



Symptoms of Respiratory Disease

Apichart Kanitsap MD.

Department of Medicine, Faculty
of Medicine, Thammasat
University

Common symptom in pulmonary disease

- Cough
- Shortness of breath, dyspnea
- Hemoptysis
- Chest pain

Cough

- Most common of respiratory symptom
- Important defense mechanism that helps clear excessive secretion and foreign material from airway
- Important factor in spread of infection
- Effective cough depends primarily upon small cross-sectional area and high flow rates

Physiology of cough

- Mechanism of cough consist 4 stages
 - Inspiratory phase
 - Compression phase
 - Expulsive phase
 - Post-tussive phase

Cause of cough

Types of stimulation	Possible cause
Inflammation	-Infection, drug reaction, allergy, edema, hyperemia collagen vascular disease, radiotherapy
Mechanical obstructive	-FB, aspiration of nasal secretion, tumor or granuloma, aortic aneurysm
airway wall tension	-pulmonary edema, atelectasis, fibrosis, chronic interstitial pneumonitis
Chemical	-inhaled irritant gases, fumes , smoke
Temperature	-inhaled hot or cold air
Ear	-tactile pressure in ear canal, OM

Pattern of cough and Etiology

- Acute : infection, postnasal drip, allergy, bronchitis, laryngitis, CHF, PE
- Chronic: postnasal drip, asthma, chronic bronchitis, GERD, COPD, TB, Bronchiectasis, lung tumor, Drugs, CHF, Habit

Pattern of cough and Etiology

- Dry : viral infection, inhalation of irritant gases, interstitial lung disease, pleural effusion, cardiac condition, tumor, radiation therapy, chemotherapy
- Chronic productive: bronchiectasis, chronic bronchitis, lung abscess, asthma, fungal infection, Tb
- Paroxysmal (esp. night) : aspiration, asthma, left heart failure

Pattern of cough and Etiology

- Barking : epiglottic disease, Croup, laryngotracheal bronchitis
- Brassy or hoarse : laryngitis, laryngotracheal bronchitis, laryngeal paralysis, pressure on recurrent laryngeal nerve, mediastinal tumor, aortic aneurysm, left atrial enlargement
- Inspiratory stridor: tracheal or mainstem bronchial obstruction, croup, epiglottitis

Pattern of cough and Etiology

- Wheezy: bronchospasm, asthma, bronchitis, CF
- Morning: chronic bronchitis, smoking
- Afternoon and evening: exposure to irritants during the day
- Associated with position change or lying down: bronchiectasis, left heart failure, post nasal drip, sinusitis, GERD with aspiration
- Associated with eating or drinking : neuromuscular disease of upper airway, esophageal problem, aspiration

Characteristic of sputum

- Black: smoke or cold dust inhalation
- Frothy pink: pulmonary edema
- Sand or small stone: aspiration of foreign material, broncholithiasis

Characteristic of sputum

- Purulent : infection, pneumonia caused by
 - Apple-green thick : H. influenzae
 - Red currant jelly : K. pneumoniae
 - Rusty : Pneumococci
 - Yellow or green, copious : advanced chronic bronchitis, bronchiectasis
 - Foul odor (fetid) : lung abscess, aspiration, anaerobic infection, bronchiectasis

Acute cough

■ Common

- Common cold
- Acute bacterial sinusitis
- Pertussive
- Exacerbation of COPD
- Allergic rhinitis
- Environmental irritant rhinitis

■ Less common

- Asthma
- Pneumonia
- CHF
- Aspiration syndromes
- PE
- Exacerbation of bronchiectasis

Chronic cough (normal CXR)

- Post nasal drip syndrome
- Asthma
- GERD
- Chronic bronchitis
- Eosinophilic bronchitis
- ACEIs
- Postinfectious cough

PNDS

- Respiratory complaints (cough, dyspnea or wheeze) due to postnasal discharge
- Arises from stimuli irritating the afferent limb of cough reflex located in hypopharynx and/or larynx
- Treatment options are somewhat dependent on subcategory of disease causing the postnasal drip

PNDS

disorder	frequency
Sinusitis	39%
Perennial nonallergic rhinitis	37%
Allergic rhinitis	23%
Postinfectious rhinitis	6%
Vasomotor rhinitis	2%
Drug-induced rhinitis	2%
Environmental irritant rhinitis	2%

