

DRUG INDUCED LUNG DISEASES

CHEMOTHERAPEUTIC AGENTS

- 1. CYTOTOXIC ANTIBIOTICS
- 2. ALKYLATING AGENTS
- 3. ANTIMETABOLITES
- 4. BIOLOGIC RESPONSE MODIFIERS

CYTOTOXIC ANTIBIOTICS

- BLEOMYCIN

- 1. CHRONIC PNEUMONITIS/ PULM FIBROSIS

- MOST COMMON SYNDROME

- RADIATION RECALL EFFECT

- RISK FACTORS: cumulative dose > 400u

- oxygen therapy

- therapeutic radiation

- renal insuff

- old age

- 2.HYPERSENSITIVITY TYPE LUNG DISEASES

Dyspnea , cough , skin rash , eosinophilia
may not occur with rechallange

3. CHEST PAIN SYNDROME

Associated with iv infusion of the drug

MITOMYCIN C

- 1. CHRONIC PNEUMONITIS / PULMONARY FIBROSIS
 - most common syndrome
 - risk factors : oxygen therapy
 - therapeutic radiation
 - concurrent use of other cytotoxic drugs
- 2. ACUTE DYSPNEA/ BRONCHOSPASM
 - NON CARDIOGENIC PULMONARY EDEMA
 - pts receiving vinca alkaloids

- 3. HAEMOLYTIC UREMIC SYNDROME
microangiopathic hemolytic anemia,
thrombocytopenia, renal insufficiency,
non cardiogenic pulmonary edema

