

The Respiratory System

Chronic obstructive pulmonary disease (COPD) or chronic obstructive airway disease (COAD) are commonly used clinical terms for a group of pathological conditions in which there is **chronic, partial or complete, obstruction** to the **airflow** at any level from trachea to the smallest airways resulting in functional disability of the lungs i.e. they are diffuse lung diseases. **The following 4 entities are included in COPD:**

- I. Chronic bronchitis
- II. Emphysema
- III. Bronchial asthma
- IV. Bronchiectasis

Chronic bronchitis is defined clinically as persistent cough with sputum production for at least 3 months of the year, in at least 2 consecutive years. Clinically there are several forms (types) of chronic bronchitis:

- **Simple chronic bronchitis:** Patients experience a productive cough but have no evidence of airflow obstruction.
- **Chronic asthmatic bronchitis:** Some patients may demonstrate severe dyspnea and wheezing in association with inhaled irritants or during respiratory infections due to hyperreactive airways.
- **Chronic obstructive bronchitis:** Some patients, especially heavy smokers, develop chronic airflow obstruction, usually accompanied by emphysema.

Important factors for the pathogenesis of chronic bronchitis.

- Chronic irritation by inhaled substances (cigarette smoking)
- Infections

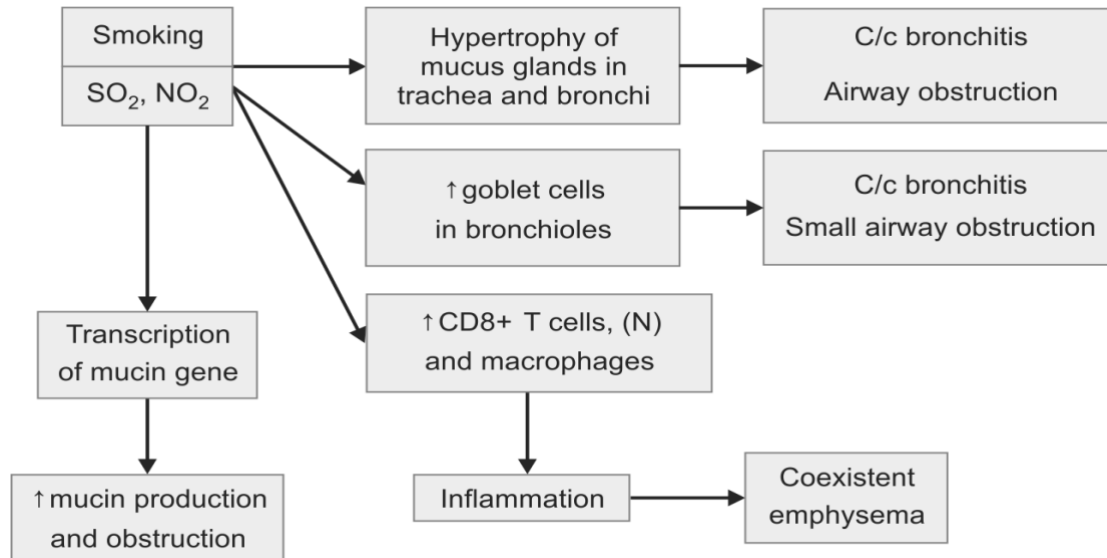


Figure 1: Pathogenesis of chronic bronchitis

Etiopathogenesis: The two most important etiologic factors responsible for majority of cases of chronic bronchitis are: **cigarette smoking** and **atmospheric pollution**. Other contributory factors are **occupation, infection, familial** and **genetic factors**.

Lung carcinoma

A number of benign and malignant tumors occur in the lungs but the primary lung cancer, commonly termed bronchogenic carcinoma, is the most common (95% of all primary lung tumors). The lung is also the commonest site for metastasis from carcinomas and sarcomas as follows:

1. Small cell lung carcinoma (SCLC).
2. Squamous cell carcinoma.
3. Adenocarcinoma. NSCLC
4. Large cell carcinoma.
5. Mixed → adenosquamous carcinoma, squamous-small cell carcinoma.
6. Most commonest—squamous cell carcinoma (smokers).
7. Most commonest in non-smokers— adenocarcinoma.
8. SCLC:
 - a. Metastasized by the time of diagnosis.
 - b. Better treated by chemotherapy.
 - c. *RB* gene mutations are usually seen.
9. Non-small cell lung carcinoma(NSCLC):

- a. Better treated by surgery.
- b. *p16* gene mutation is usually seen.

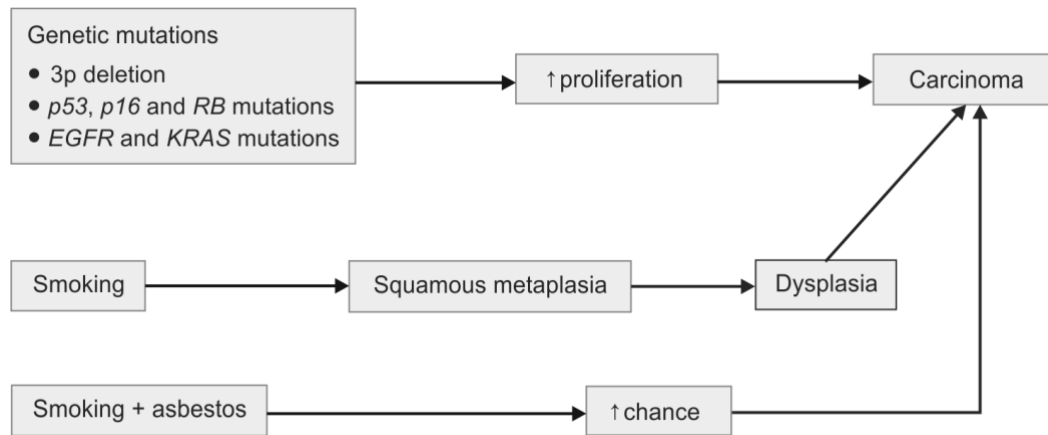


Figure 2: Etiopathogenesis of CA lung

Metastatic lung tumors

Secondary tumors of the **lungs are more common than the primary pulmonary tumors**. Metastases from carcinomas as well as sarcomas arising from anywhere in the body may **spread to the lung** by **haematogenous** or **lymphatic routes**, or by **direct extension**. Blood-borne metastases are the most common since emboli of tumor cells from any malignant tumor entering the systemic venous circulation are likely to be lodged in the lungs.

Most common sources of metastases in the lungs are: carcinomas of the bowel, breast, thyroid, kidney, pancreas, lung (ipsilateral or contralateral) and liver. **Other tumors which frequently metastasise to the lungs are** osteogenic sarcoma, neuroblastoma, Wilms' tumor, melanoma, lymphomas and leukaemias.