

# Bronchiectasis

Dr R Nadama MD MRCP(lond) MRCP(UK),  
FRCP(Lond), EDARM, FCCP


# Bronchiectasis

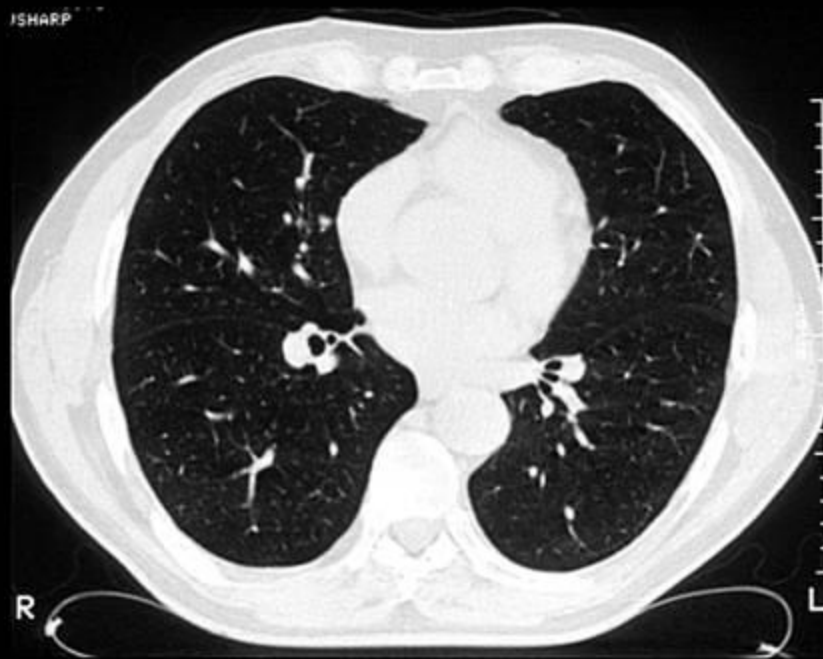
Originally described by Laennec in 1819

- Chronic
- Debilitating

Characterised

- persistent cough
- excessive sputum production
- recurrent chest infection

- 
- Permanent abnormal dilatation
  - impaired mucociliary clearance
  - bacterial colonisation
  - excessive airways inflammation