ACTINOMYCIN D

- 1. EXACERBATION OF RADIATION INDUCED INJURY

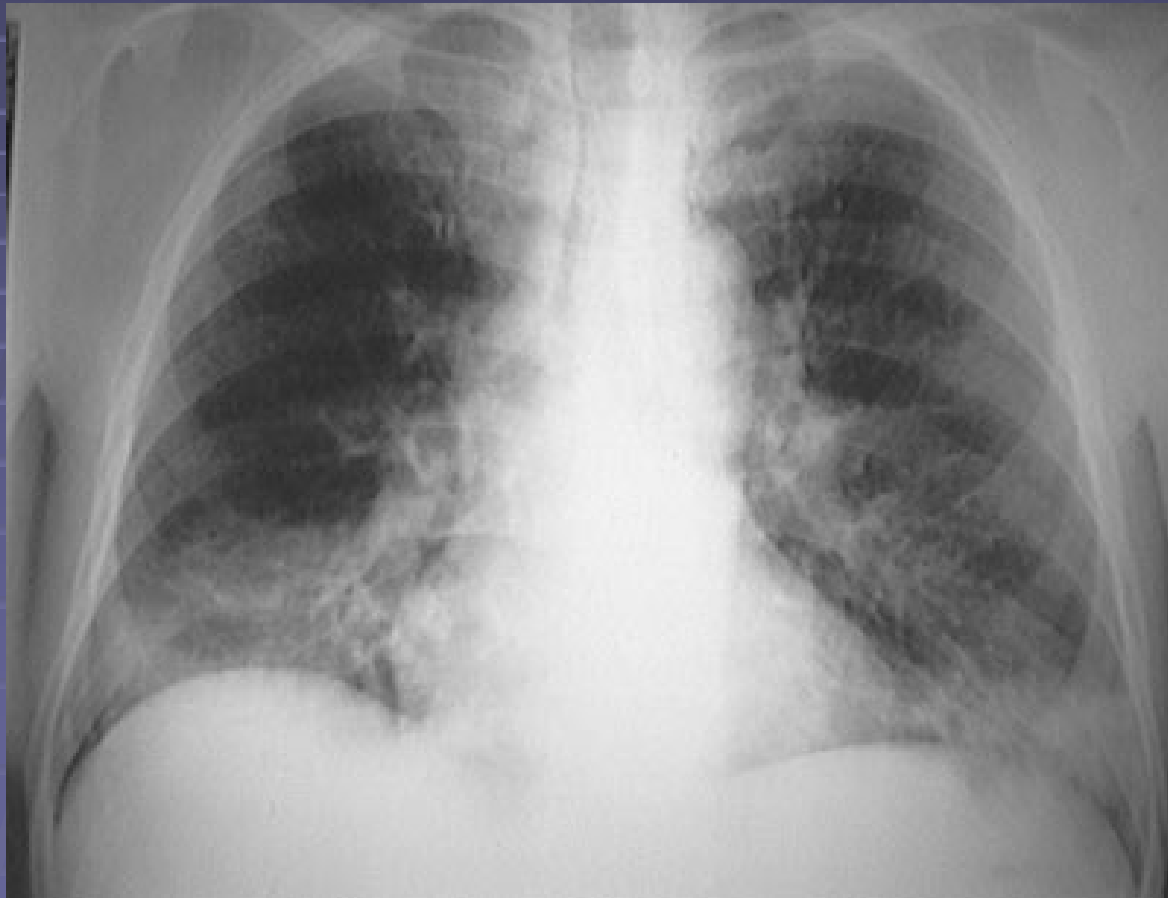
ALKYLATING AGENTS

BUSULFAN

1. CHRONIC PNEUMONITIS /PUMONARY FIBROSIS

toxicity may occur after several years
of treatment

fibrosis may occur insidiously



CYCLOPHOSPHAMIDE

1. CHRONIC PNEUMONITIS /PULMONARY FIBROSIS

risk factors: concurrent use of
other cytotoxic drugs

therapeutic radiation

ANTIMETABOLITES

- METHOTREXATE

1. CHRONIC PNEUMONITIS /PULMONARY FIBROSIS

2. HYPERSENSITIVITY TYPE

3. ACUTE CHEST PAIN SYNDROME

often assoc with pleural effusions

4. NON CARDIOGENIC PULMONARY EDEMA

assoc with intrathecal route



- **CYTOSINE ARABINOSIDE**

1. NON CARDIOGENIC PULMONARY EDEMA

- **FLUDARIBINE**

1. HYPERSENSITIVITY RXN

2. INTERSTITIAL PNEUMONITIS

BIOLOGIC RESPONSE MODIFIERS

- ALLTRANS RETINOIC ACID

1. retinoic acid syndrome

- INTERLEUKIN 2

1. pleural effusions

focal/ diffuse radiographic abnormalities

risk factors: increasing cumulative dose

admn of LAK cells

IL 2 induced cardiac toxicity

2. NON CARDIOGENIC PULMONARY EDEMA

NON CHEMOTHERAPEUTIC AGENTS

- CARDIOVASCULAR DRUGS
- TOPICAL OPHTHALMIC AGENTS
- TOCOLYTICS
- CORTICOSTEROIDS
- ANTIBIOTICS
- ANTICONVULSANTS
- SALICYLATE
- GOLD & PENCILLAMINE
- ILLICIT DRUG USAGE

