

Tetanus (Lockjaw)

Is a severe infection of the nerves, affecting spinal and cranial nerves. It results from the effects of a potent neurotoxin released by the anaerobic bacillus

clostridium tetani. The spores of the bacillus are present in soil, garden mold and manure.

Manifestations of tetanus include stiffness in the jaw (trismus) and neck and signs of infection (e.g, fever). As the disease progresses, the neck muscles, back, abdomen and extremities become progressively rigid. In severe form, continuous tonic seizures may occur with opisthotonos (extreme arching of the back and retraction of the head).

Laryngeal and respiratory spasms cause apnea and anorexia. The slightest noise, jarring motion or bright light can set off a seizure.

Spinal Cord Injury

Is caused by trauma or damage to the spinal cord. It can result in either the temporary or permanent alteration in the function of the spinal cord.

Spinal shock: about 50% of the patient with acute SCI experience a temporary neurological syndrome known as spinal shock. This type of shock characterized by decreased reflexes, loss of sensation and flaccid paralysis below the level of injury.

Neurological shock: is characterized by hypotension and bradycardia. Usually if injury is above the level of T6.

Autonomic dysreflexia (due to full bladder): is a massive, uncompensated cardiovascular reaction mediated by the sympathetic nervous system. Common precipitating factor: distension of bladder or rectum or any sensory stimulation.

Clinical manifestations: Bradycardia, hypertension, blurred vision, pounding headache, nasal stiffness, flushed face, goose bumps above the level of injury, cool clammy skin, nausea and anxiety.

What to do: elevate the head of the bed 45 degree or sitting upright. Notify the physician; assess the patient to determine the cause.

The SCI has occurred above the level of T5, the primary GI problems are related to hypomotility.

Poikilothermism: is the adjustment of the body temperature to the room temperature. This occurs in SCIs because the interruption of the sympathetic nervous system prevents peripheral temperature sensations from reaching the hypothalamus.

Maintaining a patent airway (ABC), Logroll.

Vasopressor agents such as.....? These are used to maintain the mean arterial pressure at the level greater than 90mmhg so that perfusion to the spinal cord is improved. When skeletal traction is used, the goal is realignment or reduction of the injury. TONGS are used. Infection at the site of the tong insertion is potential complication.

Interventions: cleansing the site with NS twice a day. The **HALO apparatus** can be used to apply cervical traction by means of a jacket like arrangement to stabilize the cervical.

Indwelling catheter is usually inserted.....?

UTI is a common problem.

Right brain damage: stroke on the right side of the brain

Paralyzed left side: hemiplegia

Left sided neglect, spatial perceptual deficit, tend to deny or minimize problems, rapid performances, impulsive, safety problems, impaired judgement and time concepts.

Left sided brain damage: stroke on the left side of the brain

Paralyzed right side: hemiplegia. Impaired speech/language, impaired right/left discrimination, slow performance, cautious, aware of deficits: depression, anxiety, impaired comprehension related to language, math.

Management of the Halo vest

Inspect the pins on the halo traction ring. Report to health care provider if pins are loose or if there are signs of infection, including redness, tenderness, swelling or drainage at the insertion site.

Clean around pin sites carefully with hydrogen peroxide, water or alcohol on a cotton swab as directed.

Apply antibiotic ointment as prescribed. To provide skin care, the patient should lie down on the bed with his or her head resting on a pillow to reduce pressure on the brace. Loosen one side of the vest. Gently wash the skin with soap and water, rinse it and dry it thoroughly.

At the same time, check the skin for pressure points, redness, and swelling.

If the vest becomes wet or damp, carefully dry it with a blow dryer. An assistive device such as walker and cane may be prescribed for better balance maintenance. Flat shoe should be worn. Turn the entire body, not just the head and neck, when trying to view sideways. **In case of an emergency, keep a set of wrenches close to the halo vest at all times.**

Avoid grabbing bars or vest to assist the patient. If perspiration or itching is a problem, a cotton T shirt can be worn under the sheepskin. The T shirt can be modified with a velcroseam closure on one side.

Dementia

Is a syndrome characterized by dysfunction or loss of memory, orientation, attention, language, judgment and reasoning. The two most common causes of dementia are **neurodegenerative and vascular disorders**.

Vascular dementia also called multi infarct dementia is loss of cognitive function resulting from ischemia or hemorrhagic brain lesions caused by cardiovascular disease. The greatest risk factor for dementia is aging, although it is not a normal part of aging.

Risk factors: DM, obesity, smoking, cardiac dysrhythmias, hypertension, hypercholesterolemia and CAD. Diabetes may contribute to poor memory and diminished mental function.

Depression is often mistaken for dementia in older adults and conversely, dementia for depression.

Alzheimer's disease (AD)

Is a chronic, progressive, degenerative disease of the brain. It is the most common form of dementia. AD has been associated with lower socioeconomic status and education level and poor access to health care. Women are more likely to develop AD than men.....?

In AD the tau protein is altered and as a result the microtubules twist together in a helical fashion. Final stage of AD, brain tissue shrinks significantly.

Risk factor: DM, HTN, Current smoking, hypercholesterolemia, obesity and trauma are associated with an increased risk of dementia, including AD.

Initial manifestations: with time and progression of AD, memory loss both recent and remote and ultimately affect the ability to perform self care. Agitation, aggression result from changes that take place within the brain. Dysphasia (difficulty comprehending language and oral communication), apraxia (inability to manipulate objects or perform purposeful act), visual agnosia (inability to recognize object by site) and dysgraphia (writing troubles).

In later stage unable to recognize loved ones

Ability to communicate and to perform activity of daily living is lost.

Retrogenesis is the process in AD patients in which degenerative changes occur in the reverse order in which they were acquired.

