Bagassosis

Bagassosis

Type of pneumoconiosis caused by inhalation of sugarcane fiber.

“A group of related inflammatory interstitial lung diseases that result from hypersensitivity immune reactions to the repeated inhalation or ingestion of sugarcane fiber infected with Thermoactinomyces sacchari."

Extrinsic allergic alveolitis Hypersensitivity pneumonitis

- Was first described in Iceland in 1874.
- Defined as

  "a group of related inflammatory interstitial lung diseases that result from hypersensitivity immune reactions to the repeated inhalation or ingestion of various antigens derived from fungal, bacterial, animal protein, or reactive chemical sources" (Kaltreider, 1993)

Bagassosis

Bagasse- Remnants of fibrous cellulose residue after extraction of juice from the sugarcane

Bagassosis

Sugarcane

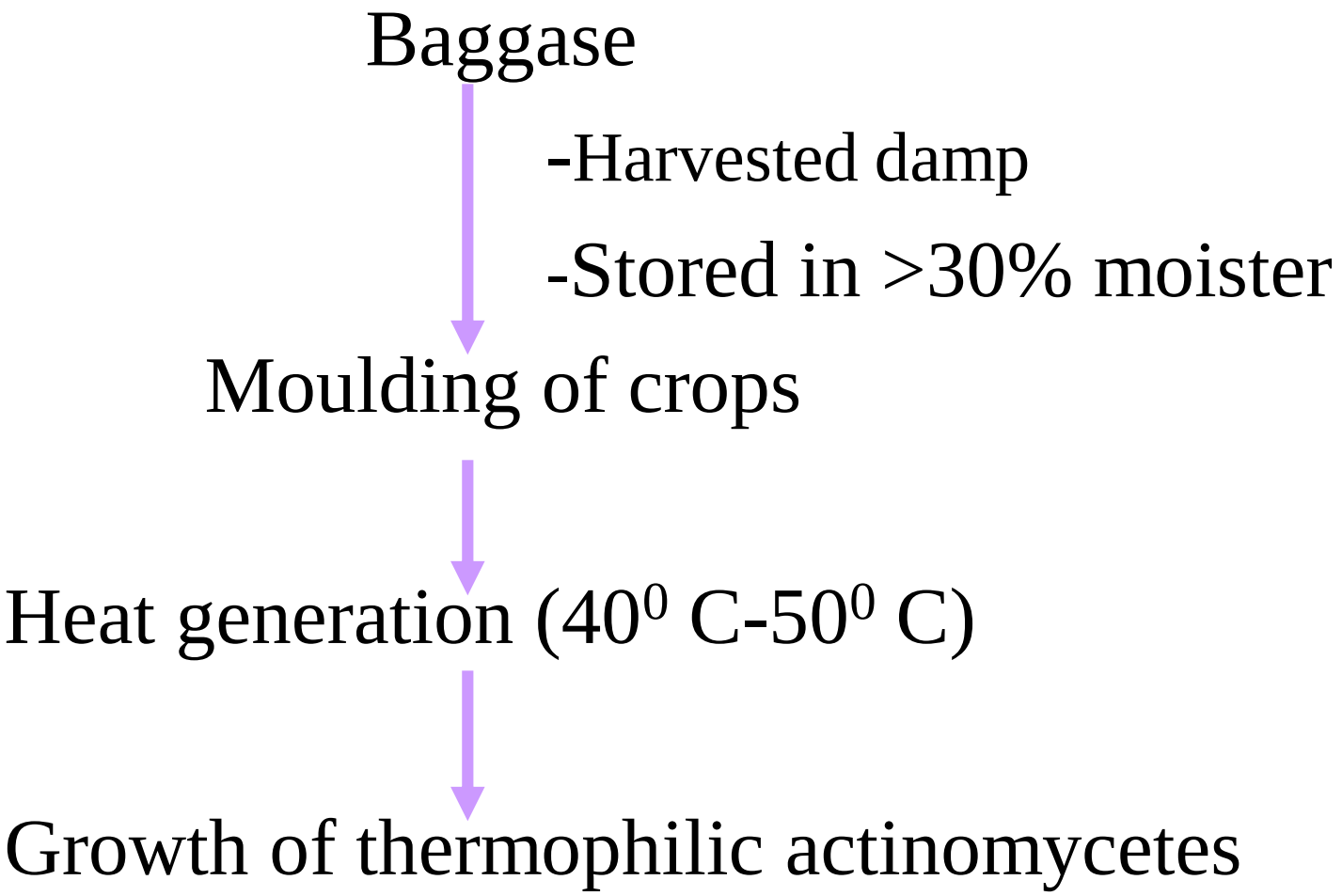
↓ Juice extraction

Baggase

↓

Used in manufacture of

paper & cardboard, rayon


Baggase
-Harvested damp
-Stored in >30% moister
Moulding of crops
Heat generation (40^0 C-50^0 C)
Growth of thermophilic actinomycetes

Process

Workers involved in

- removal,
- milling of baggase

- Predominantly involves the peripheral gas exchanging parts of the lung.
- Organic dusts are poorly ingradable & able to persist in the lung for long period.