CARDIOVASCULAR DRUGS

- AMIODARONE

incidence of pulmonary toxicity 5%

1. alveolitis/ fibrosis syndrome

- a) chronic 2/3 rd cases

- b) subacute –fever, chest pain, alveolar/mixed infiltrates

leucocytosis, raised ESR

2. NON CARDIOGENIC PULMONARY EDEMA

Daily dose < 400mg is assoc with lower risk

PATHOLOGY

- accumulation of foamy macrophages

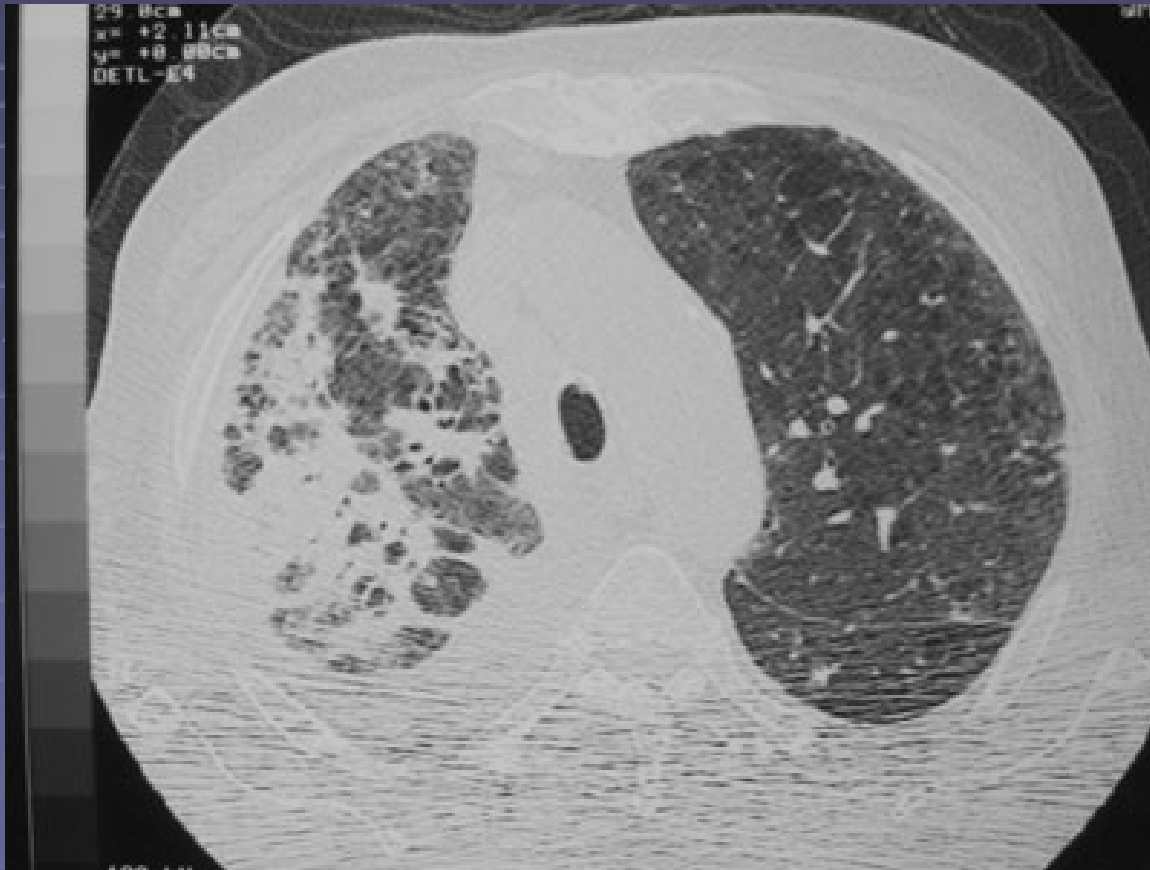
- acute intraalveolar h'age

- type 2 cell proliferation

- Hyaline membrane formation

on Electron m'scopy cytoplasm of foamy macrophages
has lamellar inclusions containing indigested
phospholipids





PROCAINAMIDE

- DRUG INDUCED SLE

ANA +ve, antihistone Ab

Slow acetylators develop ANA & clinical SLE rapidly

common symptoms: arthralgias, fever

Pleural effusions & pleuritic chest pain (MC pulmonary symptoms)

Parenchymal infiltrates

- ADENOSINE

MC pulmonary side effect is acute dyspnea during infusion

Acute bronhospasm in asthma & COPD pts

- ACE INHIBITORS

 - chronic nonproductive cough 5-15%

 - angioneurotic edema

- BETA BLOCKERS

 - pulmonary fibrosis

 - drug induced SLE

 - dose dependent decrease in FEV1

TOPICAL OPHTHALMIC AGENTS

- Significant decrease in FEV1 in asymptomatic
- Acute bronchospasm
- Non specific agents – timolol

TOCOLYTIC AGENTS

- ACUTE PULMONARY EDEMA
- BRONCHOSPASM
- METABOLIC ACIDOSIS AND DYSPNEA



CORTICOSTEROIDS

LONE COUGH

MEDIASTINAL FATTY DEPOSITS (LIPOMATOSIS)

