Eosinophilic lung disease

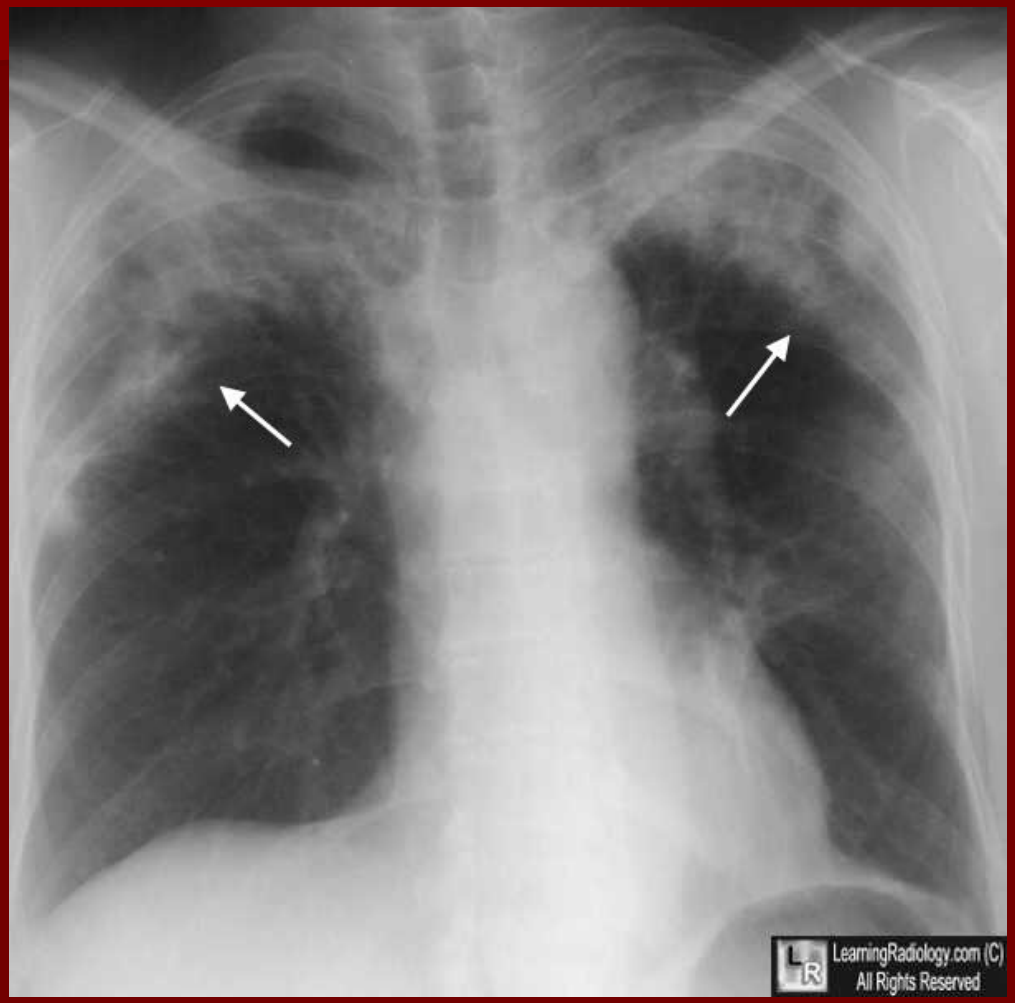
- Broad group of lung diseases heterogenous group of disorders that are characterised by excess infiltration of the eosinophils within the lung interstitium and alveoli and are broadly divided into three main groups

- idiopathic: unknown causes
- secondary: known causes
- eosinophilic vasculitis: Churg-Strauss syndrome

