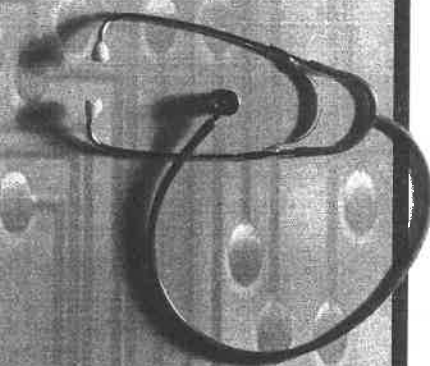


MEDCOM  TRAINEX

The Natural Process of Aging

Gerontology

SN120



Approved for 1 Contact Hour of Continuing Nursing Education
Approved for 1 Contact Hour of Continuing Education for Registered Dietitians
Approved for 1 Contact Hour of Continuing Education for Certified Case Managers
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Videotape Content Review

Review the material presented in the videotape by studying the next few pages.

INTEGUMENTARY SYSTEM

The integumentary system refers to the skin, hair and nails. The skin is the human body's largest organ, and no matter what a person's age, healthy skin is the single most extensive protection against potential health hazards. The skin is important because it does the following: ,

- keeps out infectious organisms
- protects against injury
- regulates body temperature
- assists in secreting wastes
- acts as an extensive sensory receptor.

The three layers of the skin are the epidermis, dermis, and subcutaneous tissue. With aging, the epidermis loses its ability to retain fluids, making it more dry and less supple. Changes in the tissue and fiber of the dermis result in a loss of fluid and elasticity. And the subcutaneous tissue loses fat -- decreasing its cushioning effect and causing wrinkling and slackness of the skin.

Skin that is dry, loose, and wrinkled is a common sign of physical aging. Taking proper care of the skin is more important than ever for skin exhibiting the signs of aging. Because the skin is drier, it is more easily damaged and requires careful cleaning and moisturizing.

Because soap can dry out the skin, washing less often and using less soap can help the skin retain moisture. Applying lotions and oils that can add moisture may also help the condition of the skin.

Because the subcutaneous tissue loses fat, slackness of the skin may develop, especially in the periphery of the body, such as the arms, legs, neck, and face.

Discoloration may occur because of reduced blood supply to the skin. Lentigo senilis, also called liver spots, (though the condition is unrelated to the liver) can develop on the hands and wrists, and sometimes on the face and ankles.

Because older skin provides less support to fragile blood vessels, an older person may bruise more easily and the bruise may last longer.

Because aging usually means many years of skin exposure to radiation from the sun and other sources, there is a significant correlation between aging and benign and malignant lesions. For this reason, overexposing the skin to direct sunlight should be avoided.

At one end of the spectrum, the aging are at increased risk for malignant melanoma, a dangerous form of skin cancer. But seborrheic keratoses are the most common skin tumors among older people. They tend to grow in areas covered by clothing. They are harmless and can be easily removed for cosmetic reasons.

Because the aged are at increased risk for health problems that may limit movement, pressure sores are a serious problem. They are caused by inadequate tissue nutrition in cases of prolonged pressure over bony areas. Pressure sores can often be prevented by:

- relieving the pressure on a regular basis through position changes
- providing good nutrition and hydration
- regularly stimulating circulation through exercise and massage.
- keeping the skin clean and dry.

Remember that the older person's skin may be very fragile and should be handled gently.

Fingernails and toenails also undergo change with aging. They may become thickened and brittle due to diminished capillary beds and possibly old fungal infections. And they may become increasingly yellow in color. To prevent damage to the nails, they should be trimmed frequently. To prevent cracking, they should be soaked in warm water prior to trimming. In cases where the effects of aging on the toenails are severe, it may be necessary to have a podiatrist provide care.

In addition, changes in the distribution and color of hair may occur with age. While men may lose facial hair, for women it is normal to have an increase in facial hair around the nose and chin. Also, soft facial hair may become bristly. Both men and women may experience thinning hair and baldness due to atrophy of hair follicles and changes in hormone production. Loss of pigmentation typically turns the hair white or grey.

MUSCULOSKELETAL SYSTEM

The muscles and bones of the human body are important factors in physical movement and posture. Strength, endurance, speed, and agility all depend heavily on the musculoskeletal system. With increasing age there are definite natural changes.

For example, the muscle fibers decrease in bulk and number. But while this decrease affects strength, endurance, and agility, the loss is not as much as one might expect. A loss of half the muscle bulk does not translate to a loss of half the muscle strength. The muscles may also become more rigid, resulting in a decreased range of motion in the legs, arms, and neck.

For some, there is wearing and deterioration of the cartilage of the joints. This may cause stiffening and affect the ability to walk and maintain balance.

There is a progressive reduction in bone mass throughout later life. The vertebral column and discs actually narrow and collapse, affecting stature and posture. Osteoporosis, or bone loss, may occur -- mainly due to a loss of calcium. The degree of bone loss may be greater among women due to a loss of the female hormone estrogen as a consequence of menopause. This condition can, however, be treated with estrogen therapy.

