CHAPTER-II

DRUG INDUCED PULMONARY DISEASES

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Drug-Induced Pulmonary Disorders

- Is almost always a diagnosis of exclusion
- Clearly linked to lung toxicity: 20 drugs
- Some drugs indirectly affect the Lung:
  - Apnea following CNS depression
  - Pulmonary manifestation of drug-induced SLE
<table>
<thead>
<tr>
<th>Central nervous system depression</th>
<th>Relative Frequency of Reactions</th>
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<tbody>
<tr>
<td>Narcotic analgesics</td>
<td>F</td>
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<tr>
<td>Barbiturates</td>
<td>F</td>
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<tr>
<td>Benzodiazepines</td>
<td>F</td>
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<tr>
<td>Other sedatives and hypnotics</td>
<td>I</td>
</tr>
<tr>
<td>Tricyclic antidepressants</td>
<td>R</td>
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<tr>
<td>Phenothiazines</td>
<td>R</td>
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<tr>
<td>Ketamine</td>
<td>R</td>
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<tr>
<td>Promazine</td>
<td>R</td>
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<tr>
<td>Anesthetics</td>
<td>R</td>
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<tr>
<td>Antihistamines</td>
<td>R</td>
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<tr>
<td>Alcohol</td>
<td>I</td>
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<tr>
<td>Fenfluramine</td>
<td>R</td>
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<tr>
<td>L-Dopa</td>
<td>R</td>
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<tr>
<td>Oxygen</td>
<td>R</td>
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<td>Respiratory muscle dysfunction</td>
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<tr>
<td>Aminoglycoside antibiotics</td>
<td>I</td>
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<tr>
<td>Polymyxin antibiotics</td>
<td>I</td>
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<tr>
<td>Neuromuscular blockers</td>
<td>I</td>
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<tr>
<td>Quinine</td>
<td>R</td>
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<tr>
<td>Digitalis</td>
<td>R</td>
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<tr>
<td>Myopathy</td>
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<tr>
<td>Corticosteroids</td>
<td>F</td>
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<tr>
<td>Diuretics</td>
<td>I</td>
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<tr>
<td>Aminocaproic acid</td>
<td>R</td>
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<tr>
<td>Clofibrate</td>
<td>R</td>
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</tbody>
</table>

F, Frequent; I, infrequent; R, rare.
Introduction

- lungs are exposed directly to the atmospheric environment and whole circulating blood
- More than 350 drugs and diagnostic agents are known to cause pulmonary injuries
- Varying pathophysiological patterns
- Degrees of severity
- Airways, lung parenchyma, pulmonary vasculature, pleura, and neuromuscular system
Resolution

- Early recognition and identification of the offending agent
- Its prompt withdrawal
- Initiation of management strategies
- Exclusion of other causes
Management

- Discontinuation of the offending agent, where possible
- Some management strategies include the use of corticosteroids
Bronchospasm, wheezing, and cough

- The most common drug-induced pulmonary adverse event
- Mechanisms:
  - Extension of pharmacologic effect
  - Direct airway irritation
  - Sensitization with subsequent anaphylactic reactions (IgE-mediated)
  - Anaphylactoid (non-IgE-mediated) reactions
Clinical presentation

- The same as with nondrug-induced bronchospasms
- Withdrawal and avoidance of the causative agent
- Small doses of injectable epinephrine
- Oxygen, corticosteroids, and Parenterals antihistamines, Inhaled $\beta_2$-agonists
Drugs

- ACEIs
- ASA
- beta-Blockers
- Aerosoles
- Cephalosporins (IgE-mediated)
- Amphotericin B
- Fentanyl
- Sulfites
Acute Pulmonary Edema

- Dyspnea, chest discomfort, tachypnea, and hypoxemia
- First adequate life support
- Then specific therapy that targets the causes of the accumulation of extravascular water in the lungs
Drugs

- IV fluids contrast media
- Magnesium sulfate
- Cytarabine
- Gemcitabine
- Interleukin-2 (IL-2)
- Mitomycin
- Uromonab CD3
- Vinca alkaloids
- Cocaine
- Naloxone
- Heroin, methadone, morphine
Pulmonary hypertension

- Rare, but life threatening
- The most frequent presenting symptom is exertional dyspnea, which may be present at rest as the disease progresses
- Fatigue, weakness, chest pain, or syncope
- Management:
  - Supplemental oxygen
  - Diuretics
  - Inotropic agents
  - Anticoagulants
  - Calcium channel blockers (nifedipine, amlodipine, and diltiazem have been used most frequently) in patients with proven acute vasoreactivity
Drugs

- Appetite suppressants
- SSRIs
Interstitial lung disease

- The most common drug-induced lung disease and can lead to respiratory failure
- Bleomycin, Cyclophosphamide, Nitrofurantoin
Nitrofurantoin

- Nitrofurantoin-induced acute pneumonitis may be one of the most common of the drug-induced diseases
- In 43% of patients
- It does not appear to be dose related
- Onset of symptoms, fever, dyspnea, and cough occurs within 1 month
Pulmonary fibrosis

- Accumulation of excessive connective tissue in the lung
- The mean survival time for patients with pulmonary fibrosis has been estimated at five months
- **Bleomycin** is the cytotoxic agent with the highest incidence of pulmonary toxicity (3%-40%)
- Amiodarone: The risk of amiodarone pulmonary toxicity is higher during the first 12 months of therapy even at a low dosage
alveolar damage

- Aspirin
- Narcotics
- Crack
- Cocaine
- Nitrofurantoin
- Carbamazepine
- Penicillamine
- Hydrochlorothiazide
- Simvastatin
Hypersensitivity syndrome

- Systemic idiosyncratic reaction
- Phenytoin, carbamazepine, and phenobarbital
- Develops within 8 weeks of treatment, with a 1 in 1,000 to 10,000 incidence
- Allopurinol
- Sulfonamides
- Sulfasalazine
THANK YOU