# Bronchiectasis

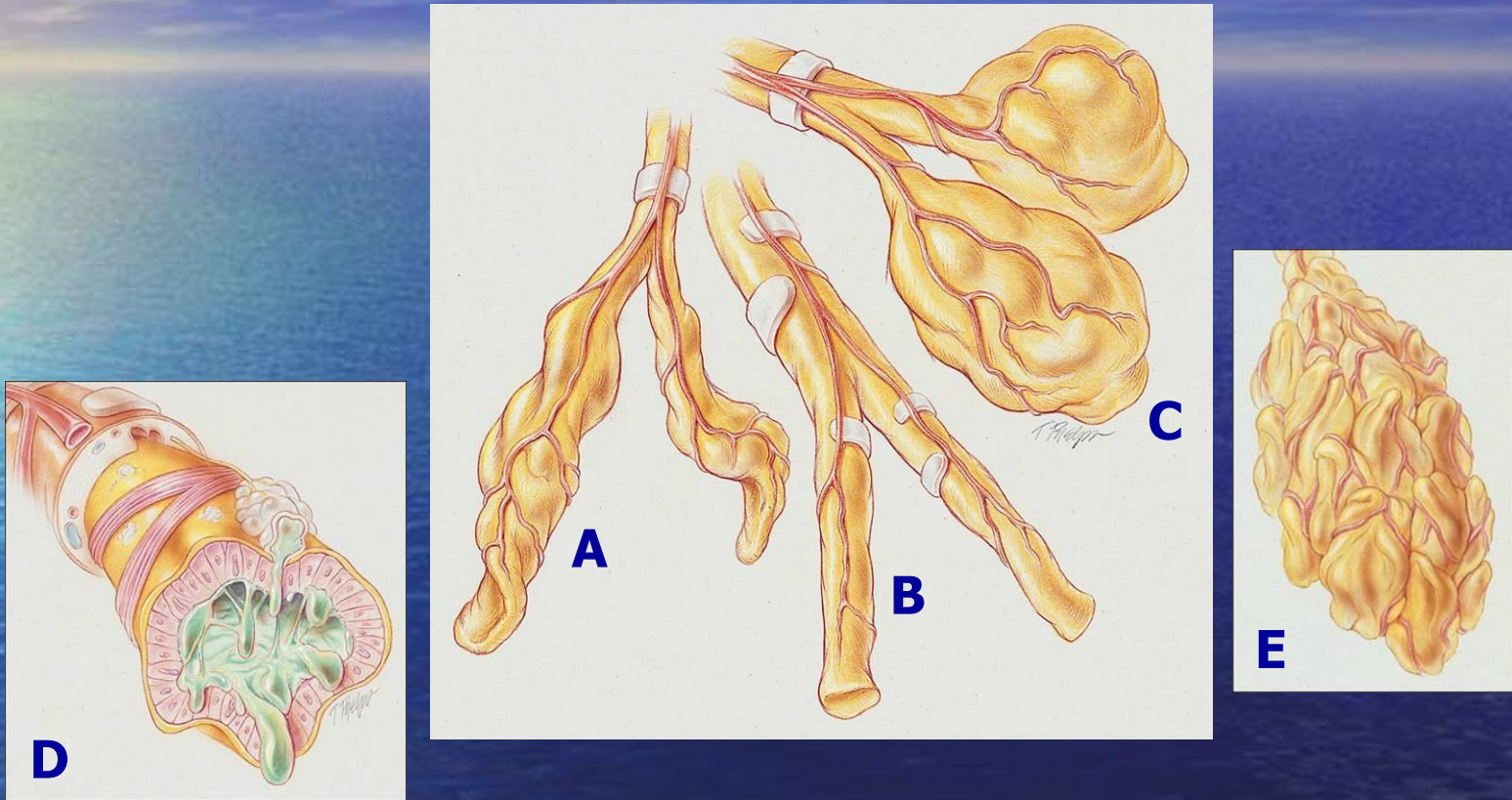
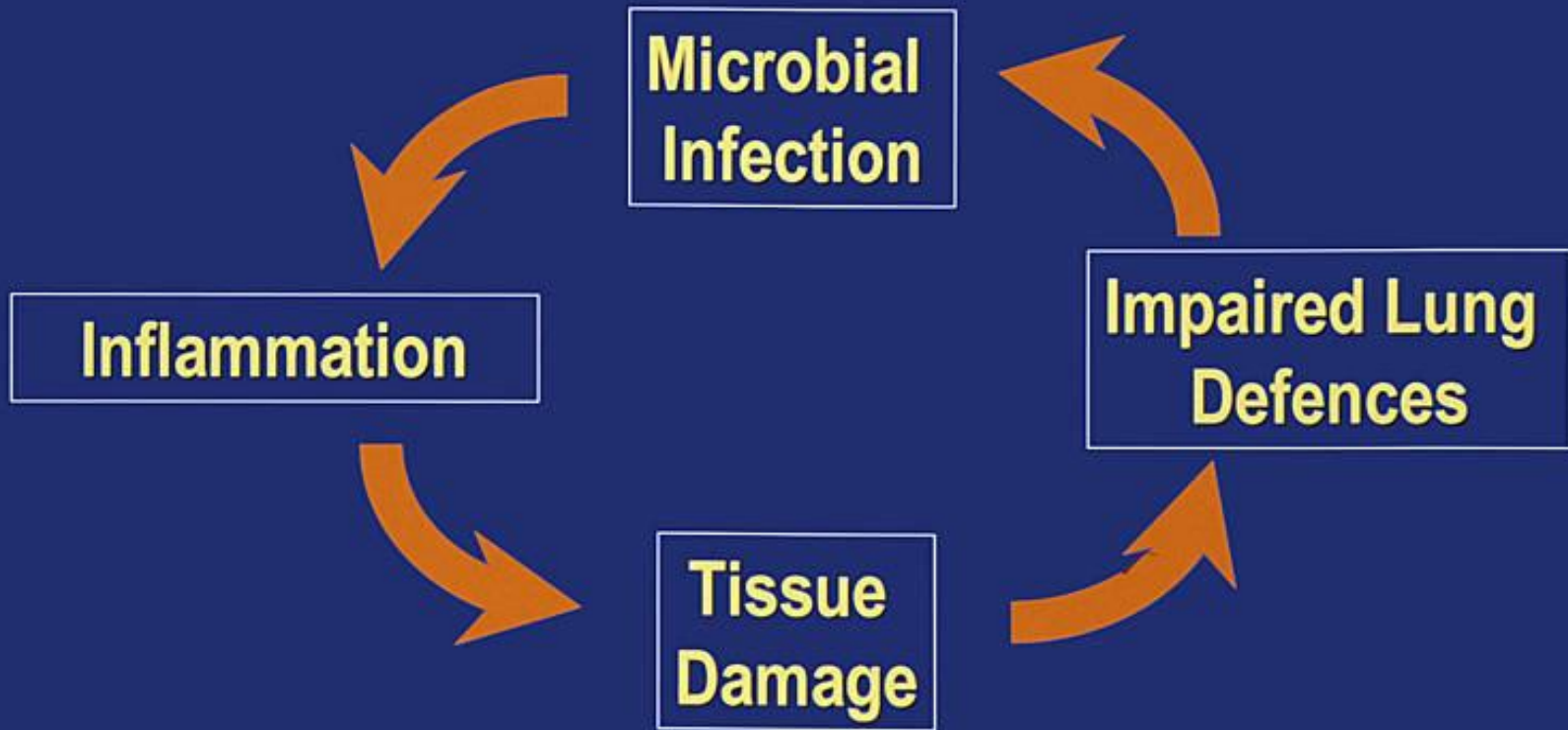


Figure 14–1. Bronchiectasis. A, Varicose bronchiectasis. B, Cylindrical bronchiectasis. C, Saccular bronchiectasis. Also illustrated are excessive bronchial secretions (D) and atelectasis (E), which are both common anatomic alterations of the lungs in this disease.

