cases/ 1000 hospital admission**

*** - 6- to 20-fold in mechanically ventilated patients**

***Increases hospital stay by 7-9 days / patient**

***Mortality rate is seriously high 30- 50 %**

()Factors predisposiong to HAP:

*age>70 years, female sex.
*chronic lung diseases.
*h2 blockers or antacids, cs.
*dm, malignancy.
*post-operative.
*bulbar or vocal cord palsy.
*unconscoius.
*vomiting, achalasia, dysphagia

*ng tube, tracheostomy, bronchoscope.
*dental or sinus infection.
*bactereamia: abdominal sepsis, iv cannula, infected emboli

organisms

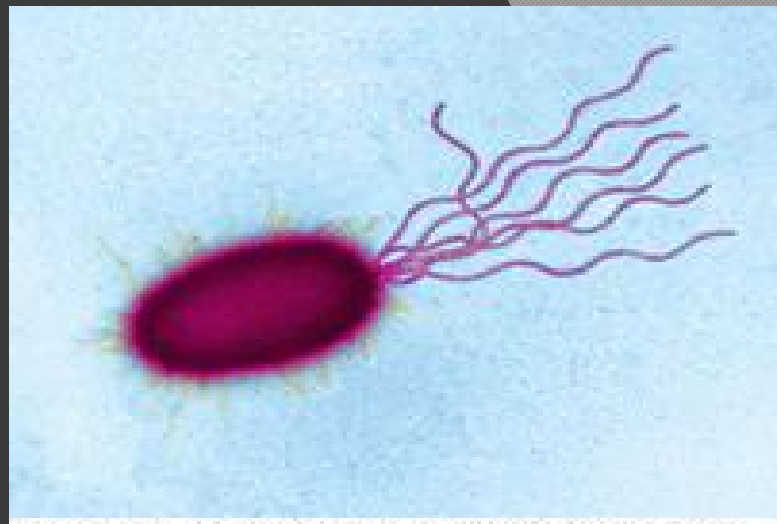
Bacterial (80-90%):

- **Gram –ve bacilli (50-70%)**
  - **Pseudomonas aeruginosa**
  - **Enterobacteriaceae**
- **Staphylococcus aureus (15-30%)**
- **Anaerobic bacteria (10-30%)**
- **Haemophilus influenzae (10-20%)**
- **Streptococcus pneumoniae (10-20%)**
- **Legionella speecies (4%)**

Viral (10-20 %)

