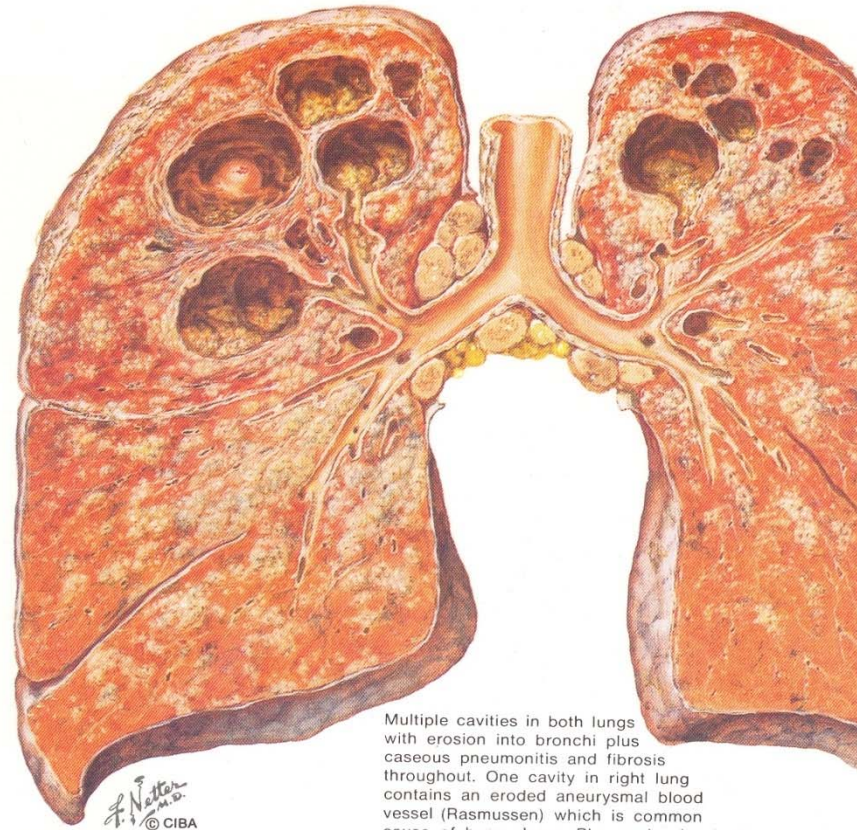


Post Primary Pul-Tuberculosis ;Clinical Features, Diagnosis & Treatment

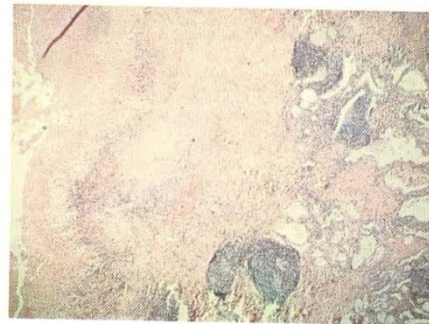


Prof. A.K.Janmeja
Head, Department of Pulmonary Medicine
&
Medical Superintendent
GMCH, Chandigarh

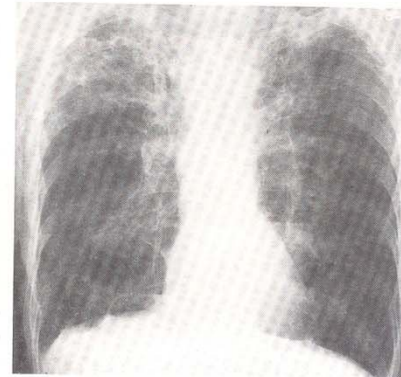
Extensive cavitary disease



Multiple cavities in both lungs with erosion into bronchi plus caseous pneumonitis and fibrosis throughout. One cavity in right lung contains an eroded aneurysmal blood vessel (Rasmussen) which is common cause of hemorrhage. Pleura also involved



Section through wall of cavity. Cavity is to the left and is bordered by liquefying caseation with degenerating tubercles and collections of lymphoid cells



Bilateral advanced fibrocavitary tuberculosis

Post Pr. T.B : C F, Δ & Treatment

I. General Constitutional Symptoms

- Mild debility, Lassitude
- Fever
- Tiredness
- Night Sweats
- Anorexia
- Weight Loss
- Digestive disturbances
- Amenorrhea .