## A VICIOUS CYCLE OF INFECTION AND INFLAMMATION



# Etiology

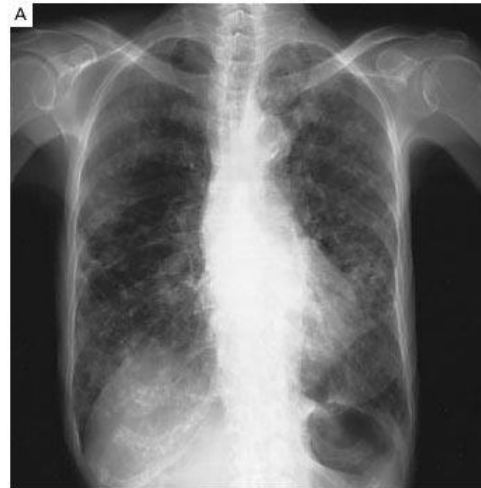
- Acquired bronchiectasis
  - Recurrent pulmonary infection
  - Bronchial obstruction
  - Childhood infection e.g measles, pertussis
  - Aspiration
- Congenital bronchiectasis
  - Kartagener's syndrome
  - Hypogammaglobulinemia
  - Cystic fibrosis
  - Abnormal cartilage formation

# Aetiology of bronchiectasis

Cause	n (% of study)
Post infection	51 (32)
Idiopathic	42 (26)
PCD	17 (11)
ABPA	13 (8)
Immune deficiency	9 (6)
Ulcerative colitis	5 (3)
Young's syndrome	5 (3)
Pan bronchiolitis	4 (3)
Yellow nail syndrome	4 (3)
Mycobacterium infection	4 (3)
Rheumatoid arthritis	3 (2)
Aspiration	2 (1)
CF variant	2 (1)
<b>Total</b>	<b>161</b>

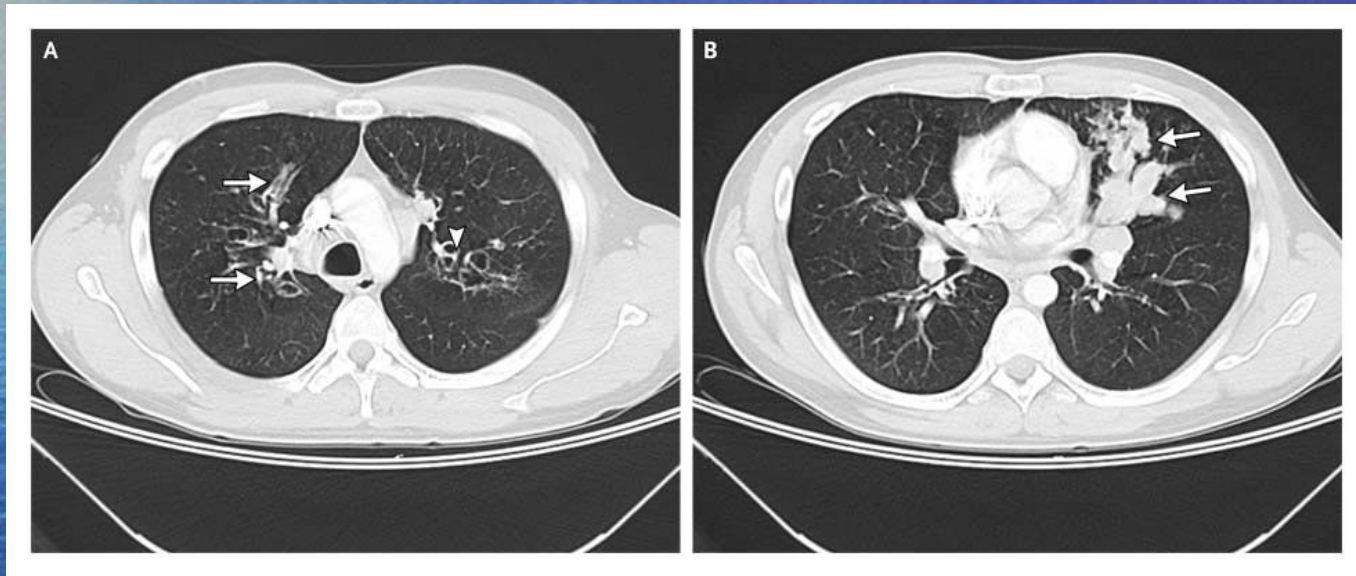


An 81-year-old woman was admitted with weight loss (18 kg in 27 months), hemoptysis, and tubular and diffuse granular shadows on her chest radiograph (Panel A)



