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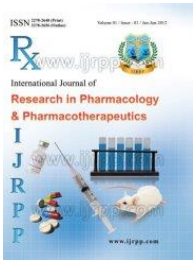

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A review on pulmonary diseases

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ABSTRACT

Lung diseases or pulmonary diseases are some of the most common medical conditions in the world. Lung disease affecting airways include asthma, chronic obstructive pulmonary disease. Lung disease affecting the air sacs include pneumonia, tuberculosis, pulmonary edema, lung cancer, acute respiratory distress syndrome, pneumoconiosis. Lung disease affecting the interstitium include interstitial lung disease. Lung diseases affecting blood vessels are pulmonary embolism, pulmonary hypertension. Lung disease affecting the pleura are pleural effusion, mesothelioma. Lung diseases affecting chest wall are obesity hypoventilation syndrome, neuromuscular disorder. Common symptoms include wheezing, shortness of breath, chest discomfort, cough with or without mucous, fever, blood in the sputum, weight loss, fatty stool. Diagnosis include pulmonary function test, chest imaging, thoracoscopy, needle biopsy pleura analysis, bronchoscopy, mediastinoscopy and mediastinotomy. Treatment for asthma, copd, pneumonia, bronchitis, include bronchodilators (salbutamol, theophylline), corticosteroids (hydrocortisone, prednisolone), antibiotics (amoxycillin, doxycycline, ciprofloxin, ceftriaxone) incase of tuberculosis medication include AKT3 & AKT4.

Keywords: Acute respiratory distress syndrome, Obesity hypoventilation syndrome, Thoracoscopy, mediastinoscopy, Mesothelium.

INTRODUCTION

Lung diseases or pulmonary diseases or pulmonary disorders refers to any disease or disorder in which the lungs do not function properly. These are some of the most common medical conditions in the world. Tens of millions of people suffer from lung disease. Smoking, infections, and genetics are responsible for most lung diseases.

Lung Diseases Affecting the Airways

Diseases that affect the airways include:

Asthma

It is a incurable illness of the airways. The disease causing inflammation & narrowing inside the lungs, restricting air supply. The symptoms of asthma often present in periodic attacks or episodes of tightness in the chest, wheezing, breathlessness, coughing.

Chronic obstructive pulmonary disease (COPD)

It is a progressive, irreversible inflammaotory disease in lungs that makes it hard to breath. Symptoms include chronic cough, wheezing, production of phlegm, shortness of breath and feeling of thightness in the chest, though these symptoms may not be noticeable until the last stages of disease. Types include:

Chronic bronchitis

Bronchitis is an inflammation of the bronchial tubes. Symptoms include cough with mucus, low fever, chest thightness, shortness of breath.

Emphysema

It damages to the airsacs in the lungs. Symptoms include shortness of breath, cough. The most common cause is cigarette smoking.

Acute bronchitis

It is termed as inflammation of the bronchi of the lungs. Symptoms include cough with mucus, shortness of breath, chest discomfort, wheezing.

Cystic fibrosis

It is a genetic disorder that affects mostly the lungs. Symptoms include difficulty in breathing, poor growth, fatty stool.

LUNG DISEASES AFFECTING THE AIR SACS (ALVEOLI)

Lung diseases affecting the alveoli include:

Pneumonia

It is an inflammatory condition of the lungs affecting primarily the small air sacs known as alveoli. Symptoms include combination of productive or dry cough, chest pain, fever, trouble breathing, white nail syndrome.

Tuberculosis

It is an infectious disease caused by "*Mycobacterium tuberculosis"* bacteria mainly affecting the lungs. Symptoms include chronic cough, blood in th sputum, weight loss, fever.

Pulmonary edema

It a fluid accumulation in the tissue and air sacs of the lungs leading to impaired gas exchange & respiratory failure. Symptoms include difficulty in breathing, cough with blood, excessive sweating, anxiety, pale skin & orthopnea.

Lung cancer

It is a malignant lung tumor characterized by uncontrolled cell growth in the tissue of the lungs. Symptoms include coughing, weight loss, shortness of breath

Acute respiratory distress syndrome (ARDS)

It is a type of respiratory failure characterized by rapid onset of widespread inflammation in the lungs. Symptoms include rapid breathing, bluish skin coloration.

Pneumoconiosis

It is an occupational lung disease caused by the inhalation of the dust especially in coal workers asbestosis and silicon mining. Patients with pneumoconiosis may have no symptoms in the early disease. Symptoms include cough with or without mucous ,chest tightness and shortness of breath.