2.Systemic Symptoms: Respiratory System

- (1) Cough : Involvement of Lungs, bronchi
- (2) Expectoration [muroid & purulent]: Lung cavity
- (3) Hoarseness : Larynx
- (4) Hemoptysis : Mild, Mod or massive
(Most common cause is TB)
- (5) Pain Chest : Dry pleurisy →pleuritic
wet pleurisy→ Pl. effusion
- (6) Dyspnoea : Extensive involvement & fibrosis

Clinical Signs

G P E:

- * Temp ↑
- * Pulse ↑

Chest signs:

- *Infiltration crepitations
- *Cavity : cavernous breathing (BB)
- *Consolidation : dullness, BB, crepitations
- *Pleural effusion / empyema
- *Pneumothorax
- *Hydro pneumothorax

Radiological Signs

- * Infiltration

- * Cavity
 - Thin wall
 - Thick wall

- * Fibrosis

- * Calcification
 - Lung
 - Pleuro-Pul
 - Hilar

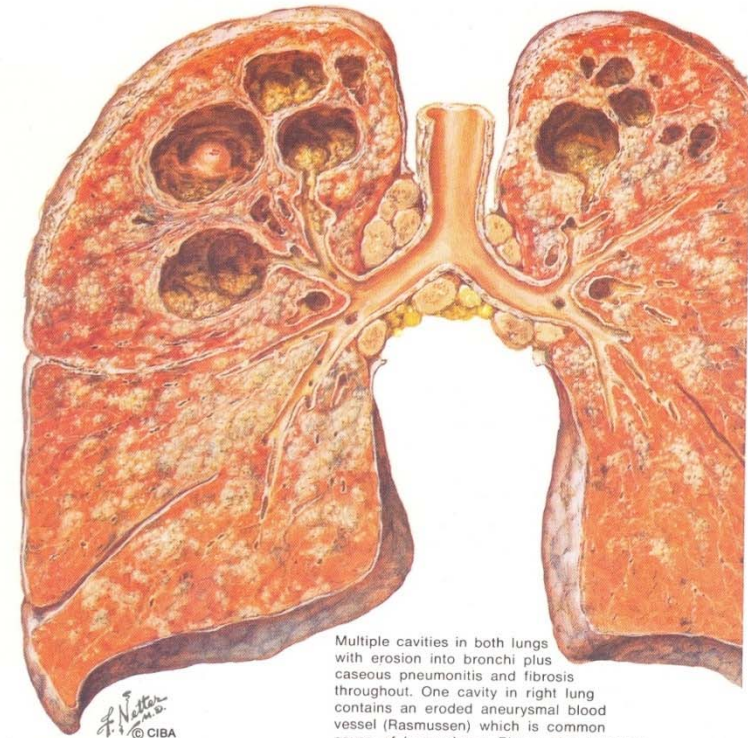
- * Pneumonia

- * Pl. effusion / empyema

- * Tuberculoma

- * Pneumothorax

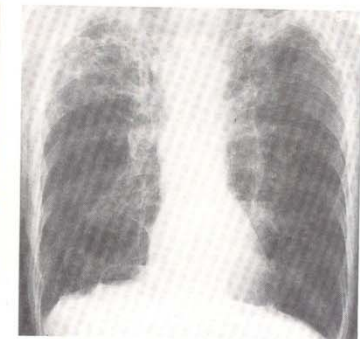
Extensive cavitary disease



Multiple cavities in both lungs with erosion into bronchi plus caseous pneumonitis and fibrosis throughout. One cavity in right lung contains an eroded aneurysmal blood vessel (Rasmussen) which is common cause of hemorrhage. Pleura also involved