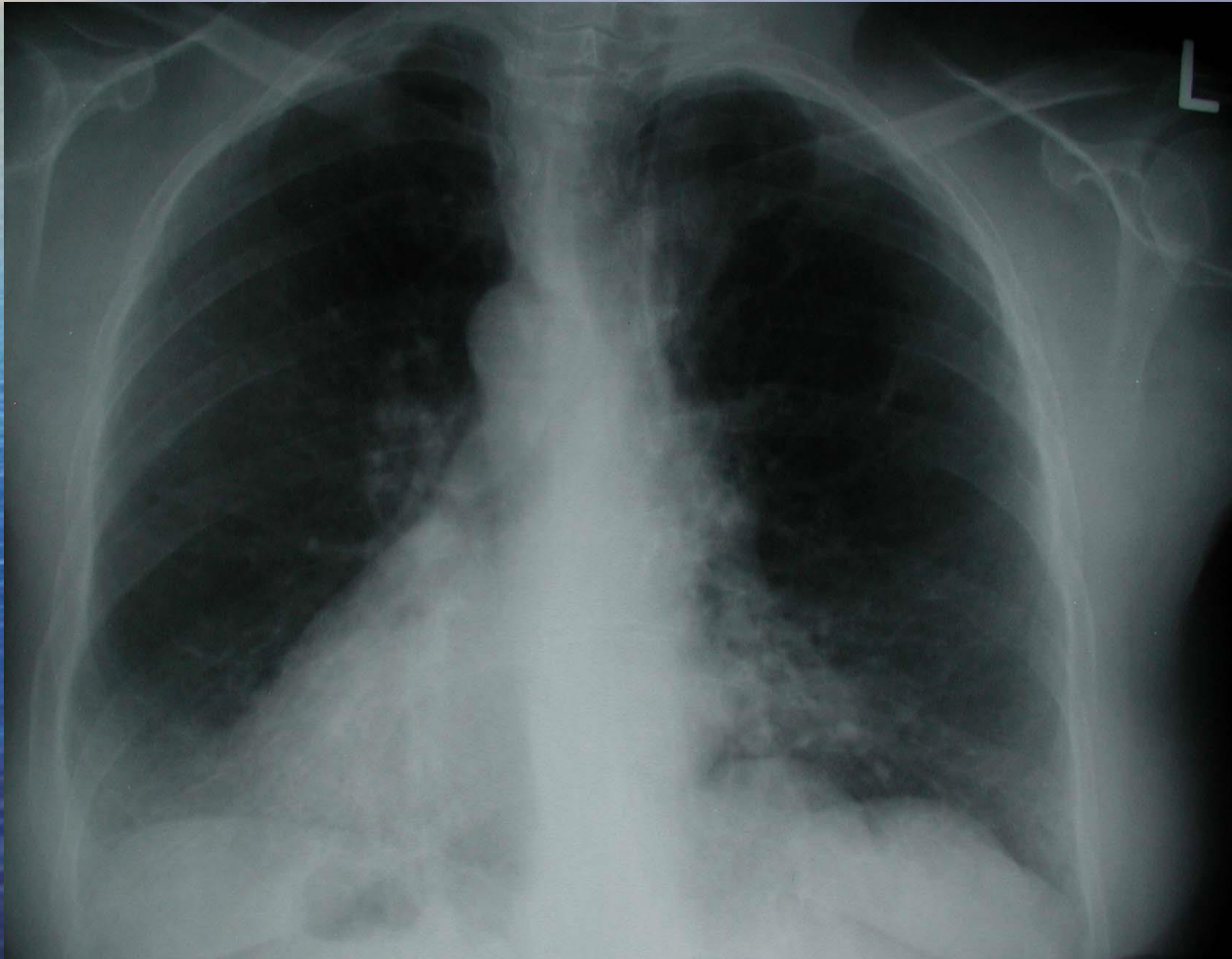
**Final diagnosis:  
MAC infection  
of bronchiectasis**

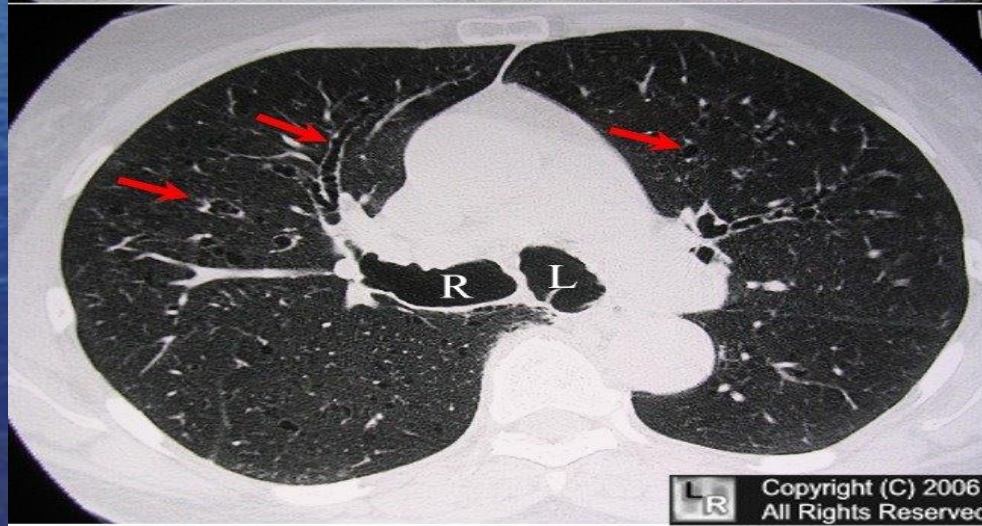
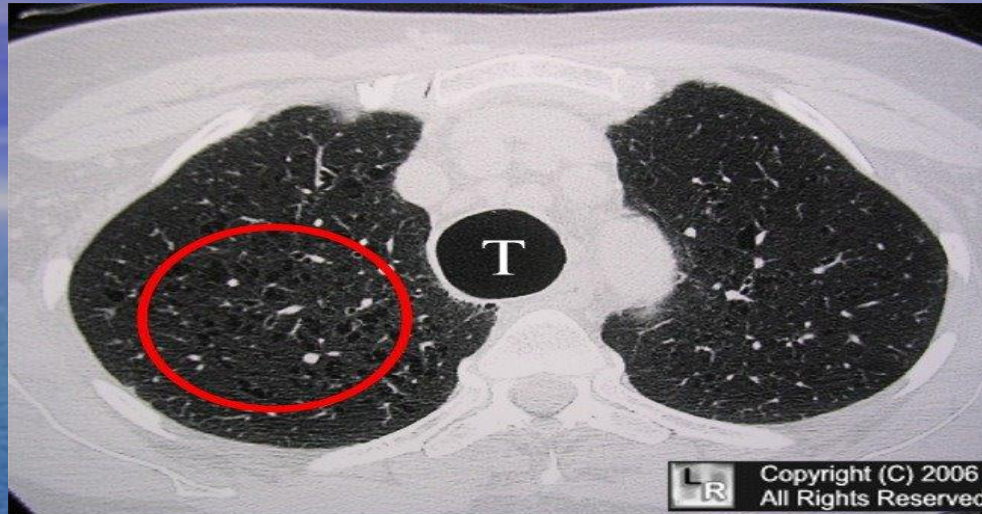
A 26-year-old man who smoked and had a long history of poorly controlled asthma and severe environmental allergies was admitted for an exacerbation of asthma



