Hypersensitivity Pneumonitis

PLAY PICMONIC

Farmer's Lung
Farmer and Lungs
A specific form of hypersensitivity pneumonitis is called farmer's lung. It is thought to be caused by actinomyces spores.

Pigeon Breeder's Lung
Pigeons and Lungs
Another type of hypersensitivity pneumonitis is pigeon breeder's lung. As its name implies, this type arises in patients who are in contact with pigeons.

Other common triggers are coffee bean dust, moldy sugar cane, and bacterial spores from hot tubs.

Malt Worker's Lung
Bob-Barley and Malt
Another specific type of hypersensitivity pneumonitis is malt worker's lung, which is thought to be due to aspergillus spores that arise from moldy barley.

CLINICAL PRESENTATION

Acute: Type III Hypersensitivity
Acute-angle (3) Tree Hiker-sensitive-crying
Hypersensitivity pneumonitis can be acute or chronic. Acute hypersensitivity pneumonitis is caused by a type III hypersensitivity reaction to a trigger. It usually occurs because of intermittent, brief exposures to high doses of the trigger in question.
As exposure begins, the allergen is picked up in the lungs by dendritic cells that travel to the lymph nodes and present it to Th1 cells. Th1 cells activate B cells which become plasmocytes that produce antibodies and form complexes with the antigen. These, in turn, deposit in the basement membrane of the pulmonary capillaries.
As this occurs, the complement system is activated and neutrophils, the predominant cell, degranulate, causing inflammation and necrosis of capillaries and alveoli.

Acute hypersensitivity pneumonitis usually occurs 4-8 hours after exposure.

Chronic: Type IV Hypersensitivity
Crone and (4) Fork with Hiker-sensitive-crying
Chronic hypersensitivity pneumonitis is a type IV hypersensitivity reaction (delayed). It occurs if the exposure continues, usually in low doses, for > 6 months. It is characterized by granuloma formation and fibrosis. The predominant cell in this form is the CD8 T lymphocyte.

Fever
Fever-beaver
Fever is a common finding in patients with acute forms of hypersensitivity pneumonitis. It is absent in chronic forms.

Dyspnea and Cough
Disc-p-lungs and Coughing-coffee-pot
Dyspnea and cough are common in both acute and chronic presentations and can be accompanied by tachypnea and crackles.

DIAGNOSIS

Ground-Glass Opacifications with Honeycombing

Broken-glass Opacities on the Ground and Honeycomb

On CXR and CT, a characteristic (though not pathognomonic) feature is ground-glass opacifications, areas of increased opacity with preserved bronchial and vascular markings. Other findings include numerous small, poorly defined opacities that spare the base of the lungs.

Restrictive Pattern

Restrictive-belt on Lungs

On spirometry, the typical finding is a restrictive pattern, with a decrease in all lung volumes along with low DLCO and low distensibility.

Inhalation Challenge

Inhaler with Sword

A study that can be performed for diagnosis is the inhalation challenge, a test in which the patient is exposed to the suspected trigger of the disease and monitored for a response.

TREATMENT

Remove the Trigger

No-Sign on Trigger

The first step to managing hypersensitivity pneumonitis is to remove the trigger. Most cases are self-limited once the trigger is removed.

Glucocorticoids

Glue-quarter-on-steroids

In severe cases of hypersensitivity pneumonitis, glucocorticoids can be used. If it is chronic, glucocorticoids are used, reducing the dose until the minimum effective dose is achieved.