Section through wall of cavity. Cavity is to the left and is bordered by liquefying caseation with degenerating tubercles and collections of lymphoid cells



Bilateral advanced fibrocavitary tuberculosis

3. Extra pulmonary manifestations

1. Laryngeal

2. Intestinal

3. Peripheral Lymph adenopathy

4. Uro-genital Endometrial Tuberculosis

- - T-O Tuberculosis

*Infertility

*Amenorrhea

5. Bone

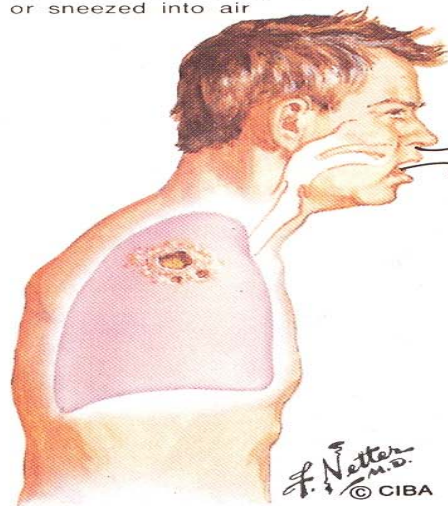
6. Joints

7. Kidney

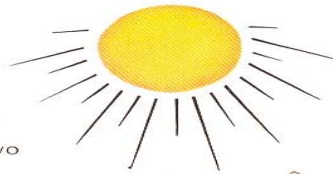
Tuberculosis – Dissemination of Tuberculosis

Expulsion

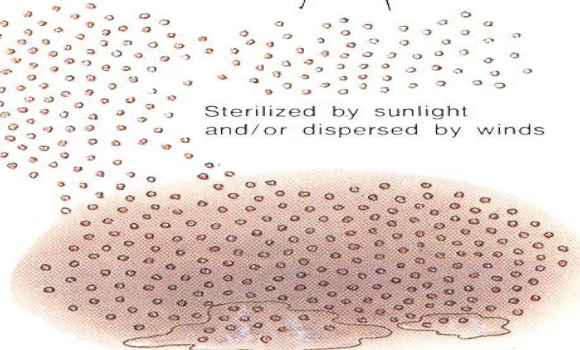
Droplets containing *M. tuberculosis* coughed or sneezed into air



Droplets remain suspended in air for an hour or two



Sterilized by sunlight and/or dispersed by winds

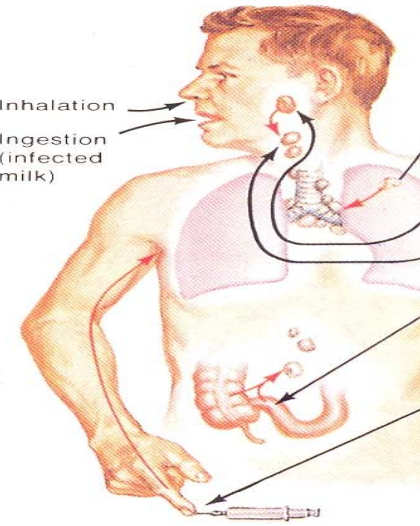


Infectious mycobacteria preserved in darkness and moisture from hours to months

F. Netter M.D. © CIBA

Introduction into host

Inhalation
Ingestion (infected milk)



