Condition: Cystic fibrosis

Inheritance:

Autosomal recessive.

Genetic etiology:

Mutation in *CFTR* gene, encoding the cystic fibrosis transmembrane conductance regulator protein, involved in chloride transport across the cell membrane. Pathogenesis largely due to failure to transport chloride across epithelial cells into interstitium, resulting in failure of passive transport of water and consequent thickening of secretions.

Frequency:

1/2,500 individuals of European ancestry.

Clinical features:

The major features of classic cystic fibrosis are chronic pulmonary disease and malabsorption. Pulmonary disease results from obstruction of small airways due to thickened mucous, with bacterial colonization, especially with *Pseudomonas aeruginosa* and *Staphylcoccus aureus*. Some CFTR mutations lead to malabsorption due to obstruction of pancreatic enzyme secretion. Males are infertile due to congenital bilateral absence of the vas deferens (CBAVD). Infants may present with meconium ileus due to thickened meconium. Other features include excessive sodium chloride loss from sweat, which is the basis for diagnostic testing, and hepatobiliary disease.

Management:

Pulmonary physical therapy and use of bronchodilators, antibiotics, and mucolytic agents to manage pulmonary disease. In those with pancreatic insufficiency, oral enzyme replacement is provided.

Genetic counseling:

Parents of an affected child face a 25% risk of recurrence. In many regions, carrier screening is provided based on detection of most common *CFTR* mutations.

Human Genetics and Genomics, Fourth Edition. Bruce R. Korf and Mira B. Irons.