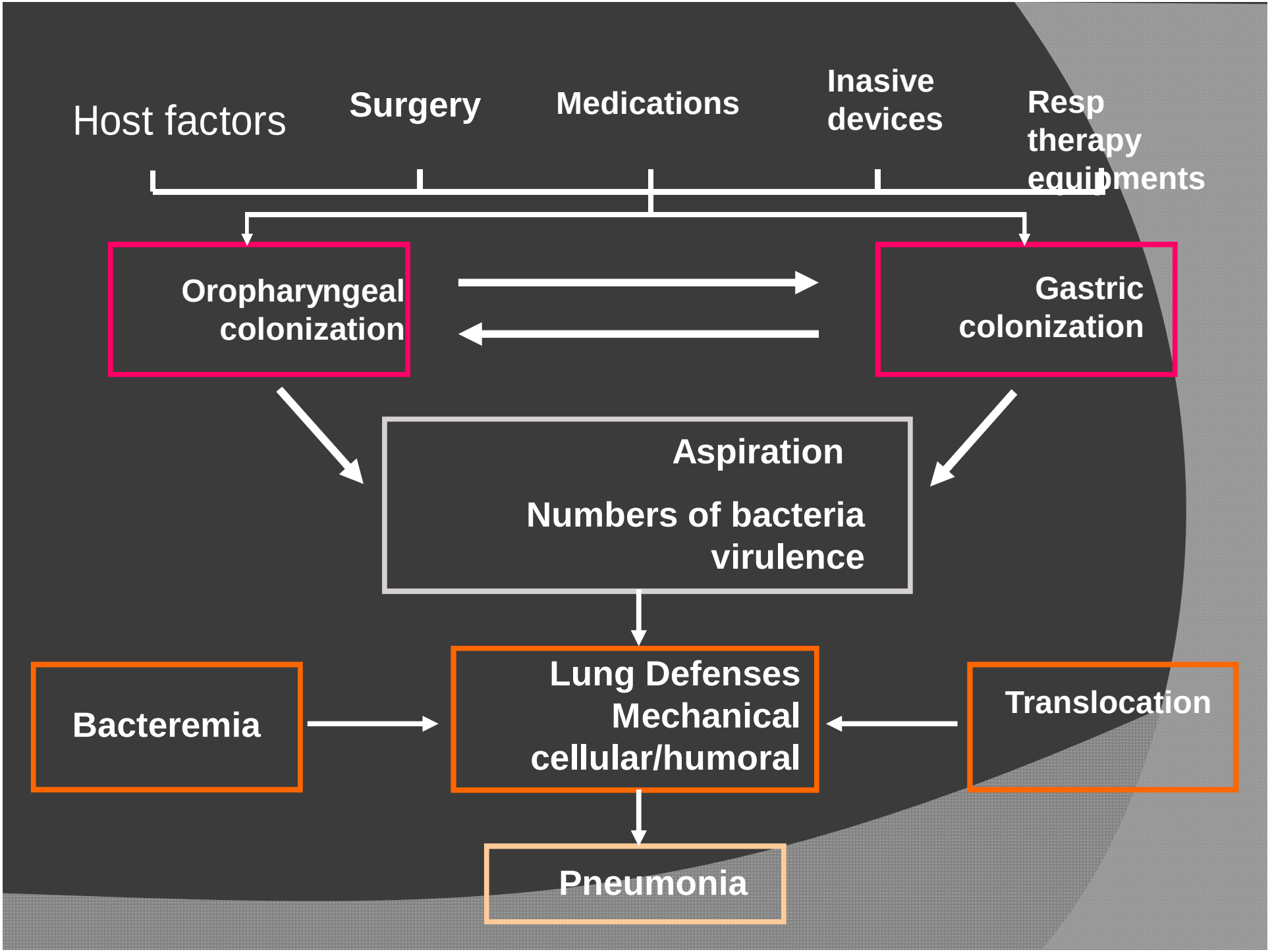
- **Cytomegalovirus**
- **Influenza**
- **Respiratory syncytial virus**

Fungal (< 1%)



()Pathogenesis: ž

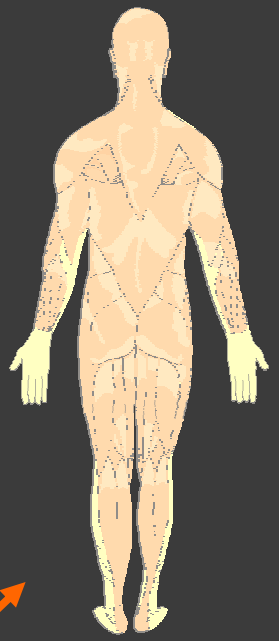
1-aspiration is play a central role.
2-polymicrobial, mostly g- negative bacilli (nosopharynx),
3-together with poor host defenses, very ill pateints or semiconscious so unable to clear upper airways & resp tract secretions.



Source of infection

Environment

Devices



Air: aspergillus

Water: legionella

Food:enteric Gram - ve

Fomites: S. aureus

RSV

Endotracheal tube

Suction catheters

Bronchoscope

Respiratory therapy equipment

Nasogastric tube

Other Patients

Staff

()CLINICAL FEATURES:

*symptomes of acute bronchitis, followed by increased cough, purulent sputum, fever, dyspnea & cyanosis then appear. (hypostatic pn)

*o/e: sings of consolidation or cavitations.

* CXR: mottled opacities in lower zones.

()diagnosis: should suspected in any pt admited to hospital after 2 days, which develop:

*purulent sputum

*new CXR infilterate

*decrease O2 saturation

*tem > 38 centigrade

*leukocytosis or leukopenia

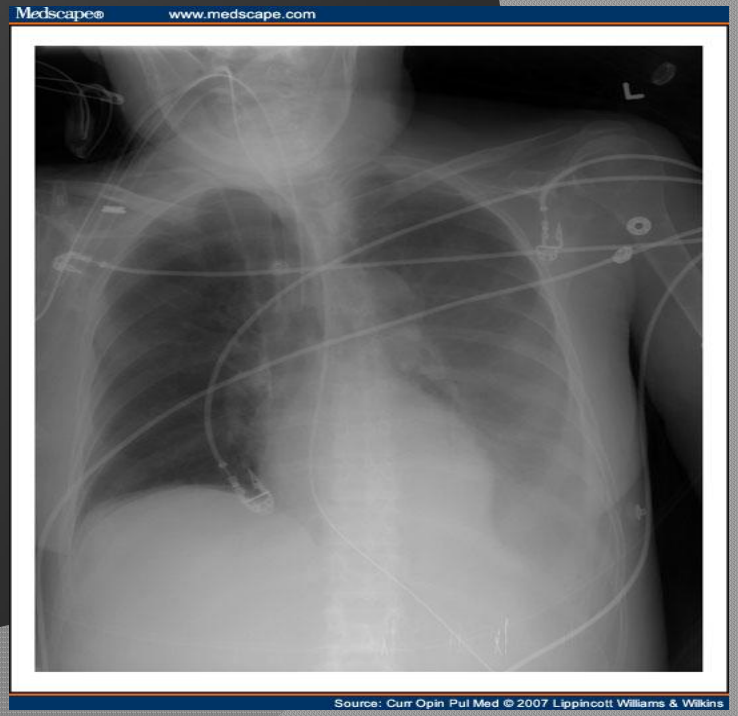
()management:

*cefotaxime plus gentamycin. or

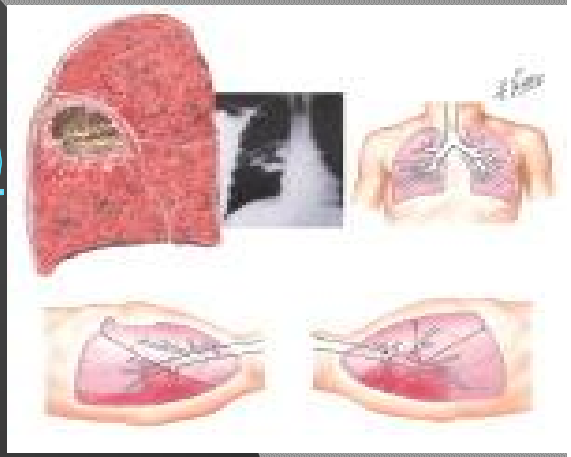
*meropenuem. or

*aztreonam plus flucloxacillin

*O2, iv fluids.



()**LUNG ABSCESS:(SUPPURATIVE)



()DEFINITION: is a form of pneumonia in which
there is destruction of the lung parenchyma.
suppurative pn: microabscess lung parenchyma.
lung abscess: large collection of pus or cavity lined by chronic inflammatory tissue. either:
primary lung abscess: infection of healthy lung tissue.
secondary: infection of pul infarct, collapse, bullae,
()ORGANISMS:
primary: staph. aur, klebsiella pn.
secondary: staph. aur, strep. pneum, h infleunzae, m. tuberc, bacteriod fragilis, MRSA

Lemierre’s syndrom:

*Is rare cause of pul absecess

*caused by fusobacterium necropharm.

*presented with sore throat, painfull swollen neck, fever , rigor, hemoptysis & dyspnea.

*the bact spread into JV leads to thrombosis & metastatic spread of the organisms.

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() CLINICAL FEATURES:

*SYMPTOMS:

-productive cough of large amount foul sputum.

-pleural pain.

-anorxia, vomiting, lossing wt.

-fever, rigor, profuse sweating.

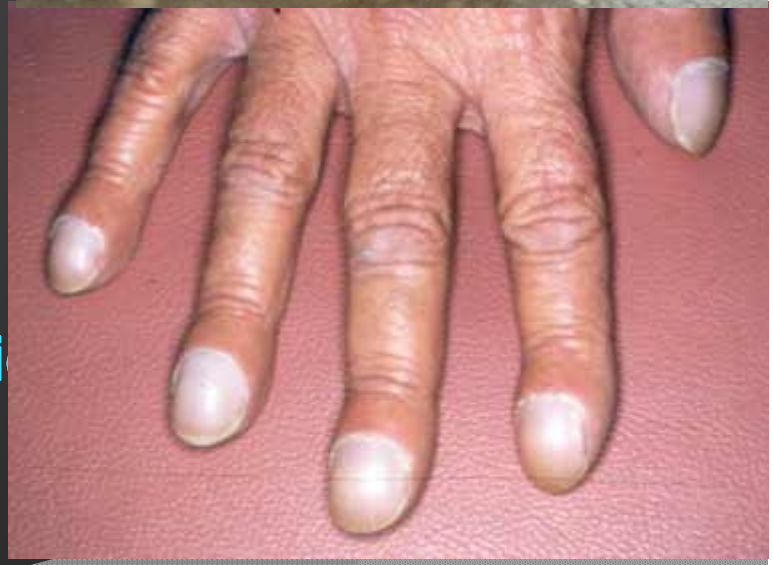
*SIGNS:

-high remittent fever.