Laboratory accident

Implantation

Lungs (initial infection and in lung). Drainage to hilar lymph nodes

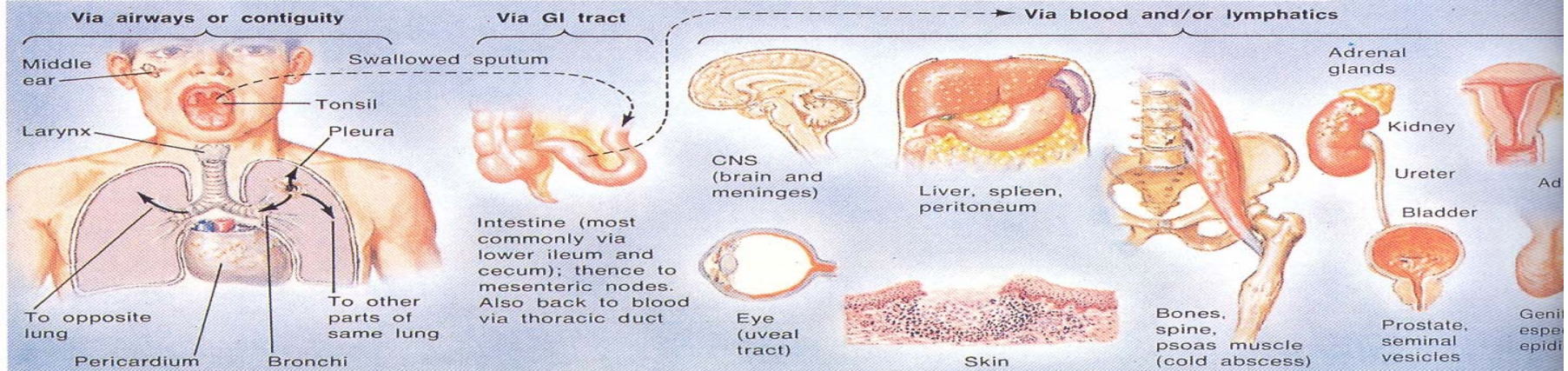
Tonsil Drainage to cervical lymph nodes

Lymph nodes

Intestine (most commonly ileum and cecum). Drainage to mesenteric lymph nodes

Finger Drainage to axillary lymph nodes

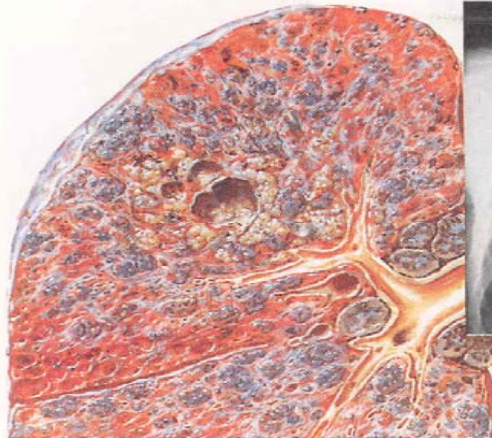
Secondary dissemination to other organs



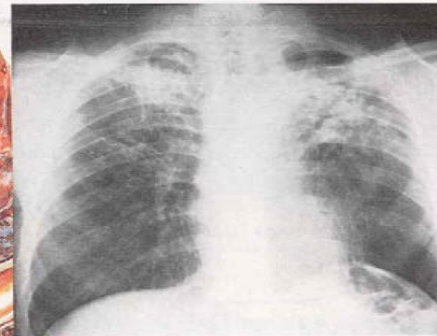
Complications of tuberculosis

1. Hemoptysis
2. Spontaneous pneumothorax
3. Tub. Laryngitis
4. Tub. Enteritis
5. Tub. endo-bronchitis & tracheitis
6. Amyloidosis

Silicotuberculosis and Rheumatoid Pneumoconiosis

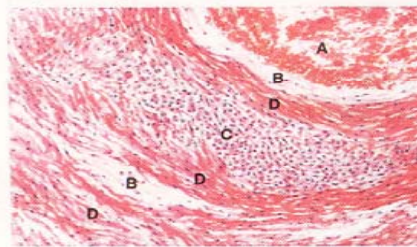


Tuberculosis with cavitation superimposed on silicosis



Silicotuberculosis. Supervention of tuberculosis on silicosis may be difficult or impossible to recognize radiographically

