Chapter 58: Nursing Management: Stroke

STROKE

- **Stroke** occurs when there is *ischemia* (inadequate blood flow) to a part of the brain or hemorrhage into the brain that results in death of brain cells. Functions, such as movement, sensation, or emotions, that were controlled by the affected area of the brain are lost or impaired.

- The term *brain attack* is increasingly being used to describe stroke. This term communicates the urgency of recognizing the clinical manifestations of a stroke and treating a medical emergency, similar to what would be done with a heart attack.

Risk Factors

- The most effective way to decrease the burden of stroke is prevention. Nonmodifiable risk factors include age, gender, race, and heredity.

- Hypertension is the single most important modifiable risk factor. Other modifiable risk factors include heart disease, diabetes, increased serum cholesterol, smoking, excessive alcohol consumption, obesity, physical inactivity, poor diet, and drug abuse.

- *Atherosclerosis* (hardening and thickening of arteries) is a major cause of stroke. It can lead to thrombus formation and contribute to emboli.

- A **transient ischemic attack** (TIA) is a temporary focal loss of neurologic function caused by ischemia of one of the vascular territories of the brain, lasting less than 24 hours and often lasting less than 15 minutes. Most TIAs resolve within 3 hours. TIAs are a warning sign of progressive cerebrovascular disease.

- Strokes are classified as ischemic or hemorrhagic based on the underlying pathophysiologic findings.

  - **Ischemic stroke:**
    - An *ischemic stroke* results from inadequate blood flow to the brain from partial or complete occlusion of an artery and accounts for approximately 80% of all strokes. Ischemic strokes are further divided into thrombotic and embolic.
    - A *thrombotic stroke* occurs from injury to a blood vessel wall and formation of a blood clot. The lumen of the blood vessel becomes narrowed, and if it becomes occluded, infarction occurs.
    - An *embolic stroke* occurs when an embolus lodges in and occludes a cerebral artery, resulting in infarction and edema of the area supplied by the involved vessel.

  - **Hemorrhagic stroke:**
    - *Hemorrhagic strokes* account for approximately 15% of all strokes and result from bleeding into the brain tissue itself or into the subarachnoid space or ventricles.
    - *Intracerebral hemorrhage* is bleeding within the brain caused by a rupture of a vessel. The prognosis of intracerebral hemorrhage is poor.
    - *Subarachnoid hemorrhage* occurs when there is intracranial bleeding into the cerebrospinal fluid–filled space between the arachnoid and pia mater membranes on the surface of the brain. Subarachnoid hemorrhage is commonly caused by rupture of a cerebral **aneurysm** (congenital or acquired weakness and ballooning of vessels).
**Clinical Manifestations and Diagnostic Studies**

- A stroke can have an effect on many body functions, including motor activity, bladder and bowel elimination, intellectual function, spatial-perceptual alterations, personality, affect, sensation, swallowing, and communication.
  - Motor deficits include impairment of (1) mobility, (2) respiratory function, (3) swallowing and speech, (4) gag reflex, and (5) self-care abilities.
  - The patient may experience **aphasia** (total loss of comprehension and use of language) when a stroke damages the dominant hemisphere of the brain or **dysphasia** (difficulty related to the comprehension or use of language) due to partial disruption or loss.
  - Many stroke patients also experience **dysarthria**, a disturbance in the muscular control of speech. Impairments may involve pronunciation, articulation, and phonation.
  - Patients who have had a stroke may have difficulty controlling their emotions.
  - Both memory and judgment may be impaired as a result of stroke.
  - Most problems with urinary and bowel elimination occur initially and are temporary.

- The single most important diagnostic tool for patients who have experienced a stroke is the noncontrast CT scan. The CT scan indicates the size and location of the lesion and differentiates between ischemic and hemorrhagic stroke.

**Collaborative Care: Prevention**

- Measures to prevent the development of a thrombus or embolus are used in patients at risk for stroke. Antiplatelet drugs are usually the chosen treatment to prevent further stroke in patients who have had a TIA related to atherosclerosis.

- Surgical interventions for the patient with TIAs from carotid disease include carotid endarterectomy, transluminal angioplasty, stenting, and extracranial-intracranial bypass.

**Collaborative Care: Acute Phase**

- The goals for collaborative care during the acute phase are preserving life, preventing further brain damage, and reducing disability. Treatment differs according to the type of stroke and changes as the patient progresses from the acute to the rehabilitation phase.

- Elevated BP is common immediately after a stroke and may be a protective response to maintain cerebral perfusion.

