

McCance: Pathophysiology, 6th Edition

Chapter 40: Alterations of Digestive Function in Children

Key Points – Print

SUMMARY REVIEW

Disorders of the Gastrointestinal Tract

1. Most alterations of digestive function in children are caused by congenital anomalies of the intestinal tract; disorders of digestion, absorption, or nutrition; or liver disease.
2. Cleft lip (harelip) and cleft palate (failure of the bony palate to fuse in the midline) may occur separately or together and is associated with deficiency of B vitamins. The fissure may affect the uvula, soft palate, hard palate, nostril, and maxillary alveolar ridge.
3. Esophageal atresia, a condition in which the esophagus ends in a blind pouch, may occur with or without tracheoesophageal fistula, a connection between the esophagus and the trachea. As the infant swallows oral secretions or ingests milk, the pouch fills, causing either drooling or aspiration into the lungs.
4. Pyloric stenosis, an obstruction of the pyloric outlet caused by hypertrophy and hyperplasia of circular muscles in the pyloric sphincter, is more common in male infants and may require surgical correction.
5. Intestinal malrotation occurs with failure of the colon to rotate during fetal development and an obstructing band or volvulus (twisting of the bowel on itself) may partly or completely occlude the gastrointestinal tract and its blood vessels.
6. Meconium ileus is a condition in the newborn in which intestinal secretions and amniotic waste products produce a thick tarry plug that obstructs the intestine, usually from lack of fetal digestive enzymes. From 10% to 15% of children with CF have meconium ileus as neonates.
7. DIOS, formerly called *meconium ileus equivalent*, can occur when intestinal contents become abnormally thick and impact the intestinal lumen. CF and dehydration are common causes.
8. Duodenal, jejunal, and ileal obstructions can be caused by meconium ileus, atresia, congenital aganglionic megacolon, or acquired obstructive disorders.
9. Congenital aganglionic megacolon (Hirschsprung disease) is caused by a malformation of the parasympathetic nervous system in a segment of the colon, resulting in inadequate colon motility and functional obstruction.
10. Malformations of the anus and rectum range from mild congenital stenosis of the anus to complex deformities, all of which are classified as imperforate anus.
11. The most common cause of acquired intestinal obstruction in infants is intussusception, a condition in which one portion of the bowel telescopes or invaginates into another. It occurs most commonly in the area of the ileocecal junction.

12. GERD is caused by the relaxation or incompetence of the lower esophageal sphincter. Infants are susceptible to reflux because the sphincter is not fully mature, their diet consists of liquids, and they are seldom in an upright position.
13. Eosinophilic esophagitis involves an inflammation of the esophagus with dysphagia and vomiting that can be associated with asthma and eczema.
14. CF is an inherited disease with a pathophysiologic triad that includes pancreatic enzyme deficiency (which causes maldigestion), overproduction of mucus in the respiratory tract, and abnormally elevated sodium and chloride concentrations in sweat.
15. Gluten-sensitive enteropathy is an immune-mediated lifelong disease characterized by the loss of mature villous epithelium in the presence of a gluten-containing diet. It results in malabsorption and growth failure.
16. Protein energy malnutrition is a group of disorders resulting from a severe dietary deficiency of proteins (kwashiorkor), carbohydrates, or both (marasmus). Starvation causes stunted mental and physical development. Kwashiorkor occurs most often in toddlers who have stopped breast-feeding and subsist on a high-carbohydrate diet.
17. Failure to thrive is inadequate physical growth of a child. Organic failure to thrive is caused by genetic, anatomic, or pathophysiologic factors that restrict normal growth and development. Nonorganic failure to thrive is caused by nutritional deficits associated with inadequate nurturing.
18. Necrotizing enterocolitis is a disorder in neonates, particularly premature infants, thought to result from stress and anoxia of an immature bowel wall. Bacteria invade the mucosa and submucosa resulting in colitis, necrosis, and even perforation of the intestinal wall.
19. Acute diarrhea in infants and children is often caused by infection and can rapidly cause dehydration and electrolyte imbalances because fluid reserves are relatively small. The most common cause of acute diarrhea in children is bacterial or viral enterocolitis.
20. Chronic diarrhea (diarrhea persisting longer than 4 weeks) can be caused by a wide variety of underlying conditions and often leads to growth failure and slow development.
21. Lactose intolerance causes diarrhea when failure to produce lactase results in osmotic diarrhea with ingestion of lactose-containing dairy products.

Disorders of the Liver

1. Physiologic jaundice of the newborn is caused by mild hyperbilirubinemia that subsides in 1 to 2 weeks. Pathologic jaundice is caused by severe hyperbilirubinemia and can cause brain damage.
2. Biliary atresia is a congenital malformation of the bile ducts that obstructs bile flow. Atresia causes jaundice, cirrhosis, and liver failure. Biliary atresia is the most common reason for liver transplantation in children.
3. Acute hepatitis has the same clinical course in children and adults but children have milder cases of the disease. Hepatitis A is the most common form of childhood hepatitis.

4. Cirrhosis is rare in children but can develop from most forms of chronic liver disease.
5. Portal hypertension in children usually is caused by extrahepatic obstruction. Thrombosis of the portal vein is the most common cause of portal hypertension in children and splenomegaly is the most common sign.
6. The three most common metabolic disorders that cause liver damage in children are galactosemia, fructosemia, and Wilson disease. All are rare, inherited as genetic traits, and permit the accumulation of toxins in the liver.
7. Wilson disease causes defective copper uptake and metabolism. Unexcreted copper accumulates in the liver, brain, kidney, and corneal cells. Damage from accumulated copper is gradual; the disease is usually not diagnosed before age 4 or 5 years.