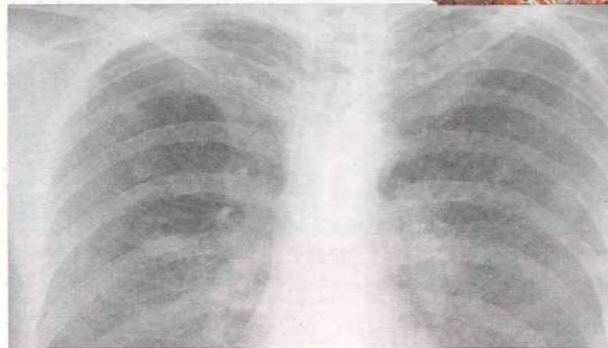
Caplan's Syndrome (Rheumatoid Pneumoconiosis)



Section through margin of Caplan's nodule.
A = necrotic central area, B = clefts,
C = zone of fibroblasts and inflammatory cells,
D = collagen



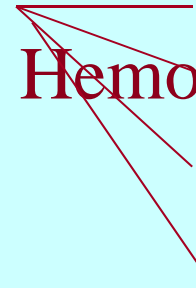
Caplan's nodules of various sizes in lung with silicotic nodules and coal dust deposits



Caplan's nodules in both lungs with some evidence of diffuse fibrosis

Sequelae