Simple pulmonary eosinophilia

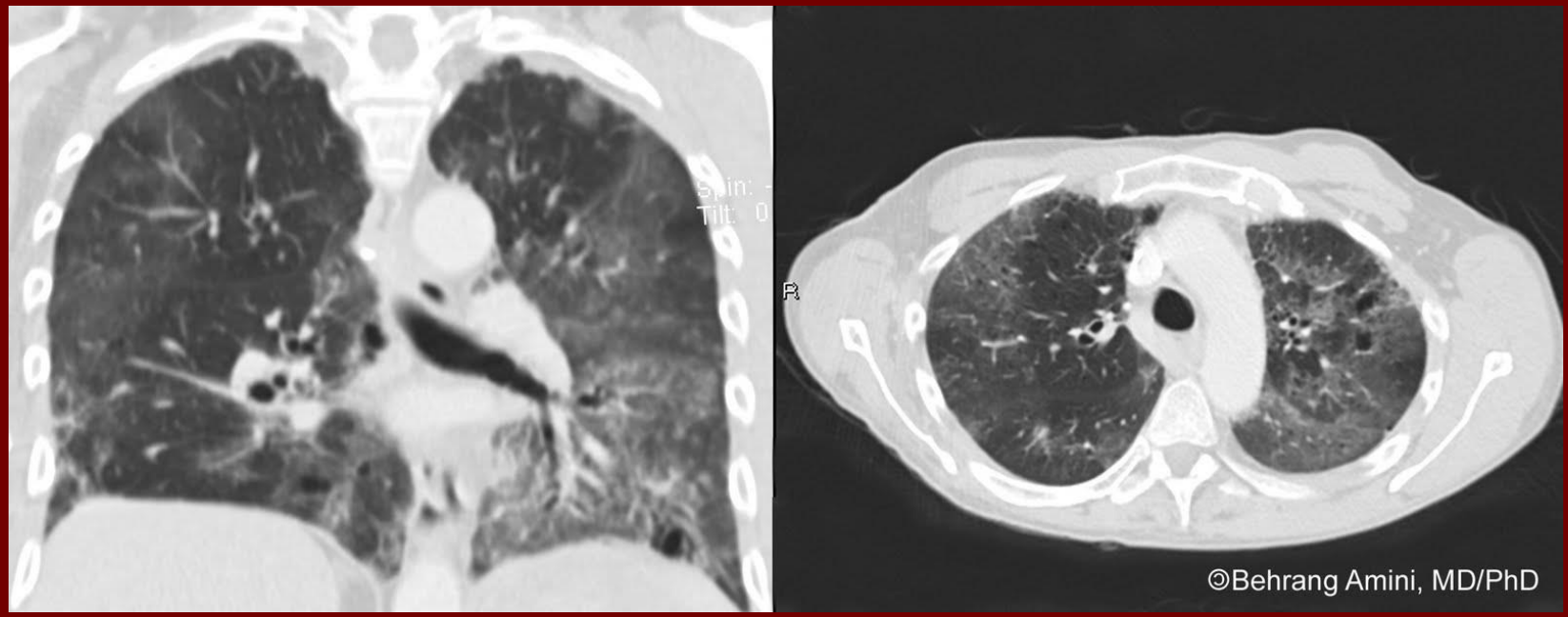
- Also known as (Loffler syndrome) is benign and self-limiting condition, characterised by mild symptoms
- Plain radiographic findings usually much more impressive than the patient's condition, and classically have a reverse bat's wing appearance.
- Blood eosinophilia is a feature.