**Final diagnosis: ABPA**

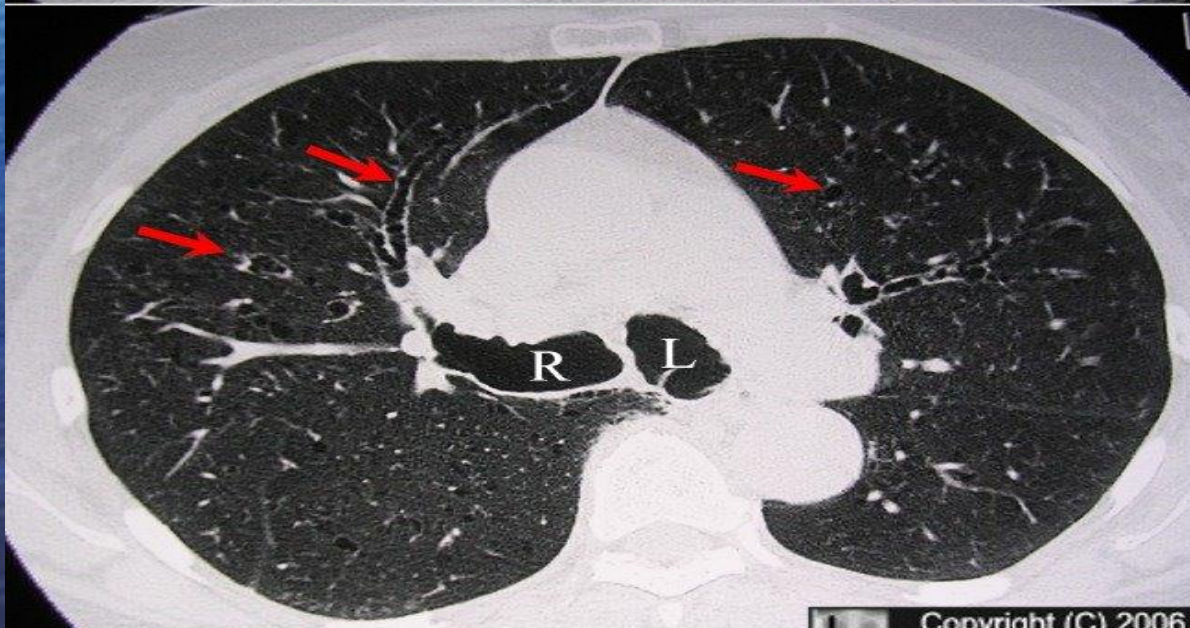
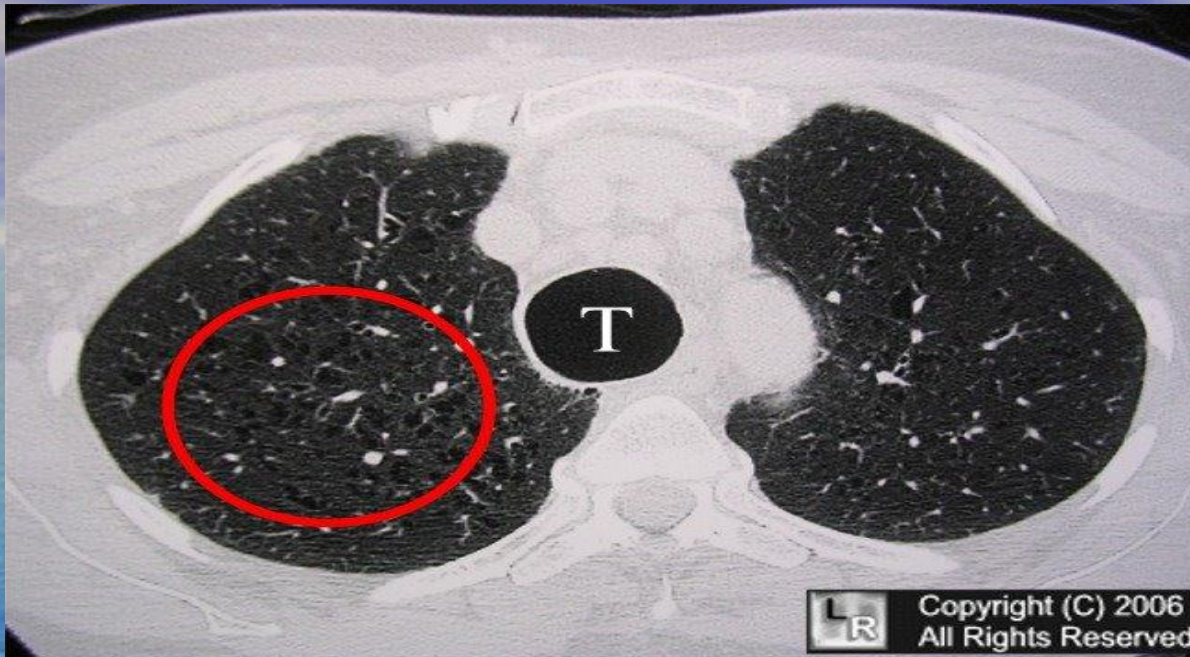
# PCD Katergener's





