

Common respiratory diseases: Approach to elderly patients



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The Aging population

Global scenario:

- Between 2015 and 2050, the proportion of the world's population over 60 years will nearly double from 12% to 22%
- By 2020, the number of people aged 60 years and older will outnumber children younger than 5 years
- In 2050, 80% of older people will be living in low- and middle-income countries

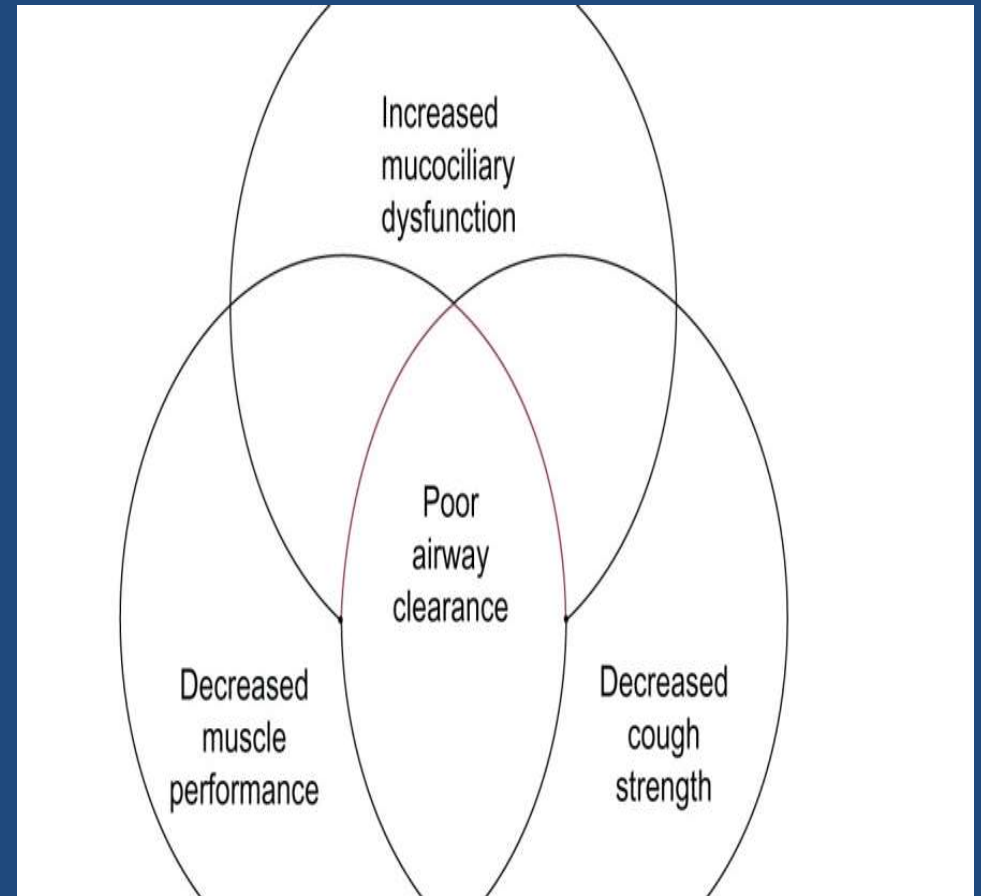
Bangladesh scenario:

- As of 2019, over 13 million people living in Bangladesh are aged over 60 which is 8% of the country's total population
- The proportion of older people is expected to double to 21.9% in 2050 with 36 million people aged over 60.
- For every five Bangladeshis, one will be a senior citizen

*United Nations. 2019. World Population Prospects 2019. Retrieved from United Nations Population Division:
<https://population.un.org/wpp/Download/Standard/Population/>*

Age-associated changes in the respiratory system

- The size of the thoracic cavity decreases, limiting lung volumes
- Muscle function is less efficient
- Cough strength is reduced due to anatomic changes and muscle atrophy
- Ciliary dysfunction
- Less robust immune response from both the innate and adaptive immune systems



Common Pulmonary Diseases in Older Persons

- Pneumonia
- Asthma
- Chronic obstructive pulmonary disease
- Lung cancer
- Idiopathic pulmonary fibrosis

Dyspnea and cough are common symptoms of pulmonary diseases in older patients but are also associated with non-pulmonary co-morbid conditions such as heart failure, anemia, muscle weakness etc