Loffler syndrome



reverse bat's wing appearance

Reverse bat's wing appearance

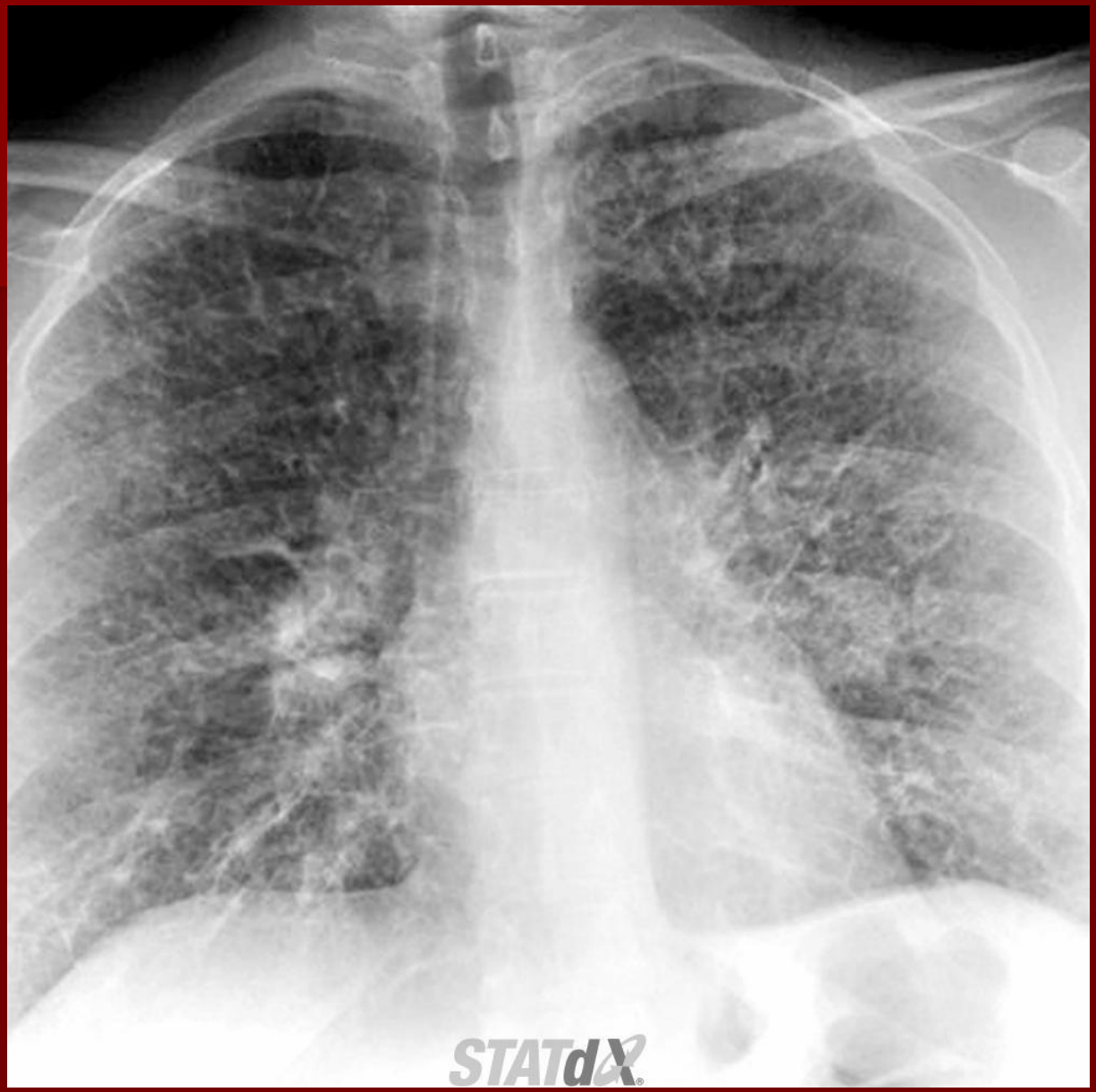


Causes

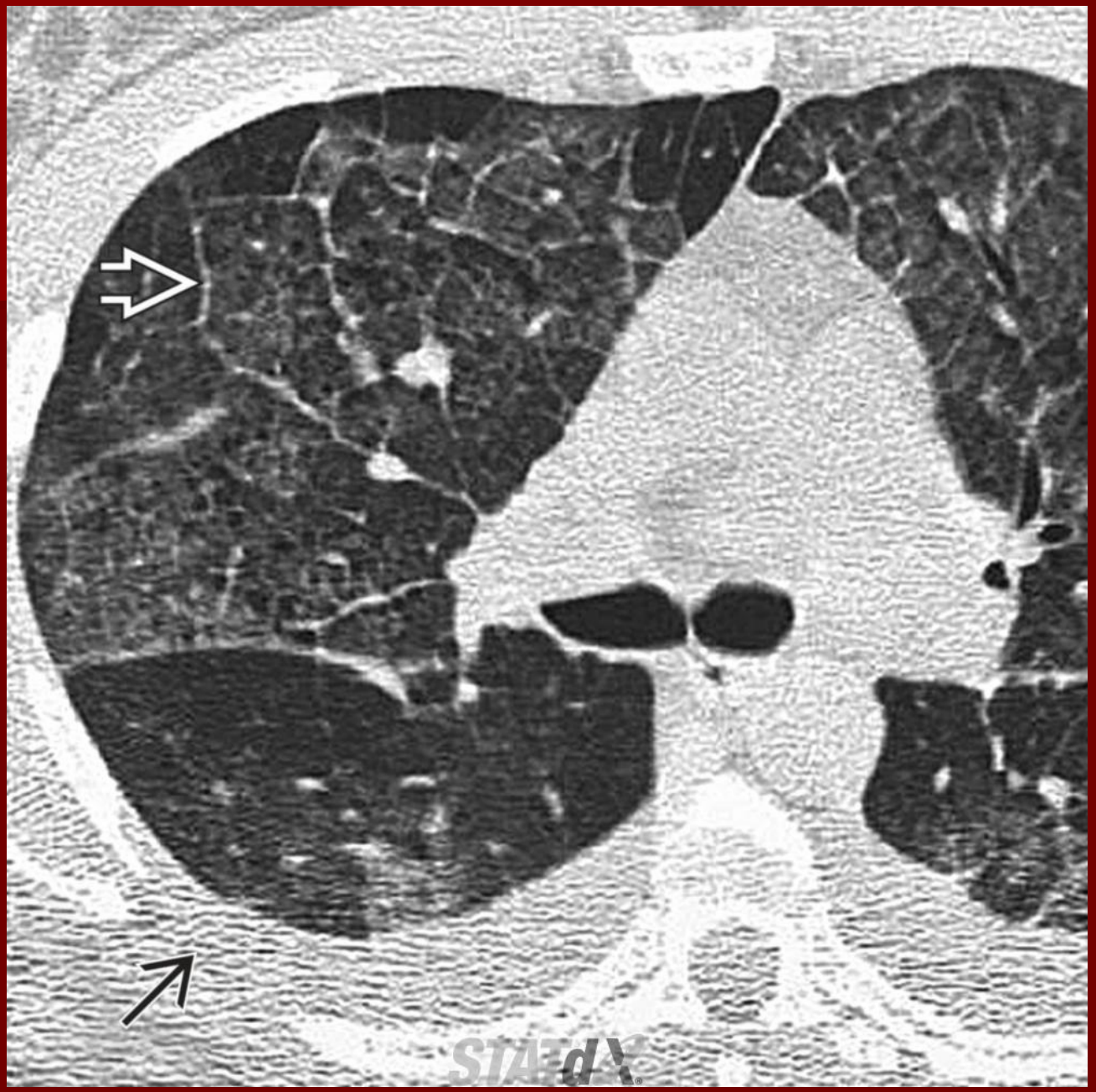
- **Acute respiratory distress syndrome**:
- **Lung contusion**:
- **Cryptogenic organizing pneumonia**:
- **Simple pulmonary eosinophilia**: Loeffler syndrome. Migratory peripheral ground-glass opacity or airspace consolidation involving mainly the middle and upper lung zones. Single or multiple airspace nodules with surrounding ground-glass opacity can also be seen.
- **Chronic eosinophilic pneumonia (shown above)**: Classic radiographic finding is nonsegmental peripheral airspace consolidation involving mainly the upper lobes.
- **Pneumonia**:
- **Pulmonary infarction**:
- **Sarcoidosis**:
- **Vasculitides**:

Acute eosinophilic pneumonia

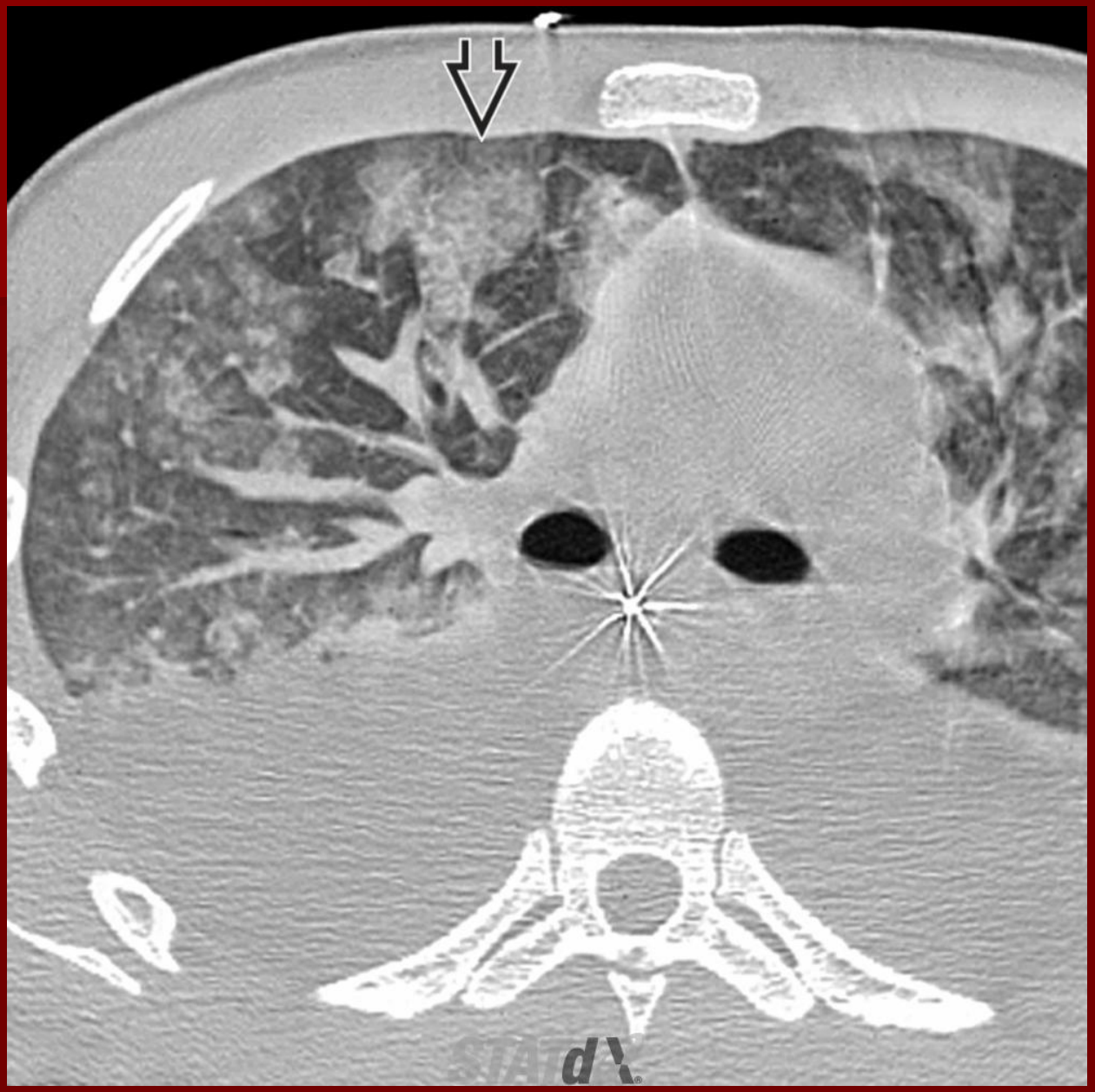
- Manifests with acute onset fever, severe dyspnoea and hypoxia for <5 days; rapid progression, shows rapid improvement with steroids and usually no relapse after treatment.
- Pulmonary lavage reveals > 25% eosinophils.
- Etiology of AEP is unknown.
- Tt may represent acute hypersensitivity to an inhaled antigen.
- CT findings include bilateral patchy areas of ground-glass opacity and interlobular septal thickening.



AP chest radiograph of a patient with AEP shows diffuse bilateral interlobular septal thickening that mimics pulmonary interstitial edema. Note the normal heart size.



Axial HRCT of a patient with AEP shows patchy ground-glass opacities, interlobular septal thickening (white open arrow), and small bilateral pleural effusions (black solid arrow). While the findings mimic cardiogenic pulmonary edema, the nongravitationally dependent distribution of airspace disease in this patient should suggest other possibilities.