Asthma

- Cough has been only symptom 6.5-57% of the time (cough-variant asthma)
- Suggested by presence of airway hyperresponsiveness
- Cough goes away with asthma medications
- Treatment is same as asthma

Eosinophilic bronchitis

- Pts present with chronic cough as an isolated symptom, normal spirometry, normal airway responsiveness to inhaled methacoline and eosinophilic airway inflammation
- Treatment is inhaled or oral corticosteroid

GERD

- Can cough by vagally-mediated distal esophageal-tracheobronchial reflex mechanism
- May be no GI symptom up to 75% of the time
- Most sensitive and specific test for GERD is 24-h esophageal pH monitoring
- Using empiric therapy as a diagnostic test

Chronic bronchitis

- Favored by inhalation of irritants, airway inflammation, mucus hypersecretion and impaired mucociliary clearance
- Treatment mainly target a reduction of sputum production and airway inflammation by removing environmental irritant' particularly smoking cessation

Bronchiectasis

- Diagnosis is established by compatible clinical history, chest radiographs, HRCT of thorax and cough disappearance with specific therapy
- Treated successfully with a combination of chest physiotherapy, drugs to stimulate mucociliary clearance and systemic antibiotics

Postinfectious cough

- Chronic cough after a respiratory tract infection and have normal CXR
- Diagnosis is one of exclusion
- Treatment may be hastened by brief course of oral CS , inhaled CS or ipratropium

ACEI-induced cough

- Typically nonproductive
- Associated with an irritating, tickling or scratchy sensation in the throat.
- Cough may appear within a few hours to weeks or months after taking the first dose of the ACEI
- Definitive treatment is discontinuation of the drug
- Cough improve within 4 weeks of discontinuing the drug

Bronchogenic carcinoma

- Is not a common cause of chronic cough (0-2%)
- Very unlikely in never smokers
- CXR is the most important initial diagnostic test