LUNG DISEASES AFFECTING THE INTERSTITIUM

Interstitial lung disease (ILD)

A broad collection of lung conditions affecting the interstitium. Sarcoidosis, idiopathic pulmonary fibrosis, and autoimmune disease are among the many types of ILD. Symptoms includes dry cough, shortness of breath, deformity of nails, weight loss.

LUNG DISEASES AFFECTING BLOOD VESSELS

Pulmonary embolism (PE)

A blood clot (usually in a deep leg vein, deep vein thrombosis) breaks off, travels to the heart, and is pumped into the lungs. The clot lodges in a pulmonary artery, often causing shortness of breath and low blood oxygen levels.

Pulmonary hypertension

Various conditions can lead to high blood pressure in the pulmonary arteries. This can cause shortness of breath and chest pain. When no cause is identified, the condition is called idiopathic pulmonary arterial hypertension.

Lung Diseases Affecting the Pleura

Lung diseases of the pleura include:

Pleural effusion

Fluid collects in the normally tiny pleura space between the lung and the chest wall. Pneumonia or heart failure is usually responsible. If large, pleural effusions can impair breathing, and should be drained.

Pneumothorax

Air may enter the space between the chest wall and the lung, collapsing the lung. Symptoms include pain in the chest, fast heart rate, low oxygen in the body & fast breathing.

Mesothelioma

A rare form of cancer that forms on the pleura. Mesothelioma tends to emerge several decades after asbestos exposure.

LUNG DISEASES AFFECTING THE CHEST WALL

Obesity hypoventilation syndrome

Extra weight on the chest and abdomen makes it difficult for the chest to expand. Serious breathing problems can result.

Neuromuscular disorders

Poor function in the nerves controlling the respiratory muscles causing difficulty in breathing . amyotrophic lateral sclerosis and myasthenia gravis are examples of neuromuscular lung disease.

Diagnosis

- Arterial blood gas analysis
- Bronchoscopy
- Chest imaging(X-ray, MRI, CT scan)
- Chest tube insertion
- Needle biopsy of the pleura or lung
- Pulmonary function test
- Thoracoscopy
- Thoracotomy
- Suctioning
- Mediastinoscopy
- Mediastinotomy

TREATMENT

Chronic obstructive pulmonary disease

OTHER THERAPY INCLUDE

Oxygen therapy

- When symptoms become more severe, supplemental oxygen therapy may be needed. Thankfully there are now lightweight portable oxygen units that allow many people with COPD to live relatively active lives.

Pulmonary rehabilitation

- Just like rehabilitation for other ailments, pulmonary rehabilitation can make a big difference for some people living with COPD.

Flu shots and pneumonia vaccine

- These help prevent infection.

Lung surgery

- Three forms of surgery may be considered for severe COPD: Volume reduction surgery may be used to remove damaged lung tissue. Doctor may recommend a bullectomy, which is the removal of enlarged bullae in your lungs. In very severe COPD, lung transplantation may be recommended. Only a small percentage of COPD patients qualify for surgical intervention, however. While it can improve quality of life, it cannot prolong survival.

Airway clearance techniques

- These are techniques to clear mucus from your airway, including controlled coughing, chest physiotherapy, and using expectorants.

Bronchitis

Antibiotics

- Aminoglycosides, Macrolides, Cephalosporins.

Antitussive

- Codeine, Hydrocodone, Dextromethorphan

Bronchodilators

- *β 2-adrenergic agonist agents:* Salbutamol, Terbutaline
- *Anticholinergic agents :* Ipatropium bromide
- *Methylxanthines:* Theophylline

Mucolytics

- Acetylcysteine

Corticosteroids

- Dexamethasone, Methylprednisolone, Defcort

Other

- Oxygen therapy, Pulmonary rehabilitation program, Chest physiotherapy, Nutritional therapy

