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Lung Cancer

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Epidemiology

A. Leading cause of cancer death in the United States and the world
B. An estimated 171,900 new cases will be diagnosed in the United States in 2003.
   1. 13% of all cancers
   2. Average age at diagnosis is 60 years.
   3. Uncommon before age 40
C. 157,200 estimated deaths from lung cancer in the United States in 2003
   1. 28% of all cancer deaths
   2. Leading cause of cancer death in men and women
      a) Accounts for about 31% of cancer deaths in men
      b) Accounts for about 25% of cancer deaths in women
   3. More deaths are attributed to lung cancer than colon, breast, and prostate cancers combined.

Risk Factors

A. Cigarette smoking
   1. Number one risk factor
      a) 80%–90% of all cases are related to smoking.
      b) Risk is related to
         (1) Number of cigarettes smoked daily
         (2) Number of years smoking
         (3) Age that smoking began
         (4) Inhalation patterns
         (5) Tar content of cigarettes smoked.
   2. Smoke contains more than 3,500 chemical compounds.
      a) More than 40 of these chemicals are known carcinogens.
   3. Smoking cessation
      a) Risk of developing lung cancer begins to decrease five years after quitting and steadily continues to decrease over time.
      b) The risk of developing lung cancer always is higher for former smokers than for those who never smoked.
   4. Cigar and pipe smoking are not associated with a rate of lung cancer as high as cigarette smoking, but they are considered significant risk factors.
B. Environmental tobacco smoke (secondhand smoke)
   1. Accounts for about a third of all lung cancers
      a) Causes about 3,000 deaths a year
   2. Particles are breathed in easily because of their small size and accumulate in the lungs.
   3. Contains more than 100 chemicals, many of them toxic
C. Radon gas
   1. Second-leading cause of lung cancer after tobacco smoke
      a) Accounts for about 10% of lung cancers in the United States
      b) Causes about 15,000 lung cancer deaths annually
      c) Acts synergistically with tobacco smoke to increase risk of developing lung cancer
   2. Colorless and odorless gas that is a by-product of radium decay
   3. Naturally contained in rock and soil
   4. Enters buildings through pipes and cracks in foundations and walls
   5. Estimated that 1 of every 15 American homes may contain excessive amounts
   6. Radon test kits are available at most hardware stores.
D. Asbestos
   1. Synergistic effect with smoking that greatly increases risk of developing lung cancer
   2. Most common occupational cause of lung cancer
   3. Associated with development of pleural mesothelioma
E. Occupational exposure to chemicals
   1. Arsenic
   2. Chromium
   3. Copper
   4. Diesel exhaust
   5. Ionizing radiation
   6. Nickel
   7. Polycyclic hydrocarbons
   8. Silica
   9. Uranium

Pathology of Primary Lung Cancer

A. Squamous cell (epidermoid)
   1. 20%–30% of all cases
   2. Differentiation
      a) Well differentiated
      b) Poorly differentiated
B. Adenocarcinoma
   1. 30%–40% of all cases
   2. Differentiation
      a) Well differentiated
      b) Poorly differentiated
C. Large cell carcinoma
   1. 10% of all cases
D. Small cell lung cancer (SCLC)
   1. 20% of all cases
E. For treatment purposes, all lung cancers are categorized as either SCLC or non-small cell lung cancer (NSCLC).

Tumor-Node-Metastasis Classification and Staging of Non-Small Cell Lung Cancer

A. Tumor-node-metastasis (TNM) system reflects the anatomic extent of the disease.
B. Proper classification and staging allow physicians to select the most appropriate treatment, provide prognostic information, and permit the comparison of results from a variety of clinical reports and trials.
C. *T* describes the extent of the primary tumor.
   1. Assesses the size and location of the primary tumor and presence or absence of invasion of adjacent structures such as the chest wall, carina, or pleural effusion
   2. Ranges from TX to T4
      a) TX = Tumor cells are present in sputum or bronchial washing, but

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