Chapter 23

Nutrition Support in Cancer and AIDS

Chapter 23

Lesson 23.1

Key Concepts

Environmental agents, genetic factors, and weaknesses in the body’s immune system can contribute to the development of cancer.

Key Concepts, cont’d

The strength of the body’s immune system relates to its overall nutritional status.

Cancer

Malignant tumor (neoplasm) can express itself in multiple forms

Tumors identified by primary site of origin and state of growth

Stages of tumor development depend on growth rate, degree of functional self-control, and amount of spread

Causes of Cancer Cell Development

Underlying cause is the functional loss of cell control over normal cell reproduction from:

- Mutations
- Chemical carcinogens
- Radiation damage
- Viruses
- Epidemiologic factors
- Stress and dietary factors
Epidemiology

The Body’s Defense System

Two populations of lymphocytes in immune system

- **T cells**
  - Derived from thymus cells
  - Activate phagocytes that attack antigens

- **B cells**
  - Derived from bursal intestinal cells
  - Produce antibodies that attack antigens

T- and B-Cell Development

Nutrition and Immunity

Inadequate nutrition weakens the immune system and causes atrophy of tissues in gastrointestinal structures

Antibodies are proteins

Nutrition and Healing

Body tissue strength depends on ability to build and rebuild, which requires optimal nutrition intake

Protein and key vitamins and minerals, as well as nonprotein energy sources, must be constantly supplied by the diet

Chapter 23

Lesson 23.2

Key Concepts

The strength of the body’s immune system relates to its overall nutritional status.
Key Concepts, cont’d

Nutrition problems affect the nature of the disease process and the medical treatment methods in patients with cancer or AIDS.

Surgery

All surgery requires nutrition support for the healing process.

General condition of cancer patients often is weakened by the disease process.

Radiation Therapy

Involves high-energy radiographs targeted on the cancer site

Often kills surrounding healthy cells as well as cancerous cells

Nutrition problems driven by site and intensity of radiation treatment

Chemotherapy

Highly toxic drugs administered by the bloodstream to kill cancer cells

Use of monoamine oxidase inhibitors (pretreatment antidepressant drugs) requires tyramine-restricted diet

Systemic Effects of Cancer

Several systemic effects cause continuing weight loss

  — Anorexia, loss of appetite
  — Increased metabolism
  — Negative nitrogen balance

Cachexia

Extreme weight loss and weakness caused by inability to ingest or use nutrients
• Body feeds off its own tissue protein
• Experienced by half of all cancer patients
• Aggressive nutrition therapy is necessary
• Objectives of Nutrition Therapy
  • Prevention of catabolism
    — Meet increased metabolic demands
• Relief of symptoms
• Principles of Nutrition Care
  • Nutrition assessment
    — Determine and monitor nutritional status
    — Body measurements, calculations of body composition, laboratory tests, physical examination, clinical observation, dietary analysis
• Personal care plan
  — Daily plan for nutrition therapy incorporated into nursing care plan

• Nutrition Needs
• Energy
• Protein
• Vitamins and minerals
• Adequate fluid intake
• Enteral: Oral Diet
• Oral diet with supplementation is optimal when tolerated
• Food plan must include adjustments in food texture and temperature, food choices, and tolerances
• Tips for Controlling Nausea and Vomiting
  • Try smaller, more frequent meals.
  • Eat more when feeling better.
  • Eat drier foods with fluids in between.
  • Try cold foods, saltier foods.
  • Avoid fatty or overly sweet foods.
  • Do not recline immediately after eating.
  • Replace fluids and electrolytes.
  • Use foods with pleasant aromas.
• Tips for Increasing Energy and Protein Intake
  • Add high-calorie condiments, sauces, dressings
  • Add extra ingredients during food preparation
  • Drink commercial food supplements
  • Avoid low-calorie foods and beverages
  • Have a meal or snack every 1 to 2 hours
• Enteral: Tube Feeding
  • When gastrointestinal tract can be used but patient is unable to eat
• Parenteral Feeding
  • When gastrointestinal tract cannot be used
Peripheral vein feeding (for brief period)

Central vein feeding (for extended period)

Prevention

American Cancer Society

- Eat a variety of healthful foods
- Adopt a physically active lifestyle
- Maintain a healthful weight
- Limit alcohol consumption

U.S. Food and Drug Administration

- Low-fat diets rich in grain products, fruits, and vegetables may reduce the risk of some cancers

Chapter 23

Lesson 23.3

Key Concepts

Nutrition problems affect the nature of the disease process and the medical treatment methods in patients with cancer or AIDS.

Key Concepts, cont’d

The progressive effects of HIV, through its three stages of white T-cell destruction, have many nutrition implications and often require aggressive medical nutrition therapy.

Human Immunodeficiency Virus

Virus causes immune system suppression

Created a widespread epidemic
• Stages of Disease Progression

• Stage 1: Clinical category A
  — Flulike symptoms 4 to 8 weeks after initial exposure

• Stage 2: Clinical category B
  — Infectious illnesses invade the body

• Stage 3: Clinical category C
  — Rapidly declining T-helper lymphocyte counts

• Goals of Medical Management

• Delay progression of the infection and improve the immune system

• Prevent opportunistic illnesses

• Recognize the infection early

• Severe Malnutrition, Weight Loss

• Decreased appetite, insufficient energy intake in addition to elevated resting energy expenditure

• Major weight loss, eventual cachexia

• Causes of Body Wasting

• Inadequate food intake

• Malabsorption of nutrients

• Disordered metabolism

• Nutrition Assessment

• Anthropometry
• Biochemical tests
• Clinical observations
• Diet observations
• Environmental, behavioral, and psychological assessment
• Financial assessment
• Principles of Nutrition Counseling
• Motivation for dietary changes
• Rationale for nutrition support
• Provider-patient agreement on plan
• Development of manageable steps for change
• Development of personal food management skills
• Summary
  • The general term cancer is given to various abnormal, malignant tumors in different tissue sites.
  • The cancer cell is derived from a normal cell that loses control over its growth and reproduction.
  • Cancer cell development occurs from mutation of regulatory genes and is influenced by environmental chemical carcinogens, radiation, and viruses.
  • Summary, cont’d
  • Cell integrity is mediated by the body’s immune system, primarily through its two types of white blood cells: T cells that kill invading agents that cause disease and B cells that make specific antibodies to attack these agents.
  • Cancer therapy primarily consists of surgery, radiation, and chemotherapy.
Likewise, nutrition care of patients with AIDS must be built on knowledge and compassion, with a sensitivity and concern for individual patient needs.

The current worldwide spread of HIV and its fatal consequences have reached epidemic proportions and are still growing.

Nutrition management centers on providing individual nutrition support to counteract the severe body wasting and malnutrition characteristic of the disease.

The process of nutrition care involves comprehensive nutrition assessment and evaluation of personal needs, planning care with patient and caregivers, and meeting practical food needs.