PNEUMONIA

Community acquired pneumonia (CAP)

Epidemiology

Community-acquired pneumonia (CAP) is the fifth leading cause of death and the most common cause of death from infectious diseases in persons aged 65 years and over in the USA

- The annual incidence of CAP for non-institutionalized patients is estimated at 18.2 cases per 1000 persons in persons aged 65–69 years and 52.3 cases per 1000 persons in those aged 85 years and older
- Mortality is also considerably higher in elderly patients with CAP compared with other groups

The elderly are particularly susceptible to this infection because of their –

- impaired gag reflex
- impaired muco-ciliary function
- declining immunity
- presence of co-morbid conditions

Clinical Presentation and Evaluation

Older patients with community acquired pneumonia commonly present with atypical symptoms rather than fever, cough, and purulent sputum that are typically associated with pneumonia

- Tachypnea
- Delirium
- Constitutional symptoms such as weakness, fatigue
- Falls

Due to difficulties in obtaining adequate sputum samples and nonspecific symptoms, pneumonia diagnosis is often delayed in older patients

Etiology

- *Streptococcus pneumoniae* - most common pathogen
- Atypicals and Gram-negative bacilli - play an important role

Severity assessment & criteria for admission to the hospital and the intensive care unit

Severe CAP - requires hospitalization on the ward service and/or intensive care unit (ICU)

CURB-65

- Identify patients who may need hospitalization in the ward service or ICU
- They are not meant to replace clinical judgment

CURB-65

- Confusion (altered mental status; 1 point)
- Urea nitrogen in serum >19.6 mg/dl (1 point)
- Respiratory rate >30 breaths per min (1 point)
- Blood pressure (BP minus systolic BP <90 mmHg or diastolic BP <60 mmHg; 1 point)
- Age of 65 years or older (1 point)

CRB-65

- Appropriate alternative for decision making.
- Used in primary care settings where laboratory tests are likely not available

Pneumonia severity index score

- **Total 20 parameters are evaluated at the time of presentation**
 - Three demographics (age [1 point per year of age], females [−10 points] and nursing-home resident [+10 points])
 - Five co-morbid conditions (neoplasia [+30 points], liver disease [+20 points], congestive heart failure [+10 points], cerebrovascular disease [+10 points] and renal disease [+10 points])
 - Five physical examination findings (confusion [+20 points], tachypnea [+20 points], hypotension [+20 points], temperature [+15 points] and tachycardia [+15 points])
 - Seven laboratory variables (arterial pH [+30 points], elevated blood urea [+20 points], hyponatremia [+20 points], hyperglycemia [+10 points], anemia by hematocrit [+10 points], pleural effusion [+10 points] and poor oxygenation [+10 points])

Treatment of CAP

Antibiotics

- β -lactam medications
- Fluoroquinolones
- Macrolides

Treatment for severe CAP

- Combined antimicrobial therapy (β -lactam plus either a macrolide or a respiratory fluoroquinolone)
- Severe CAP patients admitted to ICU - risk for *Pseudomonas* species infection and be treated accordingly

Non-antibiotic therapies

- Supportive management

Duration of therapy

- The duration of therapy in CAP patients requiring hospitalization is 7–10 days, but those with atypical pathogens such as *Legionella* species, should receive treatment for 10–14 days

Prevention

- *Vaccination*
- Pneumococcal polysaccharides vaccine
- The efficacy of revaccination is unknown
- Inactivated influenza vaccine
- *Chemoprophylaxis* for influenza infection with oseltamivir or zanamivir -in the setting of an outbreak
- *A smoking cessation plan*

Aspiration pneumonia

In patients with baseline neurological deficits, it can be especially challenging to diagnose due to -

- Slow, indolent course
- Low-grade fevers
- Absence of rigors

Asthma

How is asthma different in older adults?

It is not uncommon for adults in their 70s or 80s to develop asthma symptoms for the first time

- Greater risk - More likely to develop respiratory failure even during mild episodes of symptoms
- Mild asthma symptoms can have the same level of breathing difficulty as younger asthma patients experiencing a severe asthma episode

- Unlike asthma in younger persons, asthma in older adults rarely goes into remission
- Instead, asthma is more likely to remain a potentially serious, and many times, a disabling disease

Why is asthma difficult to diagnose in older adults?