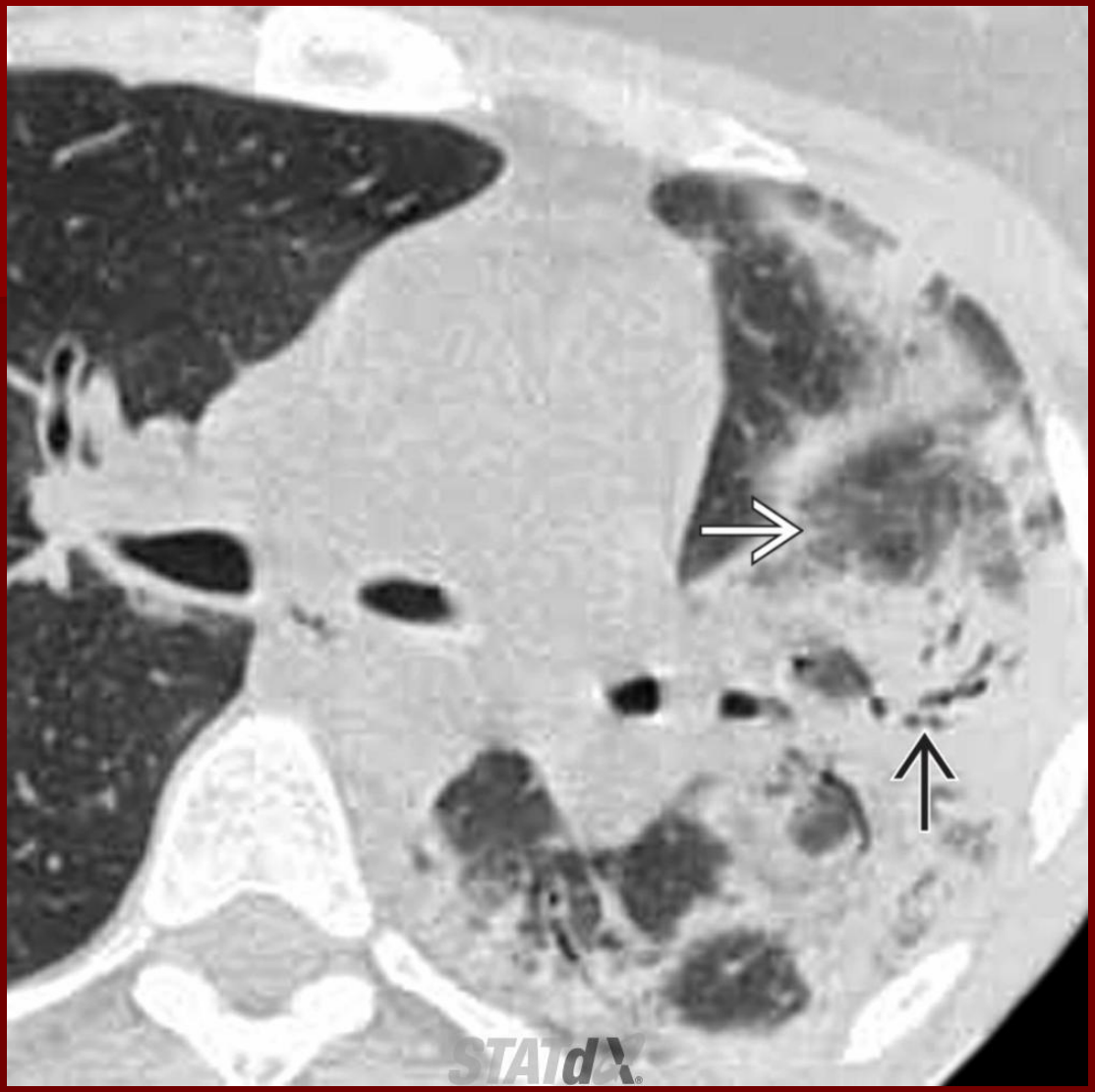
Axial HRCT of a patient with AEP shows multifocal ground-glass opacities and consolidations (black open arrow) with some lobular sparing and moderate to large bilateral pleural effusions. Pleural effusions occur in the majority of patients with AEP and are almost always bilateral.