1. Open negative syndrome



Aspergilloma
Hemoptysis
Pneumothorax
TB-Reactivation

2. Bronchiectasis

3. Secondary bronchitis

4. Respiratory insufficiency

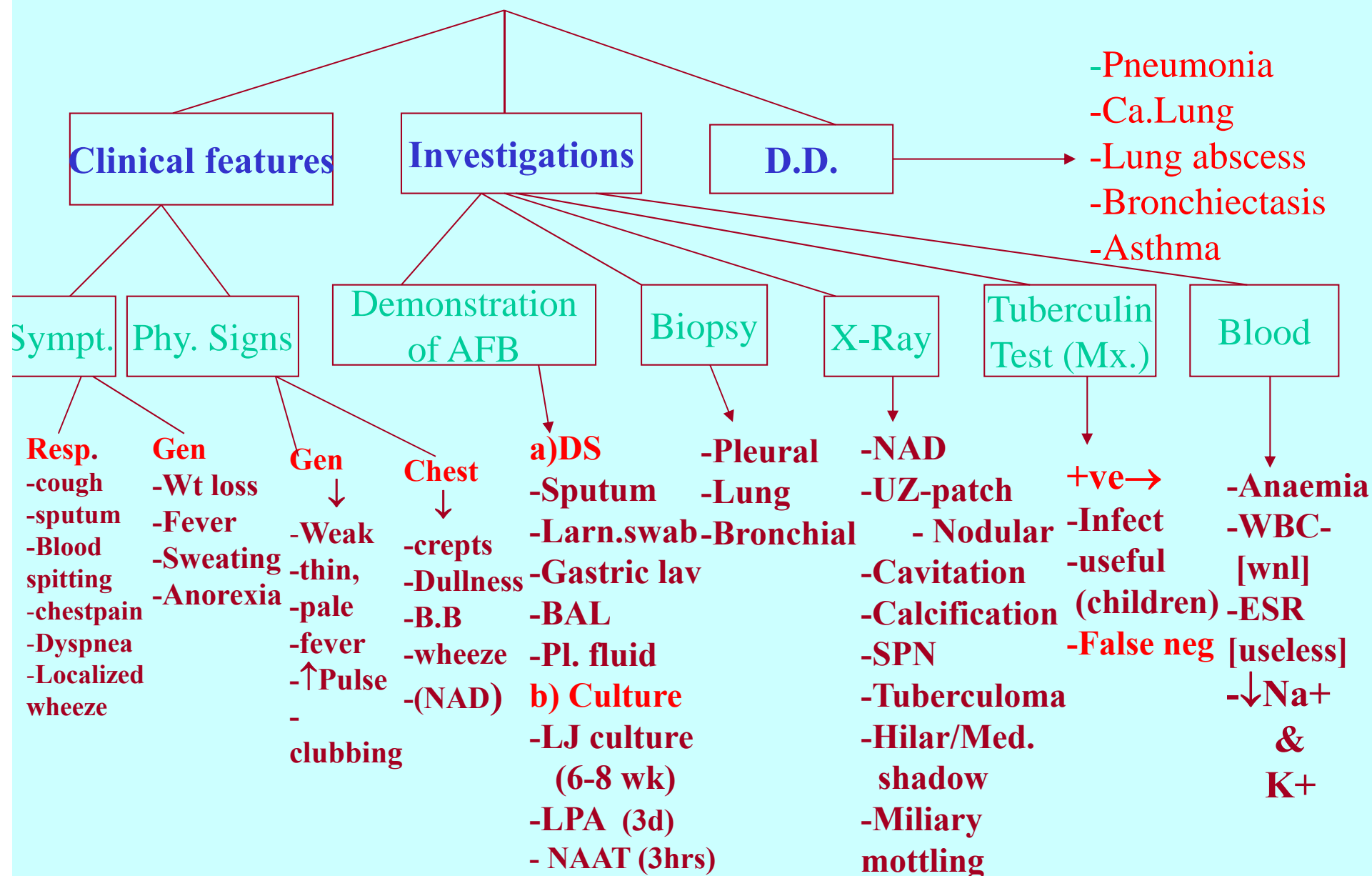
5. Cor-pulmonale

6. Amyloidosis

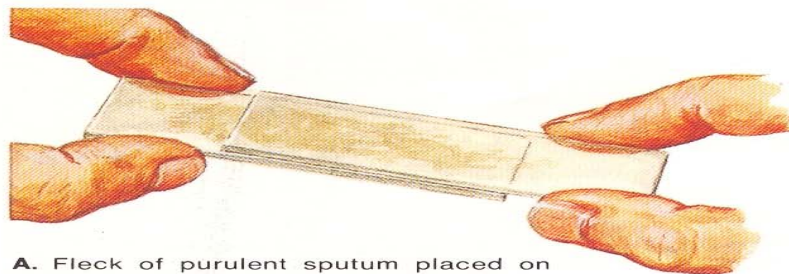
7. Disseminated Calcification of Lung

8. Emphysema

DIAGNOSIS OF PUL TB



Sputum Examination (Stained Smear)

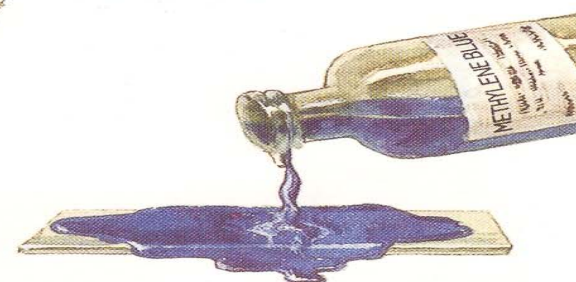
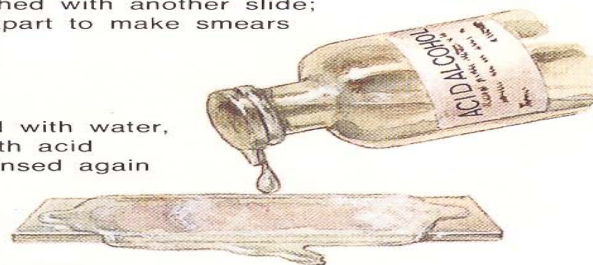


