

DEFINITION

1. Bronchitis is a term meaning inflammation of the bronchi. It exists in two forms, namely acute bronchitis and chronic bronchitis. These are separate conditions and there is no causal relationship between the two.

ACUTE BRONCHITIS

2. Acute bronchitis is an acute respiratory disease which is characterised by inflammation of the bronchi.

CLINICAL MANIFESTATIONS

3. Acute bronchitis usually occurs in the course of a viral infection of the upper respiratory tract which spreads into the trachea and bronchi. The initial tracheitis causes a dry cough with retrosternal soreness. As the bronchi become involved, the cough becomes productive of sputum. Tightness of the chest, wheezy respiration and a variable degree of breathlessness develops. The sputum becomes mucopurulent and may be flecked with blood. The systemic upset may vary from a mild afebrile disturbance lasting a day or two, to a severe illness with fever, breathlessness and cyanosis.
4. Uncomplicated acute bronchitis is a self-limiting disease with complete resolution and return to normal structure and function. In the adult it does not lead to chronic bronchitis. The fever and systemic upset, if present, usually recover within a few days but cough and sputum may persist for weeks or even months before gradually ceasing.
5. Possible complications are pneumonia or lung collapse. The condition may be severe in the very young, the very old or in patients who are already debilitated.

AETIOLOGY

6. Acute bronchitis is most often caused by viral infection of the trachea and bronchi and is part of a generalised respiratory tract infection. The viruses most often responsible are rhinovirus, coronavirus, influenza, parainfluenza and adenovirus.
7. The condition affects males more than females and is seen more frequently in winter than in summer.

CHRONIC BRONCHITIS

DEFINITION

8. **Chronic Obstructive Pulmonary Disease (COPD).** The conditions chronic bronchitis, bronchial asthma and bronchial emphysema can cause obstruction of the airways, although this is not invariable. The term chronic obstructive pulmonary disease (replacing chronic airflow limitation (CAL) and non-reversible obstructive airways disease (NROAD)) is now used as a generic term for any combination of the conditions where there is airways obstruction and a variable degree of airways hyper-sensitivity.
9. **Chronic Bronchitis** In this component of COPD there is hypersecretion of mucus, and it is defined clinically as the presence of cough productive of sputum on most days for at least three months of two successive years, in a person in whom other causes of chronic cough have been excluded.
10. Emphysema is characterised by enlargement of air spaces distal to the terminal bronchioles and is accompanied by destruction of the bronchiolar walls.
11. In practice many clinicians use the term chronic bronchitis and emphysema to indicate both excess mucus production and the presence of airways obstruction. Studies have been designed to define the roles of bronchitis and emphysema in causing airflow obstruction in some patients. However since only very severe or localised emphysema produces radiological change it is usually impossible to determine the presence or absence of emphysema during life.
12. By custom, the diagnosis chronic bronchitis is arbitrarily restricted to patients who have coughed up sputum on most days during at least 3 successive months for two or more successive years.
13. The airways in normal individuals are constantly exposed to inhaled irritants. Mucus secreted by the bronchial glands traps the particles and these are then removed by the cilia lining the airways. Coughing is a normal physiological response which aids the process. The normal response to inflammation or irritation is increased mucus production, which is then expectorated. If however irritation continues, there will be chronic mucus hypersecretion, which is the hallmark of chronic bronchitis.

CLINICAL MANIFESTATIONS

14. The characteristic presentation of chronic bronchitis is the insidious onset of cough, sputum, wheeze and breathlessness. As the disease progresses, the cough becomes more continual.
15. Respiratory infections, to which bronchitics are susceptible, cause acute exacerbations in which the sputum becomes purulent. These exacerbations lead to increasingly frequent periods of incapacity. Wheeze and breathlessness, which may at first only be present during exacerbations, may become chronic through the winter and, later, throughout the year.

16. Possible complications of chronic bronchitis are pneumonia, and as a result of hypoxia, secondary polycythemia and right-sided heart failure (cor pulmonale). Other possible sequelae are cough fractures of ribs, inguinal hernia and cough syncope.

AETIOLOGY

17. Chronic bronchitis is a very common disease, affecting men more than women and becoming manifest usually from the age of 40 years onward.
18. There is no evidence that heredity is an important factor in the aetiology of chronic bronchitis.
19. Chronic bronchitis results from mucus hypersecretion due to ongoing mucosal irritation. The most important causes of this are:
 - 19.1. Tobacco smoking.
 - 19.2. Atmospheric pollution.
20. The effects of **tobacco smoking**, in particular cigarette smoking, on respiratory health have been clearly shown by many surveys and studies.
 - 20.1. Mortality from chronic bronchitis, in both sexes, is higher among smokers than non-smokers and increases in proportion to the amount smoked.
 - 20.2. If smoking is stopped, the mortality rate from chronic bronchitis falls as abstinence is maintained.
 - 20.3. Cough and sputum are more prevalent among smokers than non-smokers. Sample surveys of respiratory symptoms in the population have shown that chronic bronchitis, however defined, is almost confined to those who smoke or have smoked.
21. A great deal is now known about the pathological effects of cigarette smoke on lung structure and function. Cigarette smoke has an adverse effect on almost every defence mechanism in the lung.
22. **Atmospheric pollution.** Morbidity and mortality correlate directly with increasing urbanisation and show increase during periods of severe atmospheric pollution in "smogs". Reduction of atmospheric pollution since 1950 in the UK has been accompanied by a drop in morbidity and mortality figures.
23. The incidence of chronic bronchitis is related to socio-economic status and is highest amongst unskilled workers. Morbidity and mortality from chronic bronchitis are higher in occupations involving exposure to industrial gases and dusts. Smoking and pollution together act synergistically.
24. Apart from the effects of pollution, adverse climatic conditions do not cause the condition.

25. Uncomplicated acute bronchitis in the adult does not cause chronic bronchitis. However once chronic bronchitis has become established, the patient's bronchial tree more readily becomes infected, and acute exacerbations of chronic bronchitis will then occur. There is, however, strong evidence that respiratory illnesses in infancy lead to chronic bronchitis in adult life.
26. It is generally accepted that chronic airways obstruction may be secondary to or a sequela of localised bronchopulmonary disease resulting from pneumonia, bronchial asthma, pulmonary collapse, bronchiectasis and pulmonary fibrosis (due for example to rheumatoid arthritis and pulmonary tuberculosis) which has produced significant destruction or fibrosis of the lungs. It may also complicate any condition causing passive congestion of the lungs such as chronic renal disease and congestive heart disease.

CONCLUSION

27. Acute bronchitis is an acute inflammation of the bronchi resulting from viral infection.
28. Chronic bronchitis is a condition characterised by cough due to excess mucus secretion. It is caused mainly by tobacco smoking and atmospheric pollution. It may also be a consequence of previous respiratory diseases. Other than atmospheric pollution, it is not caused by adverse climatic factors.
29. Acute and chronic bronchitis are separate conditions. In the adult, acute bronchitis does not lead to chronic bronchitis.

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