Chronic eosinophilic pneumonia

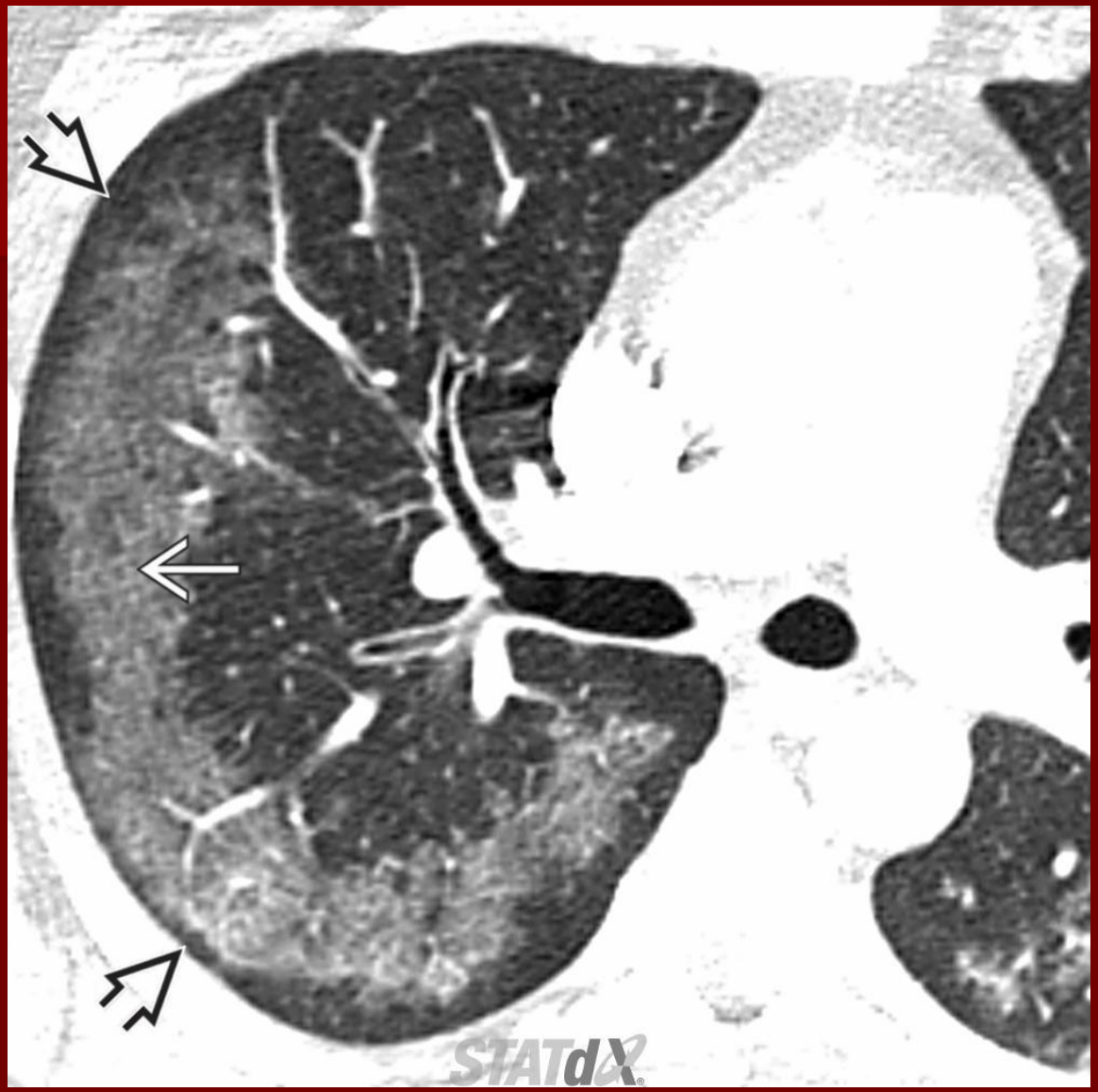
- Characterized by homogeneous peripheral airspace consolidation lasting >6 months, which responds to steroid treatment.
- This appearance results in a reverse bat's wing appearance.
- About 50% of patients with CEP have asthma.
- Difficult to differentiate from Churg-Strauss syndrome (CSS).
- While CEP has homogeneous peripheral airspace consolidations, the consolidations in CSS tends to be more lobular in distribution.
- In addition, CSS tends to have centrilobular nodules.

Churg-Strauss syndrome

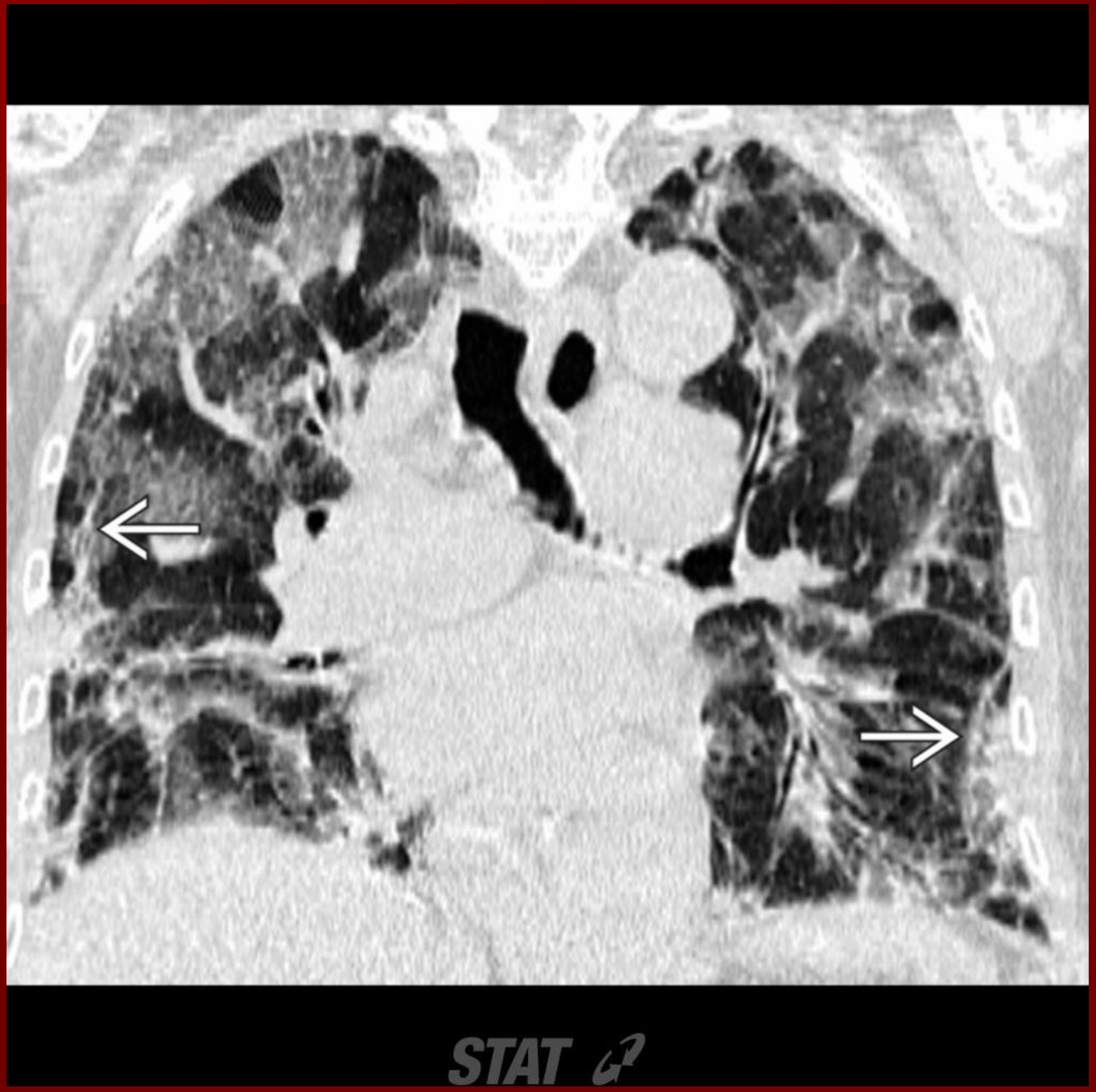
- Pleural effusions, less common than in AEP
- Systemic disease (unlike AEP)
  - Neuropathy more common
  - Paranasal sinus disease more common