The latent period

- From a few weeks to years
- Acute exposure –

  usually between 4 and 12 hours.

- **Sex:**

  More prevalent in men than women.

- **Age:**

  predominantly seen in adults—and uncommon in children—exposed to the causative allergens.

Pathophysiology

Extrinsic allergic alveolitis

- Hypersensitivity pneumonitis

Repeated inhalation or ingestion of various antigens

↓ Antigen specific IgG Abs. in the blood

Precipitation

↓ -an increase in neutrophils in the alveoli and small airways.

↓ -an influx of mononuclear cells

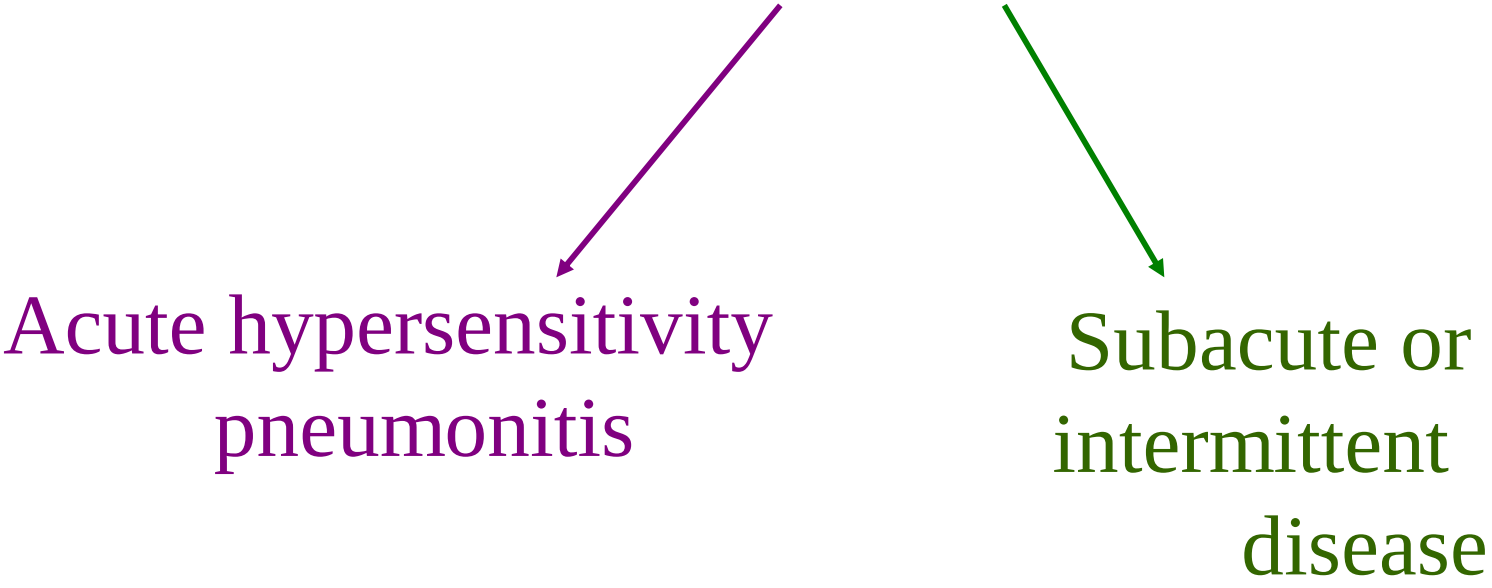
Toxic or immune reactions of the lung parenchyma

.