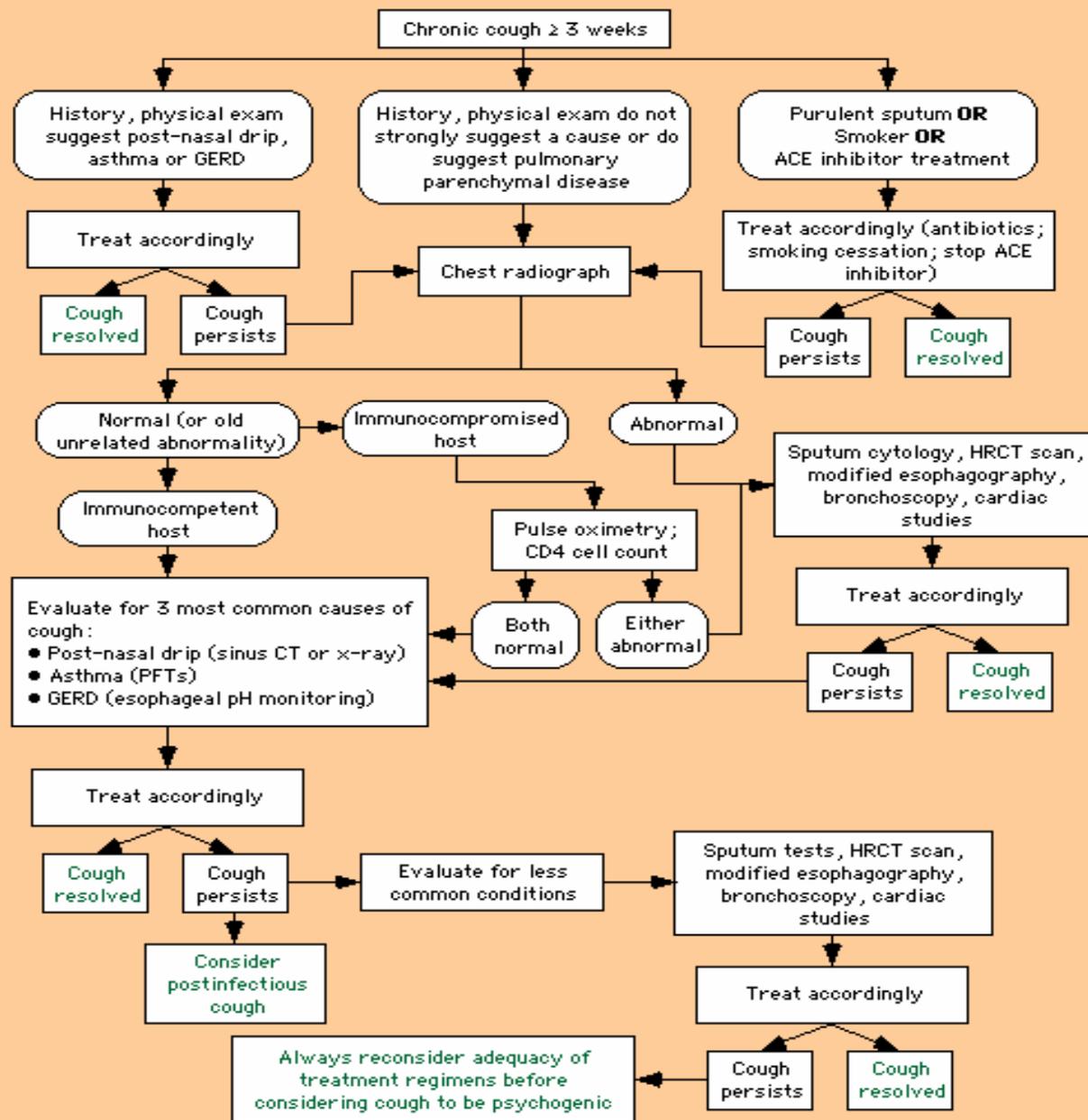
Chronic interstitial pulmonary disease

- Uncommon cause of chronic cough
- Treatment is based upon therapy of the underlying condition

Complications of cough

- Cardiovascular : hypotension, loss of consciousness, brady-tachy-arrhythmias
- Neurological: syncope, headache, seizure
- GI: induced gastroesophageal reflux, hernia
- Respiratory : pulmonary interstitial emphysema, exacerbation asthma
- Musculoskeletal: muscle injury

Evaluation of Chronic Cough in Adults



ACE = angiotensin-converting enzyme; GERD = gastroesophageal reflux disease; HRCT = high resolution computed tomography

Treatment

- Therapy that controls, prevents or eliminates cough (antitussive therapy)
 - Specific therapy
 - Non-specific therapy
- Therapy that makes cough more effective (protussive therapy)

Dyspnea

- Distressing sensation of difficult, labored or unpleasant breathing
- Physiology of dyspnea remains unclear
- Multiple neural pathway model of dyspnea may arise due to abnormalities in afferent pathway, efferent pathway or central control center of respiratory system

Differential diagnosis of dyspnea

- Cardiac
- Deconditioning
- Dermatologic
- Endocrine
- GI
- Hematologic
- Infectious
- Larynx/upper airway
- neuromuscular
- Nutrition
- Oncologic
- Pharmacologic
- Pregnancy
- Pulmonary
- Psychiatric
- Renal
- Rheumatologic
- vascular

Evaluating dyspnea

- Review patient's history and perform PE (concentrating on anatomy)
- Most common cause of dyspnea : COPD, asthma, interstitial lung disease, cardiomyopathy, GERD and hyperventilation syndrome
- CXR in nearly all patients

Positional or nocturnal dyspnea

- Trepopnea suggests asymmetric disease
- Platypnea may result from pericarditis, V/Q mismatch, ileus or right-to-left shunt
- Orthopnea occur in COPD, pulmonary edema, respiratory muscle weakness
- Nocturnal dyspnea associated with COPD, asthma, CHF, GERD

Evaluating dyspnea

- Depending on results of initial evaluation and CXR, following may be obtain
 - Pulmonary function test
 - Noninvasive cardiac study : ECG, echocardiography, stress test
 - Modified barium esophagography and/or 24-h esophageal pH monitoring
 - Chest CT scan
 - Comprehensive ETT
 - Invasive test : cardiac catheterization and lung biopsy