- A diagnosis may be missed in an older person because symptoms of other health conditions are similar to asthma symptoms
- When older adults become inactive, the opportunity for asthma to present itself lessens
- When symptoms are not recognized correctly, worsening and creating very serious health risks

Clinical presentation and evaluation

- Wheeze
 - Chest tightness
 - Shortness of breath
 - Chronic cough : worse at night
-
- Pulmonary function tests(PFTs): reversible airflow obstruction
 - Methacholine challenge test

Risk factors

- Co-morbidities
- Obesity
- Medications: beta-blockers, non-steroidal anti-inflammatory drugs

- **Are there special considerations in treating asthma in older adults?**
- Unpleasant side effects of Polypharmacy
- Mental confusion or memory problems
- Lack of manual coordination and dexterity

Treatment

- Pharmacological

Inhaled beta-agonists, inhaled and systemic corticosteroid, inhaled anticholinergics, anti-leukotriene agents

- Non-pharmacological

- Symptom diaries
- Inhaler use technique
- Peak flow meter use

Chronic obstructive pulmonary disease (COPD)

Epidemiology:

Globally

Forth leading cause of death

600 million people

Bangladesh scenario

Total burden: 6 million

Prevalence : More than 40 years of age - 21.4%

Risk factors

- Age
- Tobacco smoke: current, >20 pack-year history
- Biomass smoke exposure, occupational exposure
- Alpha-1 antitrypsin deficiency

Clinical presentation and evaluation

- Cigarette smoking history
- Occupational exposures
- Cough, wheeze
- Dyspnea
- Chronic sputum production
- Pulmonary function tests

Treatment and Prevention

No age specific recommendation

- Inhaled beta-agonists, inhaled anticholinergics, inhaled and systemic corticosteroids, theophylline, roflumilast
- Pulmonary rehabilitation
- Antibiotics for exacerbations
- Vaccination

Special attention

- Non-co-adherence
- Lack of skill
- Cost of medication

Determinants of outcome and health-related quality of life

- FEV1(positive association)
- 6-Minute walk distance (positive association)
- Co-morbidities (negative association)
- Severity of airway obstruction (negative association)
- Ability to perform activities of daily living
- Emotional state

Lung cancer

- Lung cancer increases with age, particularly after age 60. The median age of patients diagnosed with lung cancer is 70 years old

Clinical presentation

Non–small cell lung cancer most common

- Presentation with metastatic disease
- Cough, shortness of breath
- Hemoptysis
- Chest pain
- Hoarseness of voice
- Constitutional symptoms: fatigue, weight loss
- Paraneoplastic syndromes

Risk factors

- Cigarette smoking
- Radon exposure
- History of radiation exposure
- COPD
- Pulmonary fibrosis
- HIV
- Female gender for adenocarcinoma

Evaluation

- Imaging
- Staging

Treatment

- Multidisciplinary approach
- Comprehensive geriatric evaluation

Determinants of outcome and health-related quality of life

- Depends on histological type, stage, co-morbidities, functional status

Idiopathic pulmonary fibrosis (IPF)

- IPF is a relatively rare, progressive fibrotic lung disease of unclear etiology that primarily affects older patients

Clinical presentation and evaluation

- Dyspnea
- Dry cough

Pulmonary function tests with restriction

- Chest x-ray
- Chest CT
- Lung biopsy

Risk factors

- Smoking
- Genetic
- Chronic aspiration and Gastroesophageal reflux disease may also have a role

Treatment

- Supplemental oxygen
- Pulmonary rehabilitation
- Pirfenidone, Nintedanib, Prednisone, n-acetylcysteine
- Lung transplant

Conclusion

- An ageing population increases the demand for health services
- Age and co-morbidity often affect patients' abilities to respond to, adhere to and tolerate treatment of lung diseases
- Although some decline in lung function is associated with aging, clinically significant lung diseases need to be considered in symptomatic patients

- Cigarette smoking is the strongest risk factor for nearly all pulmonary diseases in older patients
- Older persons with lung diseases should receive routine **vaccinations**
- Easy-to-administer, effective treatments for lung diseases should undergo rigorous evaluation in randomized controlled trials with aging patients

THANK YOU