**Mounier-Kuhn P. Dilatation de la trachee: Constatations radiographiques et bronchoscopiques. Lyon Medical. 1932;150:106-9.**

# Mounier-kuhn





# Bronchiectasis

Adults

Who to suspect

# Persistent productive cough

- young age at presentation
- symptoms over many years
- absence of smoking history
- daily expectoration of large volumes of sputum
- haemoptysis

# Unexplained

- haemoptysis
- non-productive cough

*After excluding other causes*



# HISTORY WHICH SHOULD LEAD TO SUSPICION OF BRONCHIECTASIS

- **Recurrent LRTI**
- **Chronic productive cough**
- **Breathlessness, wheeze**
- **Haemoptysis**
- **Chest pain**
- **Tiredness**
- **(ENT, infertility, GI, ILD)**

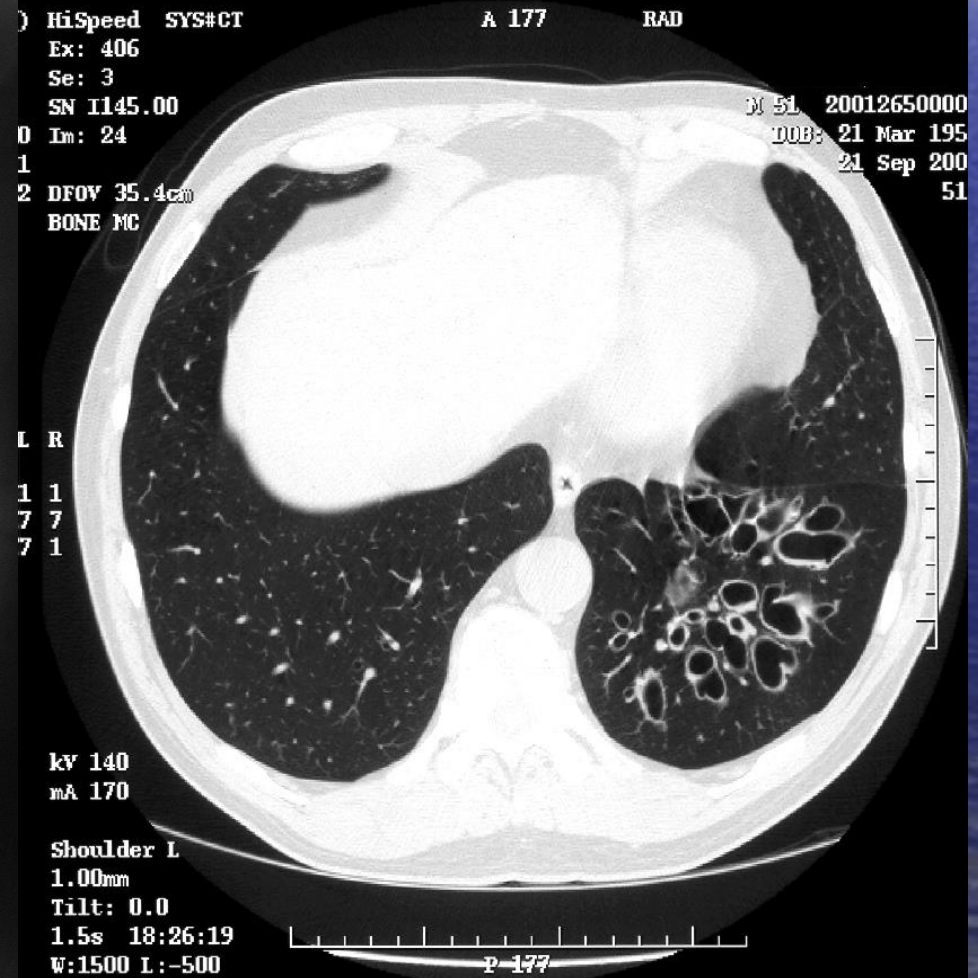
# Thought to have COPD

- COPD with Bronchiectasis
- no history of smoking
- there is slow recovery from lower respiratory tract infections
- recurrent exacerbations
- Sputum growth/colonised with *Pseudomonas aeruginosa*