A. Fleck of purulent sputum placed on slide and crushed with another slide; slides drawn apart to make smears



B. Slide flooded with carbol-fuchsin and then heated

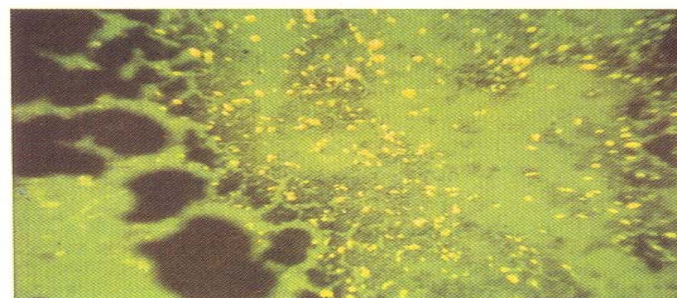
C. Slide rinsed with water, decolorized with acid alcohol, and rinsed again



D. Counterstained with methylene blue or malachite green for 30 seconds, rinsed again, and dried

F. Netter M.D.
© CIBA

E. Slide of sputum stained with carbol-fuchsin (Ziehl-Neelsen method as above), viewed under oil immersion, showing acid-fast bacilli (*M. tuberculosis*) as bright red rods

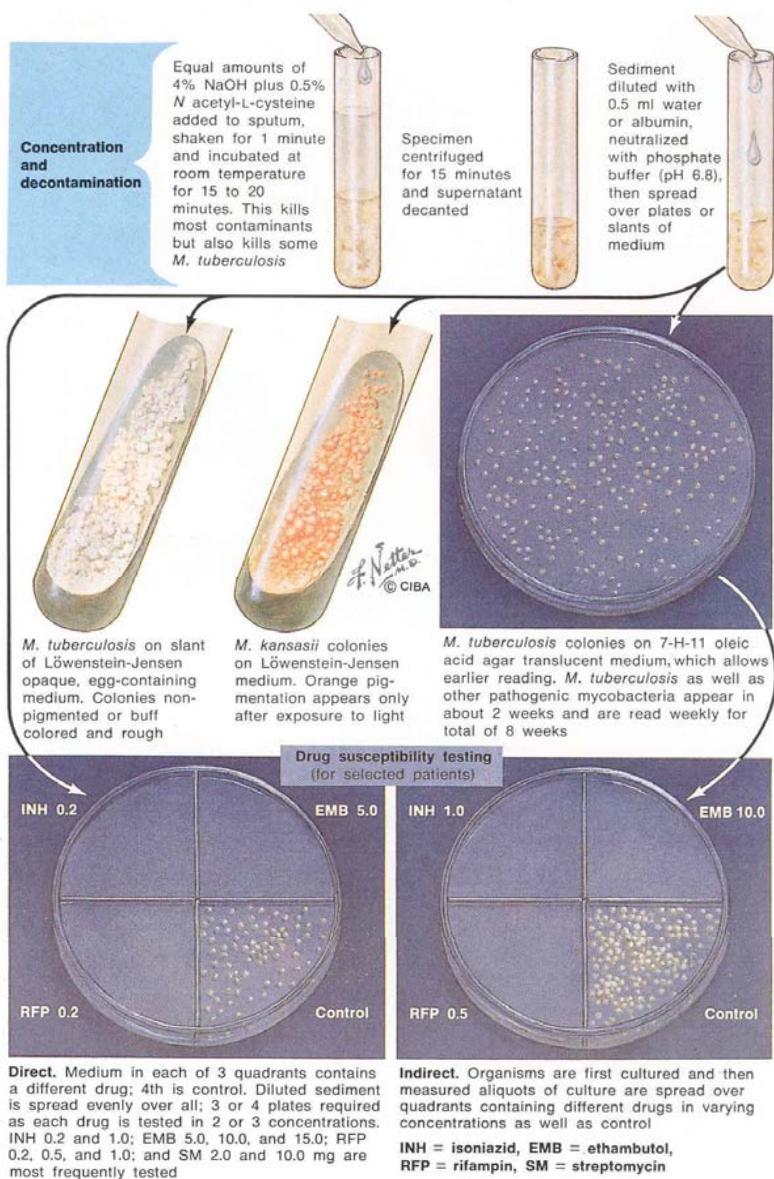


F. *M. tuberculosis* stained with auramine O which causes acid-fast bacilli to fluoresce (x 200)



G. Auramine O stain of *M. kansasii* (acid-fast "atypical" mycobacteria) which are much larger than *M. tuberculosis* (x 200)