- Fluid and electrolyte balance must be controlled carefully. The goal generally is to keep the patient adequately hydrated to promote perfusion and decrease further brain injury.

- Recombinant tissue plasminogen activator (tPA) administered IV is used to reestablish blood flow through a blocked artery to prevent cell death in patients with the acute onset of ischemic stroke symptoms.

- After the patient has stabilized and to prevent further clot formation, patients with strokes caused by thrombi and emboli may be treated with platelet inhibitors and anticoagulants.

- Surgical interventions for stroke include immediate evacuation of aneurysm-induced hematomas or cerebellar hematomas larger than 3 cm. For ischemic strokes, the mechanical embolus retrieval in cerebral ischemia (Merci) retriever allows physicians to go inside the blocked artery of patients who are experiencing ischemic strokes. The retriever goes to the
artery that is blocked, directly to the site of the problem, and pulls the clot out.

- After the stroke has stabilized for 12 to 24 hours, collaborative care shifts from preserving life to lessening disability and attaining optimal function.

**Nursing Management**

- Typical nursing goals are that the patient will:
  1. maintain a stable or improved level of consciousness
  2. attain maximum physical functioning
  3. attain maximum self-care abilities and skills
  4. maintain stable body functions (e.g., bladder control)
  5. maximize communication abilities
  6. maintain adequate nutrition
  7. avoid complications of stroke
  8. maintain effective personal and family coping

**Acute Phase**

- During the acute phase following a stroke, management of the respiratory system is a nursing priority. Stroke patients are particularly vulnerable to respiratory problems, such as aspiration pneumonia.

- The patient’s neurologic status must be monitored closely to detect changes suggesting extension of the stroke, increased ICP, vasospasm, or recovery from stroke symptoms.

- Nursing goals for the cardiovascular system are aimed at maintaining homeostasis. Many patients with stroke have decreased cardiac reserves secondary to cardiac disease.

- The nursing goal for the musculoskeletal system is to maintain optimal function. This is accomplished by the prevention of joint contractures and muscular atrophy.

- The skin of the patient with stroke is particularly susceptible to breakdown related to loss of sensation, decreased circulation, and immobility.

- The most common bowel problem for the patient who has experienced a stroke is constipation. Patients may be prophylactically placed on stool softeners and/or fiber.

- In the acute stage of stroke, the primary urinary problem is poor bladder control, resulting in incontinence. Efforts should be made to promote normal bladder function and to avoid the use of indwelling catheters.

- The patient may initially receive IV infusions to maintain fluid and electrolyte balance, as well as for administration of drugs. Patients with severe impairment may require enteral or parenteral nutrition support. Swallowing ability will need to be assessed.

- Homonymous hemianopsia (blindness in the same half of each visual field) is a common problem after a stroke. Persistent disregard of objects in part of the visual field should alert the nurse to this possibility.

- The patient is usually discharged from the acute care setting to home, an intermediate or long-term care facility, or a rehabilitation facility. Criteria for transfer to rehabilitation may include the patient’s ability to participate in therapies for a minimum number of hours per
Rehabilitation is the process of maximizing the patient’s capabilities and resources to promote optimal functioning related to physical, mental, and social well-being. Regardless of the care setting, ongoing rehabilitation is essential to maximize the patient’s abilities.

Rehabilitation requires a team approach so the patient and family can benefit from the combined, expert care of an interdisciplinary team. The interdisciplinary team is composed of many members, including nurses, physicians, psychiatrist, physical therapist, occupational therapist, speech therapist, registered dietitian, respiratory therapist, vocational therapist, recreational therapist, social worker, psychologist, pharmacist, and chaplains.

The goals for rehabilitation of the patient with stroke are mutually set by the patient, family, nurse, and other members of the rehabilitation team.

The nurse initially emphasizes the musculoskeletal functions of eating, toileting, and walking for the rehabilitation of the patient.

After the acute phase, a dietitian can assist in determining the appropriate daily caloric intake based on the patient’s size, weight, and activity level.

A bowel management program is implemented for problems with bowel control, constipation, or incontinence.

Patients who have had a stroke frequently have perceptual deficits. For example, patients with a stroke on the right side of the brain usually have difficulty in judging position, distance, and rate of movement.

The patient with a stroke may experience many losses, including sensory, intellectual, communicative, functional, role behavior, emotional, social, and vocational losses. Nurses should help patients and families cope with these losses.

Speech, comprehension, and language deficits are the most difficult problems for the patient and family. Speech therapists can assess and formulate a plan of care to support communication.