# Investigations

- Cxray
- HRCT
  
- Sputum MCS
  1. When stable
  2. Onset exacerbating
  
- Spirometry

# Radiology



# Exacerbations

- Is it an exacerbation
- ?Antibiotics required
  1. Deterioration over days
  2. Increasing Cough
  3. Increased sputum volume or change of viscosity
  4. increased sputum purulence + increasing wheeze & breathlessness
  5. haemoptysis
  6. systemic upset
  7. Non specific
- Antibiotic Choice, Dose and Duration

# Admit

- Development of cyanosis or confusion
- Breathlessness with a respiratory rate  $>25$ /minute
- Circulatory failure, respiratory failure, cyanosis or confusion
- Temperature  $>38^{\circ}\text{C}$
- Patient unable to take oral therapy
- Patient unable to cope at home
- Haemoptysis  $>25\text{mls/day}$
- Intravenous therapy required in patients with clinical failure after oral antibiotics

# Common organisms associated with acute exacerbation of bronchiectasis and suggested antimicrobial agents

## **Streptococcus pneumoniae**

Amoxicillin 500 mg tds  
Clarithromycin 500 mg bd 14 days

## **Haemophilus influenzae (b-lactamase negative)**

Amoxicillin 500 mg tds  
Amoxicillin 1 g tds  
Amoxicillin 3 g bd  
Clarithromycin 500 mg bd

## **Haemophilus influenzae (b-lactamase positive)**

Co-amoxiclav 625 mg tds  
Clarithromycin 500 mg bd  
Ciprofloxacin 500 mg bd

## **Moraxella catarrhalis**

Co-amoxiclav 625 mg tds  
Ciprofloxacin 500 mg bd

## **Staphylococcus aureus (MSSA)**

Flucloxacillin 500 mg qds  
Clarithromycin 500 mg bd

## **MRSA**

### **Coliforms**

Ciprofloxacin

### **Pseudomonas**

# Empiric therapy

- Amoxicillin 500mg tds 14days
- Clarithromycin 500 bd
- Severe Bronchiectasis/colonised with H influenzae

Amoxicillin 1g tds/ 3g bd

- Pseudomonas colonised patients  
Ciprofloxacin 500/750 bd.