Safe exercise can play an important role in keeping the muscles and bones fit. The all-too-common reduction in activity by older people who are afraid of falling may actually increase the risk of injury by leading to a weakening of bones and muscles.

Sturdy shoes with non-skid soles can also play an important role in preventing accidents. And assistive devices, like canes and walkers, can enable the aging to continue activity while helping prevent injury.

When illness or injury prevents use, muscles develop contractures, or a permanent shortening. This can lead to disability. However, range of motion exercises can help prevent the occurrence of muscle contractures.

Finally, good nutrition is important for healthy muscles and bones. To function, the muscles need the energy derived from carbohydrates. And healthy bones require adequate amounts of calcium -- found in beans, milk, and cheese.

VISION

The human eye is so well-constructed that it is expected to function efficiently throughout and beyond the life of its owner. Eye banks are a testament to this fact. But there are significant changes in vision that normally occur with aging.

The lens of the eye changes shape in order to focus on near and far objects. But with age the lens loses its elasticity, making it more difficult for the ciliary muscles and suspensory ligaments to shape the lens. The ciliary muscles may also become hardened and less able to expand and contract. This decreased ability to focus on both near and far objects, called presbyopia, is not always correctable, especially in those over 60 years of age. But it is often corrected with bifocal lenses.

Another change that sometimes occurs with aging is cataracts, the leading cause of blindness in the U.S. A cataract is a partial or total loss of transparency in any part of the lens. Cataracts develop gradually and only obstruct vision when they are located in the center of the lens. Cataracts affect more than 90 percent of persons over 70 years of age. Cataracts, which may appear like this to the victim, can often be corrected with surgery. In recent years laser techniques have greatly improved the results in this area.

Glaucoma is also common among the elderly. It occurs when pressure within the eye increases. The person may complain of pain over the eye or of seeing halos around lights. It can be treated with eyedrops and also with surgery, if necessary.

Another normal consequence of aging is the decreased ability of the iris to respond to changes in lighting. Due to weakness of the iris, the pupil size decreases so that less light is allowed to enter the eye. As a result, an older person may need more light in order to move about safely. And because the aged may also be more sensitive to glare, the best types of lights for the aged are those without glare. Ideally, nightlights are placed in bathrooms and bedrooms -- and the pathways to those areas are kept uncluttered.

Visual acuity may diminish rapidly after the age of 50 due to changes in the retina. The retina is the innermost part of the eye. It receives the light image formed by the lens and is the immediate instrument of vision. Atrophy of cone cells and tissue degeneration in the retina may cause loss of acuity. The loss of visual acuity may be central or peripheral.

Finally, increasing age may also bring difficulty in distinguishing colors -- especially blues, greens, and violets. Consequently, reds, yellows, and oranges, which can be distinguished clearly, are often the colors of choice for the aging.

HEARING

It is commonly understood that as a person gets older he or she becomes hard of hearing. While the truth is that most people retain adequate auditory functioning throughout their lives, most elderly people do experience some loss of hearing.

The decreased ability to hear high tones, called presbycusis, is often apparent by age 50 and becomes more severe after age 65. Presbycusis is most likely caused by the loss of hair cells in the organ of Corti in the middle ear. Because of high-frequency hearing loss, voices that are lower in pitch are heard more easily by the elderly. The person with a hearing loss should be addressed slowly and clearly, in a low-pitched even tone.

Other hearing problems may also be present. Sometimes the C's and T's may not be heard clearly. Sounds occurring simultaneously may be indistinguishable so that background noise hinders hearing. These problems can sometimes be solved by:

- eliminating noise
- standing so that the person can see facial expressions and lip movements
- carefully pronouncing each word.

TOUCH

Sensitivity to touch and to pain tends to decrease after age 50. This is probably due to a decrease in the number and sensitivity of sensory receptors in the skin. This condition can increase the number and severity of injuries, such as burns, cuts, and pressure damage, because the discovery and treatment of these injuries is more likely to be delayed.

The aging should be encouraged to attend to injuries when they occur and to be alert for other signs and symptoms of disease that they might miss due to a loss of sense of touch and pain.

CARDIOVASCULAR SYSTEM

All too often the attention paid to the heart comes after a life-time of the abuse of pollution, smoking, poor diets, and stressful living.

Natural changes in the cardiovascular system occur with aging and can have important health consequences. Cardiac output may decline by as much as 40 percent by age 65. The heart may become a less efficient pump due to cellular changes in the heart muscle, loss of muscle fibers, and a loss of elasticity in the heart valves. Blood flow to the vessels of the heart itself is reduced by one-third by age 60. The pulse rate is decreased and is more variable, ranging from 44 to 108 beats per minute.