Treatment of dyspnea

- Can be either disease-specific or disease-nonspecific
- Non-specific therapy included conditioning regimens, nutrition, stress reduction and coping skills, oxygen, mechanical ventilation, respiratory muscle training, vagotomy, muscle vibration and pharmacotherapy with narcotics, anxiolytics and phenothiazines

wheeze

- Continuous musical sound that lasts longer than 80 to 100 ms
- Polyphonic wheeze consisting of musical notes, is typically produced by dynamic compression of the large, more central airways
- Monophonic wheeze consist of single musical notes, typically reflect disease in small airway

All that wheezes is not
asthma

all that wheeze is obstruction

Differential diagnosis of Wheeze (extrathoracic causes)

■ Extrathoracic

- PND
- Vocal cord dysfunction syndrome
- Epiglottitis
- Laryngeal edema
- Neoplasm
- Anaphylaxis
- Obesity
- Relapsing polychondritis
- Vocal cord paralysis
- Wegener's granulomatosis

■ Intrathoracic causes

- FB aspiration
- Tracheal/bronchial tumor
- Intrathoracic goiter
- Tracheobronchomegaly
- Tracheomalacia
- Herpetic tracheobronchitis
- Right sided aortic arch

Differential diagnosis of Wheeze (lower airway obstruction)

- Asthma
- COPD
- Pulmonary edema
- Aspiration
- Pulmonary embolism
- Bronchiolitis
- CF
- Carcinoid syndrome
- Bronchiectasis
- Lymphangitic carcinomatosis
- Parasitic infections

PND

- History of postnasal drip
- Throat clearing
- Nasal discharge
- PE shows oropharyngeal secretions or cobblestone appearance

Epiglottitis

- History of sore throat out of proportion to pharyngitis
- Evidence of supraglottitis on endoscopy or lateral neck radiographs

Vocal cord dysfunction syndrome

- Lack of symptomatic response to bronchodilators
- Presence of stridor plus wheeze in absence of increased $P(A-a)O_2$
- Paradoxical inspiratory and/or early expiratory adduction of vocal cords on laryngoscopy during wheezing
- Masquerade as asthma, be provoked by exercise and often coexists with asthma

Retropharyngeal abscess

- History of stiff neck, sore throat, fever, trauma to posterior pharynx
- Swelling noted by lateral neck or CT radiographs

Anaphylaxis

- Abrupt onset of wheezing with urticaria, angioedema, nausea, diarrhea and hypotension especially following insect bite, administration of drug or IV contrast or family history

Pulmonary edema

- History and physical exams consistent with passive congestion of the lung
- Abnormal CXR, echocardiogram, radionuclide ventriculography, cardiac catheterization or combination

Aspiration

- History of risk for pharyngeal dysfunction or gastroesophageal reflux disease
- Abnormal modified barium swallow and/or 24-h esophageal pH monitoring

Pulmonary embolism

- History of risk for thromboembolic disease
- Positive confirmatory tests

Carcinoid syndrome

- History of episodes of flushing and water diarrhea
- Elevated 5-hydroxyindoleacetic acid level in a 24-h urine specimen

Bronchiectasis

- History of episodes of productive cough, fever or recurrent pneumonia
- Suggestive CXR or typical chest CT finding

Lymphangitic carcinomatosis

- History of dyspnea or prior malignancy
- Reticulonodular infiltrates with or without pleural effusion
- Suggestive by HRCT, bronchoscopy with biopsy

Parasitic infection

- Consider in nonasthmatic who traveled to endemic area
- Complains of fatigue, weight loss, fever
- Peripheral blood eosinophilia
- Infiltrates on CXR
- Stools for ova and parasites for nonfililarial, blood serologic studies for filarial causes

Hemoptysis

- Spitting of blood derived from lung or bronchial tube
- Massive hemoptysis is defined as the expectoration of 600 mL of blood within 24 h
- Massive hemoptysis may occur in 3-10% of all pts with hemoptysis

Pseudo-hemoptysis

- May occur when blood from oral cavity, nares, pharynx or tongue drains to back of the throat and initiates the cough reflex
- When blood is aspirated into lower respiratory tract in pts who have hematemesis
- When oropharynx is colonized with red, pigment-producing, aerobic, gram-negative rod (*Serratia marcescens*)

Cause of hemoptysis

■ Tracheobronchial disorders

- Acute tracheobronchitis
- Aspiration of gastric content
- Bronchial adenoma
- Bronchial telangiectasia
- Chronic bronchitis
- Endobronchial tuberculosis, metastases, hamatoma
- FB aspiration
- Tracheoesophageal fistula
- Tracheoartery fistula