THROMBOEMBOLIC DISEASE

OPPORTUNISTIC INFECTIONS

ANTIBIOTICS

- HYPERSENSITIVITY RXN

- PIE syndrome - beta lactams, sulfa drugs

- MC is loeffler's syndrome

- c/f- dyspnea cough fever

- peripheral blood eosinophilia of acute onset

- spontaneous resolution on drug withdrawal

■ NITROFURANTOIN

ACUTE

Onset <1 mth after 1st

Dose; recurs with challenge

fever, dyspnea, cough,

Maculopapular rash

Mixed infiltrates

PFT-restrictive defect with

Decrease DLCO

CHRONIC

elderly pts undergoing

chronic oral therapy

cough, dyspnea,

cyanosis, fatigue

interstitial infiltrates

prognosis worse

- INH INDUCED SLE

fever anemia rash arthralgias

Pleural effusions & pleuritic chest pain (MC pulmonary symptoms)

ANA+ve, anti histone Ab

- ANTIBIOTIC ASSOCIATED ALVEOLAR HYPOVENTILATION AND HYPERCARBIC RESP FAILURE

AMINOGLYCOSIDES (MC DRUGS)

seen in cases of:

post operative pts.

myasthenia like syndromes

unrecognized myasthenia gravis

ANTICONVULSANTS

- DIPHENYLHYDANTOIN

1. asymptomatic physiological abnormalities
2. hypersensitivity syndrome
3. lymphocytic interstitial pneumonitis
4. pseudolymphoma syndrome

SALICYLATES

- ASPIRIN INDUCED ASTHMA

aspirin sensitivity seen in 5% asthmatics

SAMPTER'S TRIAD- nasal polyposis, chronic sinusitis, asthma

SALICYLATE INDUCED PULM EDEMA

10-15% of salicylate overdosing

metab acidosis with resp alkalosis

Significant proteinuria

CXRAY- perihilar alveolar infiltrates with pleural effusion and cardiomegaly

- GOLD

seen in treatment of osteoarthritis , pemphigus

Assoc with HLAB 40 & HLAB 35

typically interstitial pneumonitis

c/f cough fever skin rash peripheral blood eosinophilia

Lung biopsy- alveolar septal thickening

interstitial fibrosis

mononuclear cell infiltrate

■ PENCILLAMINE

1. Interstitial Lung Diseases
2. Bronchiolitis Obliterans
3. Pulmonary Renal Syndrome

COMPLICATIONS OF ILLICIT DRUG USE

- Alveolar hypoventilation & hypercarbic resp failure
- Endocarditis , septic emboli
- HIV assoc infections
- Tuberculosis
- Complications of central cannulation
 - pneumothorax
 - intravascular infections
 - arterial aneurysms and dissections

- Foreign body granulomatosis
- Opiate induced pulmonary edema
- Cocaine crack lung
 - bronchospasm
 - pneumothorax, pneumomediastinum
 - airway burns
 - non cardiac pulmonary edema
 - pulmonary infiltrates with eosinophilia
 - acute alveolar h'age syndrome

TREATMENT

- DRUG CESSATION
- CORTICOSTEROIDS

EMPERICAL GUIDELINES FOR USE STEROIDS IN DIRD's

Pattern of Involvement	Indication for Steroids	Duration of Treatment	Level of Scientific Evidence†
Laryngeal edema	Y	Days	1
Sudden severe asthma	Y	Weeks	1
Worsening of asthma	Y	As needed	2
Bronchiolitis obliterans	Y‡	Months	2
Classic interstitial pneumonia (NSIP)	Y§	A few weeks or months™	2
Pulmonary infiltrates and eosinophilia	Y§	A few weeks or months™	2, 3
Amiodarone lung	Y§	6 to 18 mo¶	3
Organizing pneumonia	Y§	A few months™	3
Desquamative interstitial pneumonia	Y	A few months ?	1
Pulmonary fibrosis	Y‡	Months	2, 3
Lipoid pneumonia	N	–	1
Pulmonary edema	?	–	–
Pulmonary hypertension	N	–	–
Alveolar hemorrhage	Y?	Months	2
Hemolytic-uremic syndrome	Y?	?	2
Veno-occlusive disease	N	–	–

All the best..