Pneumonia

Antibacterial treatment of pneumonia		
Community-acquired		
Mild ,not previously treatment	*Streptococcus pneumoniae* *Haemophilus influenzae*	Oral amoxicillin 500mg–1g/8h or clarithromycin 500mg/12h or doxycycline 200mg loading then 100mg/day
Moderate	*Streptococcus pneumoniae* *Haemophilus influenzae* *Mycoplasma pneumoniae*	Oral amoxicillin 500mg–1g/8h + clarithromycin 500mg/12h or doxycycline 200mg loading then 100mg/12h. If IV required: amoxicillin 500mg/8h + clarithromycin 500mg/12h
Severe	As above *Panton-Valentine Leukocidin-producing Staph. aureus (PVL-SA)*	Co-amoxiclav 1 . 2g/8h IV or cephalosporin IV (eg cefuroxime 1 . 5g/8h IV) AND clarithromycin 500mg/12h IV. Add flucloxacillin± rifampicin if staph suspected; vancomycin (or teicoplanin) if MRSA suspected. Treat for 10d (14–21d if staph, legionella, or Gram –ve enteric bacteria suspected). Consider adding IV linezolid, clindamycin, and rifampicin
Atypical	*Legionella pneumophilia* *Chlamydophila species* *Pneumocystis jiroveci*	Fluoroquinolone combined with clarithromycin, or rifampicin, if severe. Tetracycline High-dose co-trimoxazole

Tuberculosis

Resistance to	*Initial phase*		*Continuation phase*	
	Drugs	*Minimum duration in months*	*Drugs*	*Duration in months*
• Isoniazid, rifampicin and streptomycin	1 aminoglycoside[e] 2 ethionamide 3 pyrazinamide 4 ofloxacin[f] 5 ethambutol	3 3 3 3 3	1 ethionamide 2 ofloxacin[f] 3 ethambutol	18 18 18
• Isoniazid, rifampicin, streptomycin, and ethambutol	1 aminoglycoside[e] 2 ethionamide 3 pyrazinamide 4 ofloxacin[f] 5 cycloserine[g]	3 3 3 3 3	1 ethionamide 2 ofloxacin[f] 3 cycloserine[g]	18 18 18

Drug induced pulmonary disease

Table 1. Drugs Known to Cause Pulmonary Disorders

Class	Drugs
Alkylating agents	Busulfan, chlorambucil, cyclophosphamide, ifosfamide, melphalan, procarbazine
Analgesics	Heroin, methadone, naloxone, placidyl, propoxyphene, salicylates
Antibiotics	Amphotericin B, cephalosporins, ciprofloxacin, clarithromycin, daptomycin, erythromycin, minocycline, nitrofurantoin, penicillin, pentamidine, sulfasalazine, sulfonamides
Antiepileptics	Carbamazepine, phenytoin
Antidepressants	Bupropion, citalopram, duloxetine, tricyclics, venlafaxine
Antidiabetics	Thiazolidinediones, pioglitazone, rosiglitazone
Anti-inflammatories	Acetylsalicylic acid, celecoxib, gold, meloxicam, methotrexate, NSAIDs, penicillamine
Antimetabolites	Azathioprine, cladribine, cytarabine, mercaptopurine, methotrexate
Biological response modifiers	Adalimumab, etanercept, granulocyte colony-stimulating factor, interleukin-2, infliximab, interferons, leflunomide, lenalidomide, thalidomide, tumor necrosis factor
Bone resorption inhibitors	Pamidronate, risedronate
Cardiovascular	Amiodarone, ACE inhibitors, anticoagulants, beta-blockers, carvedilol, dipyridamole, diltiazem, fibrinolytics, nicardipine, propafenone, protamine, statins, tocainide
Chemotherapeutic cytotoxic agents	Actinomycin D, bleomycin, doxorubicin, imatinib, mitomycin, neocarzinostatin, trastuzumab
Hormones	Oral contraceptives, progesterone
Immunoreactives	Corticosteroids, interleukin-2
Inhalants	Aspirated oil, oxygen
Intravenous	Blood, ethiodized oil fat emulsion, morrhuate sodium, talc
Nitrosoureas	Carmustine, lomustine, semustine
Plant alkaloids	Etoposide, teniposide, paclitaxel, vinblastine, vincristine
Platelet-aggregation inhibitors	Clopidogrel, ticlopidine, tirofiban
Prostaglandins	Epoprostenol, prostaglandin E1
Radiation	Acute, chronic
SERMs	Raloxifene, tamoxifen
Skeletal muscle relaxants	Dantrolene, tizanidine
Miscellaneous	Benzocaine, bromocriptine, chlorhexidine, cyclosporine A, factor VIIa, gefitinib, hydrochlorothiazide, L-tryptophan, leukotrienes, methimazole, naphazoline, omeprazole, oxytocin, quinine, riluzole, sirolimus, sufentanil, tocolytics, triptans

ACE: angiotensin-converting enzyme; NSAIDs: nonsteroidal anti-inflammatory drugs; SERMs: selective estrogen receptor modulators.
Source: References 1-28.

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