Sputum Culture



Differential Diagnosis

1. Ac & Ch. inflammatory conditions of different part of respiratory system

*URTI- pharyngitis, tonsillitis, laryngitis

*Pneumonia

*Infection bronchi & Bronchiole: 

*Bronchiectasis

*Suppurative conditions of lungs (abscess etc.)

*Fungal infection : Histoplasmosis

*TPE

2. Ca Lung

3. Silicosis / Pneumoconiosis

4. Sarcoidosis

5. Mitral stenosis

Treatment of Tuberculosis

- Historical aspect:
 - old concepts
 - Sanatorium regimens (1840)
 - Sanatorium reg. + Surgical
- Medical treatment: C.T (1943, Walksman)
- Surgical treatment:
 - Collapse
 - Resection

Medical Treatment

***Aim of anti TB-CT treatment**

1. Cure
2. Prevention of Death
3. Prevention of transmission
4. Prevention of Relapse

***Effective medical treatment = proper CT**

***Failure of control of Tub problem ?→RNTCP**

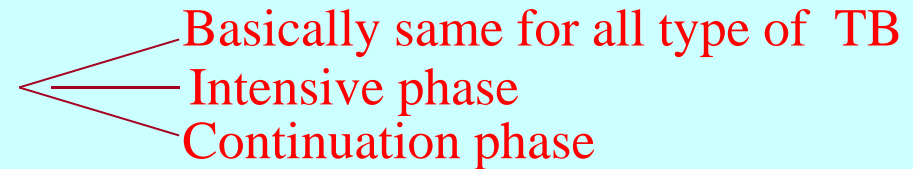
Essential Anti TB drugs

	Action	Potency	Daily dose	Int. Thrice/wk
H	Bactericidal	+++++	5	10
R		+++	10	10
Z		++	25	35
S		++	15	15
E	Bacteriostatic	+	15	30

Bacterial populations in a lesion

Populations	Drugs
A. Rapidly multiplying in the cavity wall	H,S
B. Intra cellular bacilli	Z
C. Persisters (Semi dormant, Spurts)	R
D. Dormant (die on their own)	
Bactericidal drugs:	HSRZ
Sterilizing drugs :	R& Z

Standard Treatment Regimens



Cat.	PT(WHO, IUATLD)	Reg. O D	Intermittent (RNTCP-GOI)
I	Rx of New Cases -Sp+ P.T -Sp-ve PT -Ex. Pul.TB	2 HRZE/ 4HR 2 SHRZ/ 4H R	$3H_3R_3Z_3/ 4 H_3R_3$ $3H_3R_3Z_3/ 4H_3R_3$
II	Re treatment Sp+ Relapse - Rx fail - Default	2 E 2SHRZE/ 1HRZE/ 5 HRE	$3H_3R_3Z_3E_3/ 1H_3R_3Z_3E_3/ 5 H_3R_3E_3$
III		
IV	Ch. Cases, who fail re-treatment→ MDR-TB by <i>Specialist</i>		

Role of Steroids

- As an adjuvant

TBM	Pericardial effusion
Laryngeal TB	
Renal	Massive Pl. effusion
Massive LAP	Severe hypersensitivity reaction
Adipose Disease	

- Dosages

TBM	40 mg	1-4 wk, than taper
Pericardial	40 mg	1-4 wk, than taper
Pl. effusion	40 mg	1-4 wk, than taper

- Monitoring of Rx in smear +ve patients

Sputum m /e At 2 M, at 4 M & at completion Rx
(2 month after I.P)

Thank You