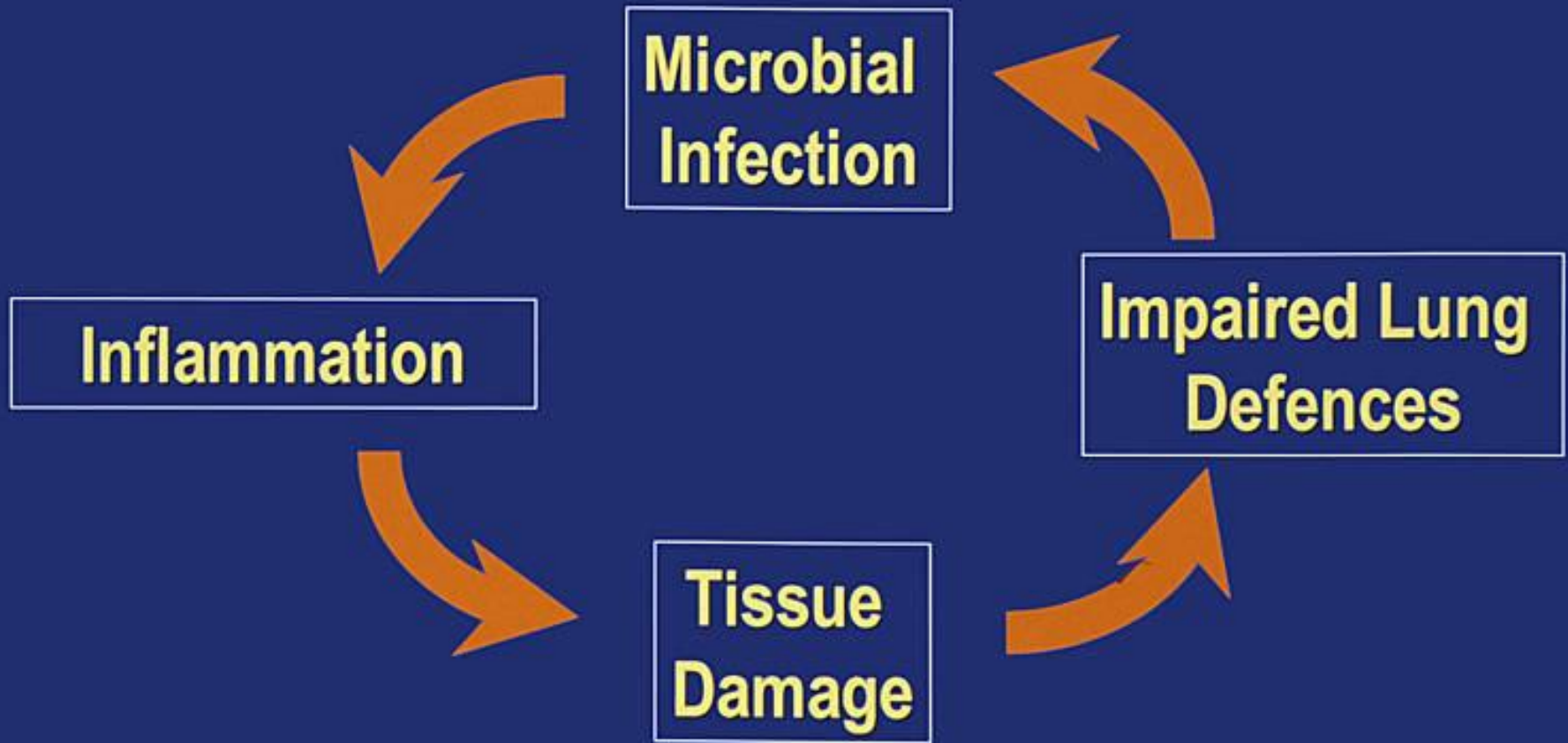
# Long Term antibiotics

- =>3 Exacerbations/yr
- Fewer Exacerbation but significant morbidity
- Nebulised antibiotics  
Gent/tobramycin/colistin
- Long term Macrolides

# Management

- Physiotherapy
- Immunisation
- Bronchodilators
- Mucolytics
- Nebulised saline

# A VICIOUS CYCLE OF INFECTION AND INFLAMMATION



# Monitoring

- Symptom
- Sputum Volume 24hrs/Purulence
- Frequency of Exacerbations/yr
- Frequency of Antibiotic use
- FEV1 FVC PEF annually
- Cxray only if indicated

# Self Management Plan

## BTS Bronchiectasis Self Management Plan

### My Usual Symptoms day to day when stable- (not during a chest infection) please tick or answer

#### Cough

- I normally cough most days of the week
- I normally cough one or two days of the week
- I normally cough a few days per month
- I normally cough only with chest infections

#### Sputum

- I normally cough up sputum most days of the week
- I normally cough up sputum one or two days of the week
- I normally cough up sputum a few days per month
- I normally cough up sputum only with chest infections

#### What colour is it?

- clear  white  light yellow or green  dark yellow or green

#### How much do you cough day to day?

- 1 teaspoon  1 tablespoonful  half a sputum pot  1 sputum pot

#### Is your sputum?

- watery  sticky

#### Breathlessness

- I normally get breathless walking around the home
- I normally get breathless walking outside on the level
- I normally get breathless walking up a flight of stairs
- I normally get breathless playing sports
- I only get breathless with chest infections
- I never get breathless

Other usual symptoms e.g. wheezing, tiredness, fatigue \_\_\_\_\_

### Chest infections

#### Sicca (you may have some or all of these)

- Feeling generally unwell
- Coughing up more sputum or sputum more sticky
- Worsening colour to your sputum (clear to light or dark yellow or green Or light to dark yellow or green)
- Worsening breathlessness

#### Action

- Clear your chest more often (at least twice daily).
- Take your medication and inhalers.
- Drink plenty of fluids.
- Collect sputum sample and hand to GP as soon as possible (if cannot get to surgery that day, keep the sample in fridge overnight).
- Some colds get better without needing antibiotics. If there is no change in the amount or colour of your sputum **do not start** your antibiotics.
- Seek help if needed

Name \_\_\_\_\_

Date of Birth \_\_\_\_\_

Hospital/NHS Number \_\_\_\_\_

Date \_\_\_\_\_

### When to seek help



•When? If you feel your bronchiectasis is worse but no change in the amount or stickiness or colour of your sputum and no improvement within 48 hours, make an appointment to see your GP  
•Action. Take sputum sample to your GP - do not start antibiotics until you have seen your GP



•When? All chest infections where you feel unwell with coughing up more sputum and worsening colour to your sputum or worsening breathlessness OR  
•If coughing up blood OR  
•If chest pain breathing in  
•Action. Collect sputum sample and then start the antibiotics recommended immediately without waiting for the sputum result



•When? You are confused or drowsy OR  
•Coughing up large amounts of blood OR  
•Severely breathlessness or breathless whilst talking  
•Action. Call the emergency GP first  
•Collect sputum sample if feasible and then start the antibiotics recommended immediately without waiting for the sputum result

### Day to day

- Clear your chest as advised by your physiotherapist.
- Take your medication and inhalers, if on them, as prescribed.
- Never allow medicines to run out.
- Keep a rescue antibiotic course at home.
- Drink plenty of fluids, eat a healthy diet and take regular exercise.
- Don't smoke. Ask for help from your practice nurse if needed.
- Get your annual flu vaccination.
- Avoid visiting anyone who is unwell with a cold, flu or chest infection.
- Keep a supply of sputum pots in the house.
- Know how much sputum you have and its colour.

### Recommended chest treatment day to day

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.

### Recommendation treatment for chest infections

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.

### Contact Numbers

GP  
Community respiratory team  
Hospital respiratory team



# A VICIOUS CYCLE OF INFECTION AND INFLAMMATION