-tachypnea, hypotension, dyspnea.

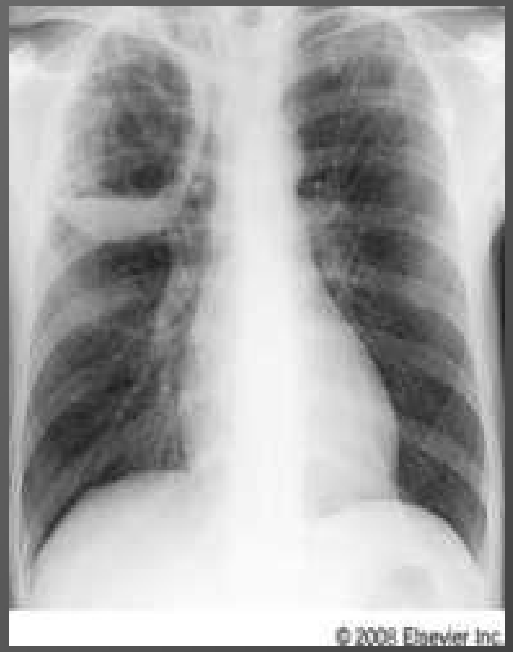
-digital clubbing.

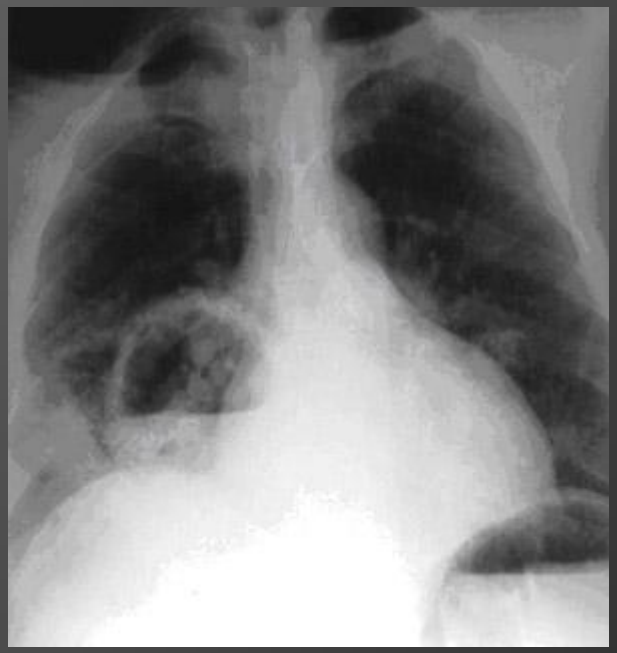
-signs of consolidation; signs of cavitati

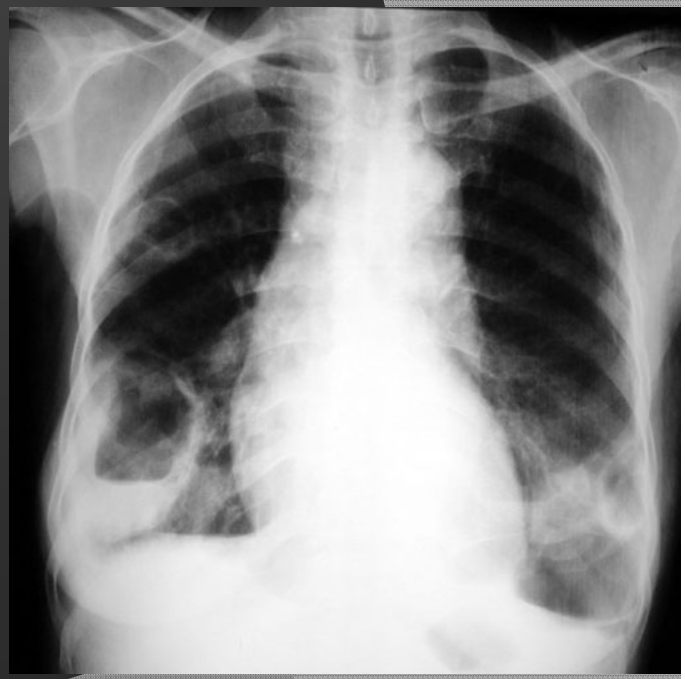


() CXR:

HOMOGENOUS LOBAR OR SEGMENTAL OPACITY, MAY CAVITATE LATER ON & SHOWS A FLUID LEVEL.