The arteries that carry the blood from the heart become rigid with age. This increases resistance to blood flow, resulting in higher blood pressure. In the course of aging, the healthy adult can expect blood pressure to rise from 120/80 at age 25 to 160/90 at age 95. High blood pressure can do damage to many parts of the body, and can result in heart and kidney failure.

The signs of a myocardial infarction in an older person may or may not include chest pain. The victim may complain of labored breathing and pain below the chest. Nearly one-fourth of heart attacks are silent and go undiagnosed. The only sign may be a sudden change in appearance, behavior, or mental process.

Blood vessels may become less able to respond quickly to changes in body position, failing to maintain sufficient blood supply to all parts of the body. This can lead to dizziness when standing up from a lying position. The older person should sit up straight and allow the body to adjust for a few seconds before standing up.

Because the functional reserve capacity of the cardiovascular system is reduced with age, the ability to handle stress may be affected. The heart rate does not increase under stress like it used to, but instead the stroke volume is increased. Be warned that this absence of a rise in heart rate can obscure the presence of disease conditions.

RESPIRATORY SYSTEM

The respiratory system controls the ability to be physically active. It is well-constructed and should last throughout one's lifetime. But the longer one lives, the more susceptible they become to the effects of pollution, smoking, occupational exposure to harmful air or vapors, and lung disease.

There are some normal changes with aging. The breathing capacity of the lungs decreases and the older person expends about 10 percent more energy in order to breathe. In addition to rapid fatigue, the decreased ability to breathe deeply and to cough can lead to respiratory illness, such as pneumonia.

Finally, be aware that the following conditions may indicate a respiratory emergency:

- An absence of chest movements or uneven chest movements during breathing.
- No exchange of air is heard or felt at the mouth or nose.
- Dyspnea, or difficulty in breathing.
- Cyanosis, or blue-gray or ashen skin.
- A breathing rate above 30 respirations per minute.
- A breathing rate below 8 respirations per minute.

GASTROINTESTINAL SYSTEM

Of all of the body's systems, the gastrointestinal tract is most likely to cause distress in the older person. However, the types of gastrointestinal problems that older people have do not differ significantly from those that younger people have.

There are natural changes related to aging that can affect the gastrointestinal tract. First, eating habits may change. This may be due to difficulty with chewing or swallowing or a loss of appetite caused by diminished sense of taste and smell. There may also be decreased saliva secretion or impairment of the swallowing mechanism.

In the stomach, reduced secretion of enzymes and digestive acids and reduced motor activity may affect the breakdown and absorption of food. In the intestines, absorption of certain nutrients is decreased -- and loss of muscle tone may reduce peristalsis, causing constipation.

For constipation, it may help to eat five or six small meals per day, with the heaviest meal at midday rather than in the evening. Plenty of fluids can help prevent constipation, and can replace lost fluid if diarrhea is present. Also, the right foods and adequate exercise can help the digestive process.

And since loss of appetite may be a factor, the foods selected should be familiar to and preferred by the older person and should be served in an attractive manner.

GENITOURINARY SYSTEM

A loss of urinary control or sexual performance is too often accepted as normal among the aging, but the normal changes of aging usually do not hold these conditions in store. But, still, there are changes.

The kidneys normally show evidence of wear by age 40. Blood flow to the kidneys is reduced an average of 55 percent between ages 35 and 80. Progressive degeneration of tissue decreases the ability of the kidneys to filter efficiently and the normal excretory pattern may be interrupted.

Nocturia, frequent urination during the night, may be a result of an aging kidney, but infections or other problems may also be the cause.

Older persons should increase their fluid intake to prevent dehydration. Also, changes in the kidneys may cause medications to remain present and active for longer than normal periods. Adverse affects of medication should be monitored closely in the elderly.

CENTRAL NERVOUS SYSTEM

Although the number of brain cells decreases beginning at about age thirty and continues to decrease, there are more than enough brain cells to maintain brain functioning for life.

Although many older persons develop mental impairments, such as Alzheimer's disease, in healthy persons the change in mental functioning is minimal. A simple slowing may be the primary effect. Slowed voluntary and involuntary reflex movements, slower completion of complex tasks, and slower decision-making may be present.

Mild confusion may be a common occurrence among the elderly, but it is usually not due to the natural aging process and should be brought to the attention of a physician. The real cause of confusion may be medication, fatigue, depression, deficiencies in respiration, circulation, or nutrition, or disease conditions.

BODY TEMPERATURE

The body's capacity to regulate body temperature may diminish with aging. Lowered metabolism, loss of subcutaneous tissue, and decreased physical activity may contribute to difficulty keeping warm, even in a warm environment.

Heat may also be poorly tolerated because perspiration is decreased -- and older blood vessels are less able to dilate and eliminate heat through the skin.

And when heat is applied to the body, such as during a hot bath, confusion may occur as the blood to the brain is diverted to peripheral areas to keep the body cool. For this reason, older persons are encouraged to avoid taking baths using water that is too hot.