Cause of hemoptysis

■ Cardiovascular disorder

- Aortic aneurysm
- MS
- Postmyocardial infarction syndrome
- Pulmonary arteriovenous fistula
- PE, fat embolism
- Tumor embolization
- CHF
- Coronary artery bypass graft

Cause of hemoptysis

■ Localized parenchyma disease

- Acute and chronic pneumonia
- Actinomycosis
- Bronchopulmonary sequestration
- Lung abscess, lung contusion
- Metastatic cancer
- Paragonimiasis , nocardiosis
- Pulmonary tuberculosis
- Pulmonary endometriosis
- Cryptococcosis , Histoplasmosis

Cause of hemoptysis

- **Diffuse parenchymal disease**
 - Capillaritis, systemic vasculitis
 - Goodpasture's syndrome
 - Wegener's granulomatosis
 - Systemic vasculitis
 - Inhaled isocyanates
 - Viral pneumonitis

Cause of hemoptysis

■ Hematologic disorders

- Anticoagulant therapy
- DIC
- Leukemia
- Thrombocytopenia

■ Miscellaneous

- Iatrogenic : bronchoscopy, needle lung biopsy
- idiopathic

Common cause of massive hemoptysis

- Cardiovascular
 - Arteriobronchial fistula
 - CHF
 - Pulmonary AVM
- Diffuse intrapulmonary hemorrhage
- Diffuse parenchymal disease
- trauma
- Iatrogenic
 - Malposition of chest tube
 - Pulmonary a. rupture
 - Tracheoartery fistula
- Infection
 - Aspergilloma
 - Bronchiectasis
 - Lung abscess
 - TB
- Malignancy
 - Bronchogenic CA
 - Leukemia
 - Metastatic cancer

Routine evaluation for hemoptysis

- History
- PE
- CBC
- Urinalysis
- Coagulation study
- EKG
- CXR
- bronchoscopy

Tracheobronchial disorders

- Expectorated sputum for TB, parasites, fungi and cytology
- Bronchoscopy
- HRCT

Cardiovascular disorders

- Echocardiogram
- ABG on 21% and 100% oxygen
- V/Q scans
- Pulmonary angiogram
- Aortogram, contrast CT scan

Localized parenchymal disease

- Expecterated sputum for TB, parasites, fungi and cytology
- Chest Ct scan
- Lung biopsy with special stain

Diffuse parenchymal disease

- Expecterated sputum for cytology
- Blood for BUN, creatinine, ANA, RF, complement, ANCA, anti-GBM antibody
- Lung and/or kidney biopsy with special stains

Treatment

- Definitive therapy
- Supportive therapy
 - Bed rest and mild sedation
 - Antitussive drug (narcotics) should not be used
 - An effective cough may be necessary to clear blood from the airways and avoid asphyxiation
 - Supplement oxygen

Treatment

■ Supportive

- If bleeding continues and gas exchange becomes compromised, ET intubation and MV may necessary
- ET with internal diameter of at least 8 mm should be used
- Other respiratory adjunctive therapy (chest physiotherapy, postural drainage) should be avoided
- Fluid and blood resuscitation should be given when indicated

Treatment of massive hemoptysis

- Treatment is directed not only at specific cause but also abrupt cessation of bleeding
- Death from massive hemoptysis is predominantly due to asphyxia
- Urgent management must emphasize protecting the uninvolved lung from aspiration of blood and tamponading of bleeding site

Treatment of massive hemoptysis

- Urgent treatment to stop massive hemoptysis : laser bronchoscopy, iced saline lavage, angiographic embolization, surgical resection

Chest pain

- Cardiac cause : ischemia, aortic dissection, myocarditis, pericarditis
- Pulmonary: pleuritic, pneumonia, PE, pneumothorax
- GI: biliary, esophagus, pancreatitis, stomach
- Chest wall: costochondritis, herpes zoster
- Psychiatric

Chest pain

- Quality
- Location
- Radiation
- Onset
- Duration
- Provocation/Palliation
- Severity
- Associated symptom
- Risk factor

Chest pain

■ PE

- GA
- Vital sign
- Palpation at chest wall
- CVS, pulmonary system
- GI

■ Investigation

- CXR, EKG