() MANAGEMENT:

*in many pt oral Rx with amoxicillin is effective.

*iv therapy is mandatory in moderate to severe cases.

*can add oral metronidazol if susp of anaerobic inf.

*if MRSA: oral with trimeth/sulpha, clindamycin, tetra, & linezolid.

If paranteral: vancomycin

*4-6 weeks duration of treatment.

*physiotherapy is of great value.

*surgical intervention indicated in:

1- failure to respond to medic

2- suspected neoplasm.

3- suspected hemorrhge.

4-large abscess > 6 cm

5- resistence organisms.

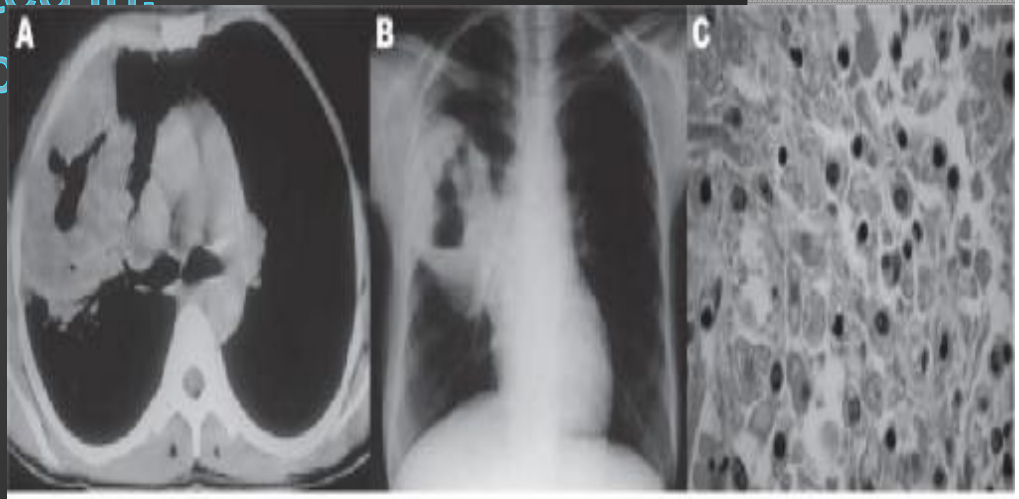


Figure 2 - Thorax CT-scan (A) and Rx-ray (B) of *Rhodococcus equi* bacteremia with lung abscess. Lung histological section with sheets of macrophages with foamy or abundant granular eosinophilic cytoplasm that contain Michaelis-Gutmann bodies, characterized by visible PAS-positive and diastase-resistant basophilic structures with targetoid-like concentric laminations (C). (HE 400x).

Complications

* Empyema due to rupture in pleural space ž
*Prolonged toxaemia and chronicity with fever, ž pleural pain and sweating
*Severe and fatal haemorrhage ž
*Metastatic brain abscess ž
. *Amyloidosis in case of prolonged suppuration ž
. ž

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()PNEUMONIA IN IMMUNOCOMP PT:

() occur because of defects in cellular or humeral immune mechanisms.

()organisms: pseudomonus aeurginosa most commonly but any low virulence bact became "opportunistic" pathogens (pneumocystis jirovecii) viral , fungal, mycobact, nocardia.

*infeaction is often due to more than one organism.

()clinical features:

fever, cough, dyspnea & infiltrate on CXR.

() diagnosis: lung biopsy, & other invasive procedures are impractical because the pt tired.

HRCT is useful in dif the cause:

*focal unilateral opacification--mycobac, nocardia.

*bilateral opacification-pneumo jirovecii

*cavitation- nocardia, mycobact

*halo sign- aspergillosis

()management: 3rd generation cephalosporin

Thank you