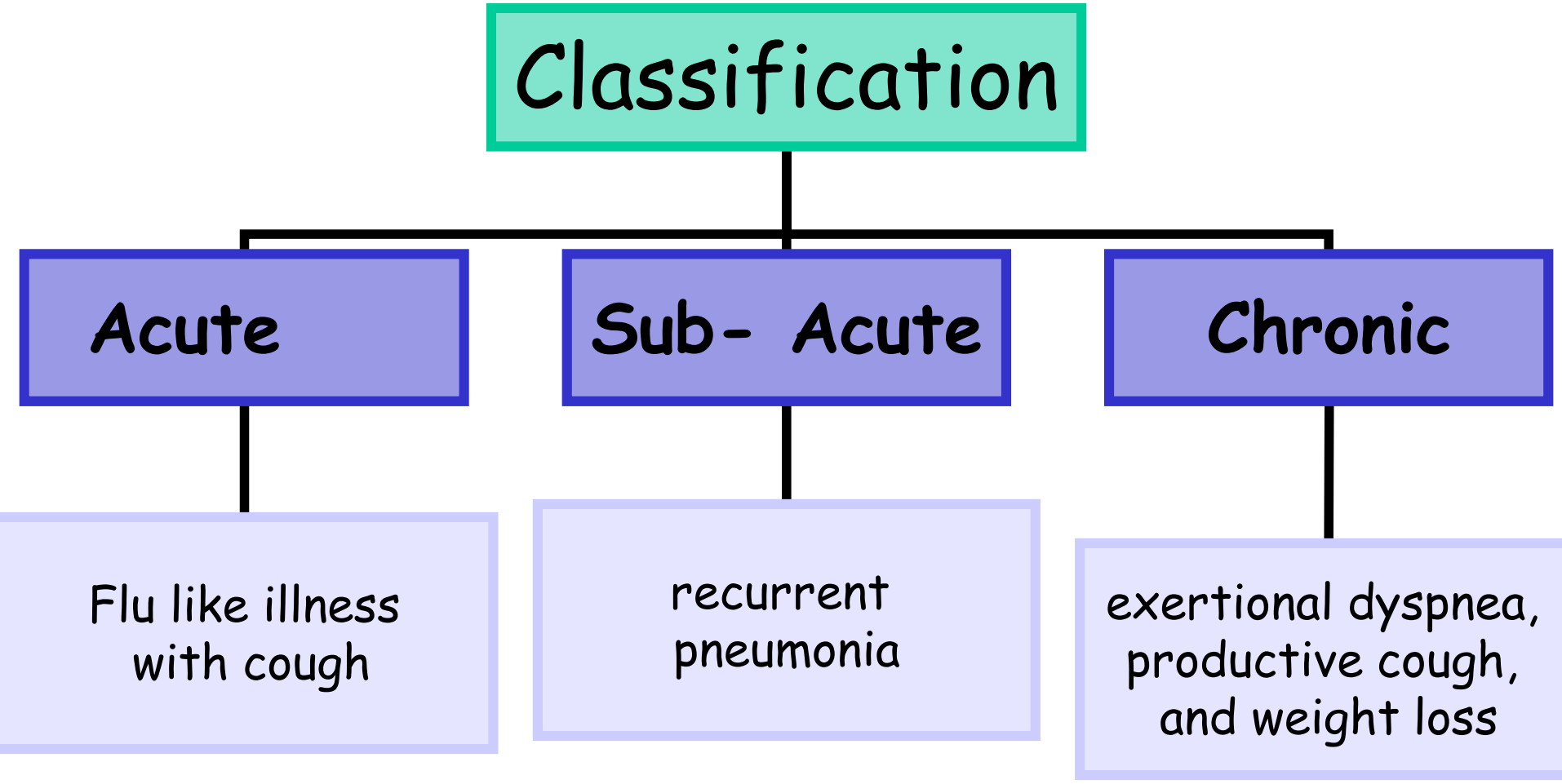
↓ Chronic condition

- noncaseating granulomas, bronchiolitis
- chronic interstitial inflammation and alveolar destruction (honeycombing) associated with dense fibrosis.

Pathophysiology



Clinical Features



Crepitant rales can be elicited in some patients

Clinical Features

- Breathlessness, cough, hemoptysis, slight fever
- Early stage- Acute diffuse bronchiolitis

- Later-Diffuse fibrosis, Emphysema & bronchiectasis

If exposure is terminated early-

Resolution occurs with improvement or complete recovery

- Chronic exposure may cause the disease to progress to interstitial fibrosis

Mortality/Morbidity

- Depends on

  -The type and

  -Length of antigen exposure.

- Most patients recover completely after removal of the offending antigen.

- Most patients experience total recovery of lung function, but this may take several years.