No definitive diagnostic test for AD. When all other possible conditions that can cause cognitive impairment have been ruled out, a clinical diagnosis of AD can be made. No treatment is available to stop the deterioration of brain cells.

Treatment: Cholinesterase inhibitors such as **donepezil, rivastigmine** (block cholinesterase which is responsible to breakdown of acetylcholine).

Memantine (namenda) protects the brain's nerve cells against excess amounts of glutamate, which is released in excess amounts by cells damaged by AD.

Prevention: Avoid harmful substances; excessive drinking and drug abuse can damage brain cells. Learn new things, exercise, stay connected socially active, avoid trauma to brain, treat depression. A specific type of agitation, termed sun downing, is when the patient becomes more confused and agitated in the late afternoon or evening. Behavior commonly exhibited include agitation, aggressiveness, wandering, resistance to redirection and increased verbal activity such as yelling. The person with AD is at risk for problems related to personal safety. loss of interest in food and decreased ability to self feed.

Teaching: do not correct mistreatment or faulty memory. Make plans for the future in terms of advance directives, care options, financial concerns and personal preferences for care. Install door locks for safety, ensure that the home

has good lighting, install handrails in stairways and bathroom and remove area rugs. Label drawers and faucets to ensure safety. Develop strategies such as distraction and diversion to cope with behavioral problems. Identify and reduce potential triggers (reduce stress, extremes in temperature). In severe stage: consider placement in a long term care facility when providing total care becomes too difficult.

Delirium : is a state of temporary but acute mental confusion, is a common, life threatening and possibly preventable syndrome.

Clinical manifestations: manifestations of delirium are sometimes confused with those of dementia. A key distinction between delirium and dementia is that the person who exhibits sudden cognitive impairment, disorientation or clouded sensorium is more likely to have delirium rather than dementia.

Interventions: care of the patient with delirium focuses on eliminating precipitating factors. If it's drug induced, medications are discontinued. It may be caused by drug withdrawal. So drug tests are done.

Provide the patient with reassurances and reorienting information as to place, time and procedures. Haloperidol, risperidone, olanzapine and quetiapine can be used.

Stroke or CVA

Stroke occurs when there is ischemia to the part of the brain or hemorrhage into the brain that result in death of brain cells. If blood supply stops neurological metabolisms is altered in 30 seconds, metabolism stops in 2 minutes and cellular death occurs in 5 minutes.

Risk factors: Stroke risks increases with age, strokes are more common in men, but more women die from stroke than men. African Americans have a

higher incidence of stroke and a higher death rate from stroke than men. Smoking nearly doubles the risk of stroke. Women who drink more than one alcoholic drink per day and men who drink more than two alcoholic drinks per day are at higher risk for hypertension, apple obesity and sedentary lifestyle. Birth control pills that contained high levels of progestin and estrogen increased the women's chances of experiencing a stroke, especially if the women also smoked heavily.

Men are more likely to have a thrombolytic and embolic Stroke. Men have better chances of surviving than women. At all ages more women than men die from strokes. Women are more likely to have a hemorrhagic stroke. TPA is used less frequently to treat women who have strokes.

Warning sign of stroke

Call 911 and get medical help immediately if someone has one or more of the following symptoms:

Sudden numbness, weakness, paralysis of the face, arm or leg, especially on one side of the body.

Sudden confusion, trouble speaking or understanding,

Slurred speech, sudden trouble seeing in one or both eyes. Sudden trouble walking, dizziness, loss of balance or coordination, sudden severe headache with no known cause.

TIA: Clinical symptoms typically last less than 1 hour. Should be treated as medical emergency: also risk factor of stroke. system may include tinnitus, vertigo, darkened or blurred vision, diplopia, ptosis, dysarthria, dysphagia, ataxia and unilateral or bilateral numbness or weakness. TIAs are the warning sign of progressive cerebrovascular disease. The sign and symptoms of a TIA depend on the blood vessel that is involved and the area of the brain that is ischemic. If the

carotid system is involved, patients may have a temporary loss of vision in one eye (**amaurosis fugax**).

Rheumatic heart disease is one form of embolic stroke in young to middle aged adults.

Diagnostic test: CT usually non-contrast and MRI.

TPA must be administered 3-4.5 hours of the onset of clinical signs. Always check blood test for glucose level because if the value is more than 400mg /dl, TPA does not work. Intra arterial TPA can be administered up to 6 hours after the onset of stroke.

Anticoagulant and platelet inhibitors are contraindicated in patient with hemorrhagic stroke. the main drug therapy for patients with hemorrhagic stroke is hypertension.

Interventions: decrease environmental stimuli that may be distracting and disrupting to communication efforts. Treat the patient as an adult, speak with normal volume and tone, present one thought or idea at a time, keep question simple and ask question that can be answered with yes or no.

Let the person to speak and do not interrupt, allow time for individual to complete thoughts. Make use of gestures or demonstration as an acceptable alternative form of communication. Encourage this by show me or point what you want". Do not pretend to understand the person if you donot. Calmly say, you do not understand and encourage the use of non verbal communication or ask the person to write down what he or she wants. Give the patient time to process information and generate a response before repeating a question or statement. Organize the patient's day by preparing and following schedule. Do not push communication if the person is tired or upset. Aphasia worsens with fatigue and anxiety.

Preventive therapy: Anti platelet agents such as (Aspirin, ticlopidine and clopidogrel) for thrombus or an embolus stroke. Statins (Simvastatin and

Lovastatin) have also been shown to be effective in the prevention of stroke for individuals who have experienced a TIAs in the past.

Full freedom should be given to the patient.

Passive ROM on the affected side.

Role reversal

Refer to speech pathologist.

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