Axial HRCT of the same patient shows a heterogeneous left lung consolidation with air bronchograms (black solid arrow) and surrounding ground-glass opacity (white solid arrow). Consolidation is the primary radiographic and CT finding of CEP, but ground-glass opacity is a frequent associated feature. Ground-glass opacity may persist as consolidation begins to clear after initiation of therapy.



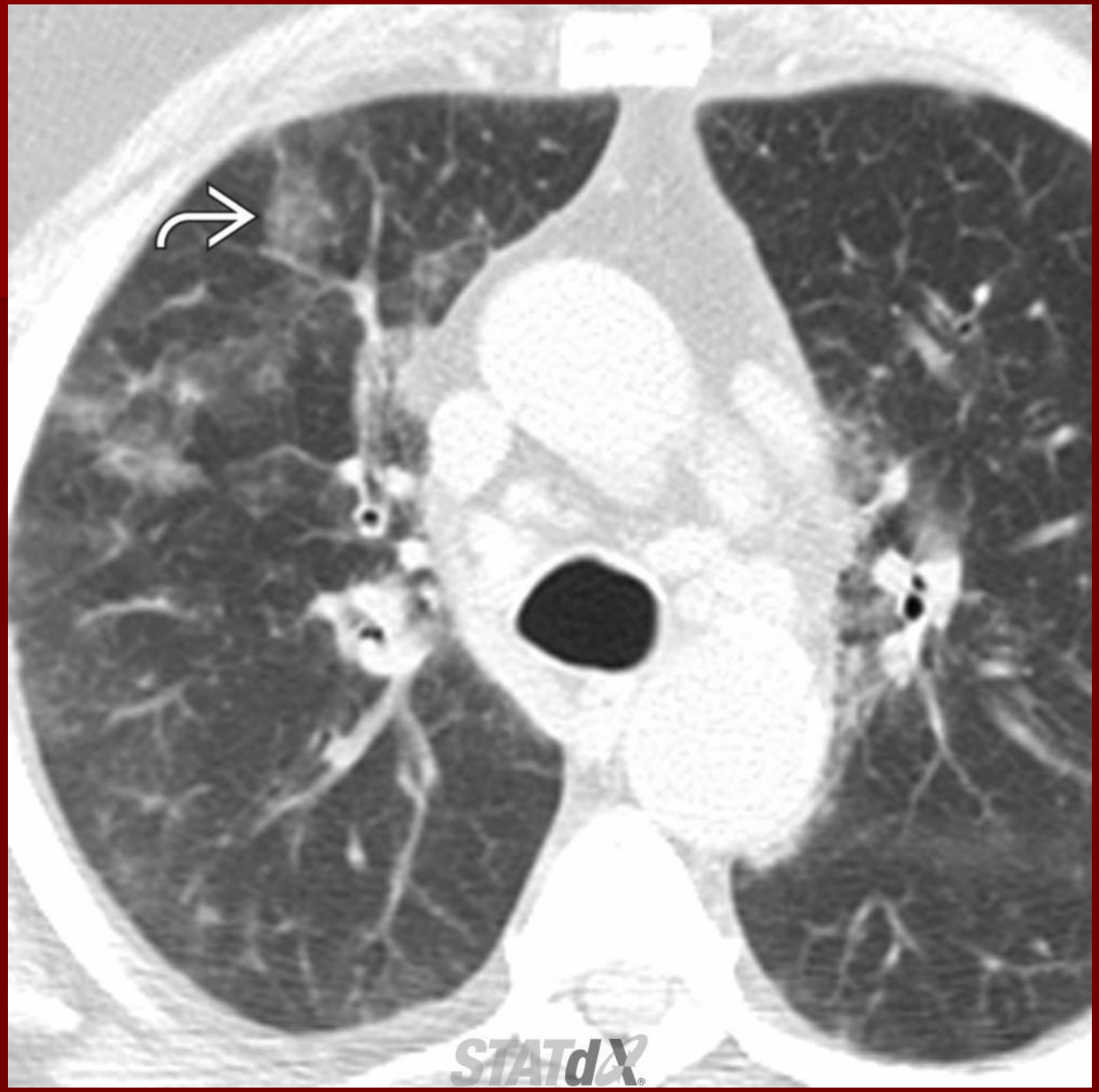
Axial CECT of a patient with CEP shows bilateral peripheral ground-glass opacities (white solid arrow) with exquisite demonstration of subpleural sparing (black open arrow), a finding that can also be seen in nonspecific interstitial pneumonia and alveolar hemorrhage.