Diagnosis

- H\o
- PFT
- Radiology- X-ray, CT scan
- Lung Biopsy

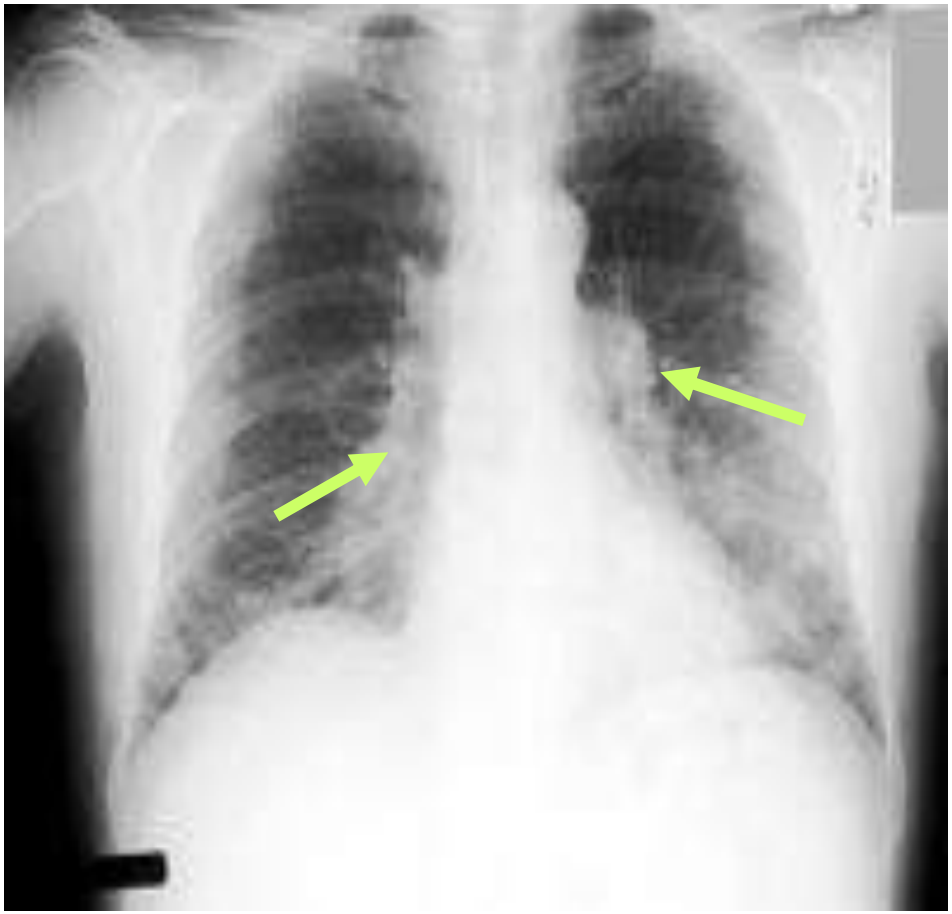
Diagnosis

- Pulmonary function tests-

  -Restrictive defect in early disease and

  -Restrictive, obstructive, or mixed defect in late disease.
- Specific precipitating antibodies are detectable in some cases.

Radiological Examination



- Chest radiograph in a 60-year-old farmer who had an 8-year history of intermittent dyspnea shows **bilateral reticulonodular interstitial infiltration** secondary to subacute hypersensitivity pneumonitis.

High-resolution CT (HRCT) scan acute phase of hypersensitivity pneumonitis.

- ground-glass and mosaic attenuation opacification

Radiological Examination

- X-Ray- is the examination of choice.

  In conjunction with the patient's clinical presentation, radiographic findings are generally sufficient to diagnose
- High-resolution CT (HRCT) is commonly performed to confirm the diagnosis and to rule out other possibilities.

Biopsy

- In many cases, lung biopsy is required for histologic confirmation of the diagnosis.
- Transbronchial biopsy is diagnostic in two thirds of cases
- Surgical lung biopsy is sometimes necessary.

Prevention

Prevention

- Prevention of growth of actinomycete
- Engineering measure
- Personal Protective measure
- Medical measures

Prevention of growth of actinomycete

- Drying before storage
- Keeping moister content < 20%
- Addition of 2% propionic acid (Fungicide)to grain before storage prevent moulding

↓

No increase in temperature

- Engineering measure-

  -Enclosed apparatus

  - Good exhaust ventilation
- Personal Protective measure

  -Mask/ Repirator
- Medical measure-

Disease	Major antigen	Exposure
Farmer's lung	Micropolyspora faeni	Moldy hay
Bagassosis	Thermoactinomyces sacchari	Moldy pressed sugar cane
Mushroom worker's lung	Thermophilic actinomycetes	Mushroom spores, mushroom compost
Malt worker's lung	Aspergillus clavatus, Faenia rectivirgula	Moldy barley
Humidifier/air-conditioner lung	S rectivirgula, Thermoactinomyces vulgaris	Contaminated forced-air systems, heated water reservoirs
Bird breeder's lung	Avian or animal proteins	Pigeons, parakeets, fowl, rodents

Farmer’s Lung

- Individuals with farmer's lung recover with only minor functional abnormalities, and few go on to develop a disability.
- A significant number of farmers develop mild chronic lung impairment, which is predominantly obstructive airflow disease associated with mild emphysematous changes.