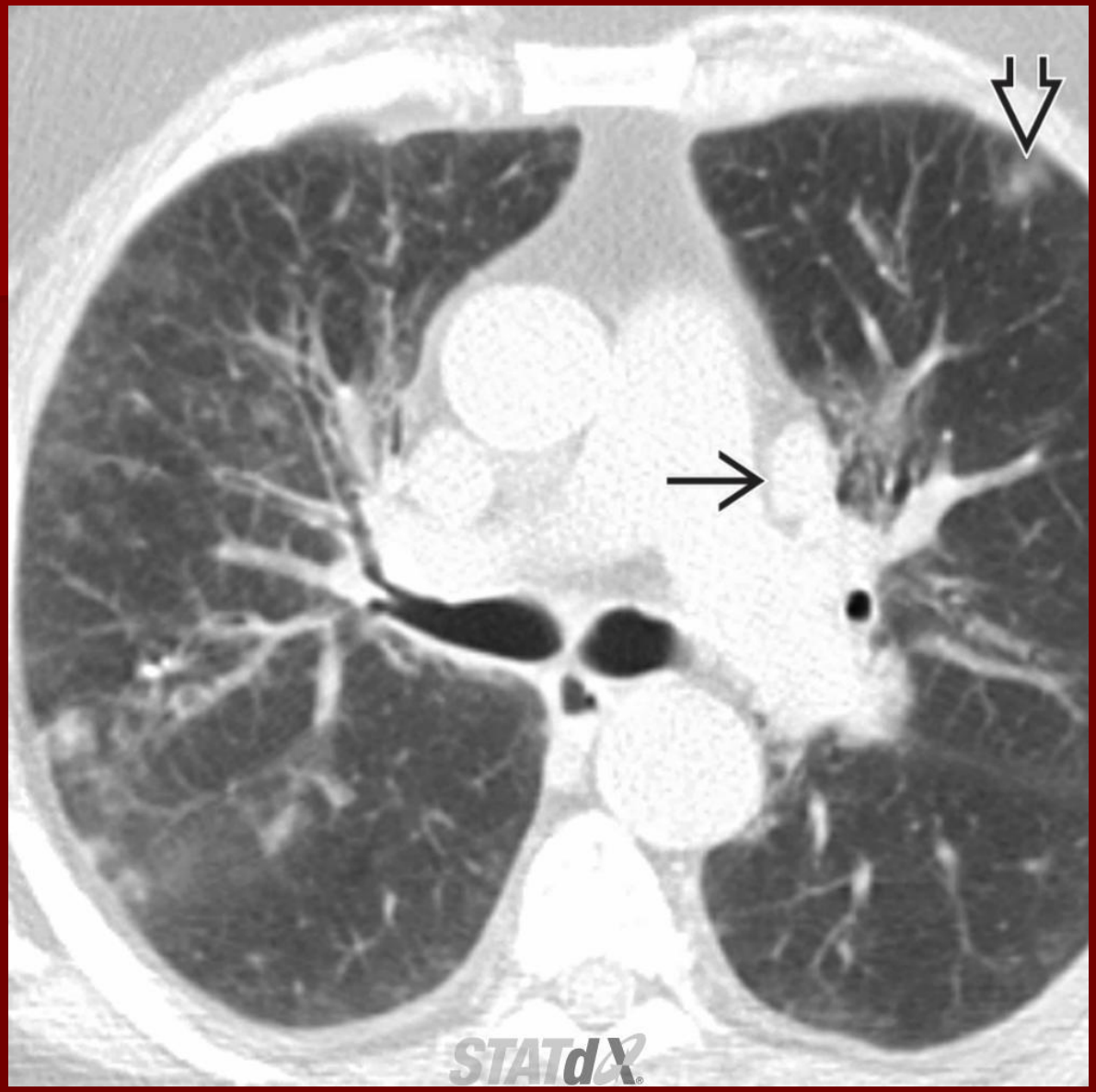
Coronal HRCT of the same patient shows linear band-like opacities that parallel the chest wall (white solid arrow). Ground-glass opacities are most severe in the upper lobes.

Idiopathic hypereosinophilic syndrome

- Systemic disorder with damage to heart and the CNS.
- On CT, one finds nodules with a ground-glass halo, similar to SPE.
- In contrast to SPE, the opacities do not resolve spontaneously.
- In addition, approximately 50% of cases are associated with pleural effusions.



Axial NECT of a patient with HES shows patchy bilateral foci of ground-glass opacity (white curved arrow). Ground-glass opacities in patients with hypereosinophilic syndrome usually exhibit a variable distribution throughout the lungs.



Axial NECT of a patient with HES shows scattered small lung nodules (black open arrow) surrounded by halos of ground-glass opacity and a few scattered ground-glass opacities. There is also mild mediastinal lymph node enlargement (black solid arrow).